References

Reference A—Style and Format Principles

Sections:

A.01.001: Terms and Phrases

A. Conventions to Be Used for Common Terms and Phrases. To ensure consistency of terminology within the Development Code, listed below, are conventions to be used for certain common terms and phrases, some of which will appear abbreviated throughout the Development Code. In all cases, these terms and phrases will be defined in the Development Code glossary, or will be explained within individual Development Code sections or by appropriate interpretation.

City. Use "City" rather than "City of Ontario," after City of Ontario is first used in the Development Code.

Deny. Use "deny" rather than "disapprove" or "disallow."

Policy Plan (General Plan) component of The Ontario Plan. Use "Policy Plan (General Plan) component of The Ontario Plan " rather than "General Plan," or "City of Ontario General Plan."

Pursuant To. Use "pursuant to" rather than "in compliance with," "in accordance with," "under," etc.

Lot. Use "lot" rather than "parcel."

Approving Authority. Use "Approving Authority" when referring to the City Council, Planning Commission, Planning Director, Zoning Administrator, etc., as the hearing body or position responsible for approving an application or rendering a decision.

Reviewing Authorities. Use "Reviewing Authorities" when referring generically to all Advisory Authorities, Approving Authority and Appeal Authorities.

Structure (Structures). Use "structure" or "structures" rather than "building," "buildings," or "buildings and structures."

State. Use "State" rather than "State of California," after State of California is first used in the Development Code.

Zoning District. Use "zoning district" rather than "zone," or "zone district."

B. **Words to Use and Not Use**. Additional words to use and not use are as follows:

Use	*Don't Use*
2, 10, 20, 30, etc.	two, ten, twenty, thirty, etc.
one	1
12 months	one year
30 days	one month
allowed	permitted
Approving Authority	final review authority or decision making body
believes	feels
concurrently	simultaneously
contained, identified, outlined	(as) set forth, set out in
e.g., (for partial "for instance" lists)	"for example"
ensure	insure, assure
equivalent	same as though
i.e., (for complete lists)	"that is"
pursuant to	in accordance with, per, in compliance with
multiple-family	multi-family
lot	parcel
percent	%, except when used in charts or tables
presumed	assumed
religious assembly	church
shall	must
their	his/her
Policy Plan component of The Ontario Plan	General Plan
	herein
	said
	such
	thereof
	That (at the beginning of a finding)
	"any," "all," "no" to start a sentence

A.01.002: Numbers

A. **Expression of Numbers.** Numbers will be expressed in numeric form 2 through 10 or more. The archaic ordinance convention of repeating numbers in both word and numeric form (i.e., "fifty (50)") will not be used.

B. **Expression of Percentages.** Percentages will be expressed using the % character only in tables and graphics, the word "percent" will be used in text.

A.01.003: Capitalization

Typical words to capitalize and not capitalize are as follows:

Always Capitalize:	*Don't Capitalize:*
AR, RE, LDR, MDR, HDR, CS, CC, CR, OL, OH, MU, BP, IP, IL, IG, IH, ONT, CIV, OS-R, OS-C, OS-U, RC, AG, ES, etc.	development agreement
Building Permit	specific plan, except when referring to a specific plan name
Chapter	zoning district
City	
City Council	
City Engineer	
Department (*all City Departments*)	
Development Code	
Division	
Federal	
Land Use Element	
Part	
Permit types (e.g., Use Permit, Variance, etc.)	
Planning Commission	
Planning Director	
Section	
State	
Subparagraph	
Subsection	
Title	

A.01.004: Hyphenation

A. **Hyphenation of Compound Nouns**. Use a hyphen with compound nouns, such as "father-in-law" or "right-of-way." Additionally, a hyphen is used to join two or more words that serve as a single adjective that describes a noun.

Examples:

- A fifty-year-old man has won the marathon.
- The detective noticed the run-down heels of the suspect.

B. **Words to Hyphenate and Not Hyphenate.** Typical words to hyphenate and not hyphenate are as follows:

Hyphenate:	***Don't Hyphenate:***
one-story, 2-story, 3-story, etc.	
one-foot, 2-foot, 3-foot, etc.	
single-family	"anti" words are one word (i.e., antiestablishment)
multiple-family	"mid" words are one word (i.e., midway), except mid-sixties, mid-century, or when used with any proper capitalized noun, such as mid-January
right-of-way (plural is rights-of-way)	"citywide" (as an adjective)
off-site (adjective or adverb)	"multi" words are one word (i.e., multifaceted), except when a hyphen would prevent one word from being mistaken for another (i.e., multi-ply fabric).
on-site (adjective or adverb)	"non" words are one word (e.g., nonconforming, nonuse, nonurban, nonresidential, etc.), except when combined with any capitalized proper noun (e.g., non-English, non-Indian, non-Italian, etc.
on-ramp	"pre" words are one word (i.e., preexisting), excepting "pre-engineered"
off-ramp	"re" words are usually one word (i.e., reengineered), excepting words that would have duplicate meanings (e.g., resign, re-sign)
self- (when used as a prefix)	"retro" words are one word (i.e., retroactive, retrofit)
-type	

A.01.005: Commas Separating Items in a Series

Use commas to separate three or more items in a series. The items may be single words, phrases, or clauses. A comma before the last item is optional if there are exactly three items in the series.

A.01.006: Colons

A colon is usually used in one of 2 ways: **[i]** It may be used to introduce the reader to whatever follows it, signaling: "Here is something you should pay attention to;" or **[ii]** the colon may follow an independent clause (a complete statement) to introduce a defining example, a list, or a quotation.

<u>Examples</u>:

- She had only one person to blame: herself.
- A new menace threatens eastern Canada: pollution.
- To be physically healthy, we need three things: ample rest, a good diet, and plenty of exercise.
- The title of one of his poems signifies Dylan Thomas's feelings about his father's death: "Do Not Go Gentle into That Good Night."

A.01.007: Semicolons

A. A semicolon joins two independently expressed ideas; it also implies a relationship between them.

B. Semicolons can be used between closely related independent clauses, and may be used instead of commas, to separate items in lengthy, complex lists.

Examples:

- I am hoping to see The Titanic before it leaves town; I am told that the 3 hours it takes to watch this movie passes very quickly.
- We visited Erie, Pennsylvania; Buffalo, New York; and Toronto, Ontario.

C. Transition words are sometimes used between independent clauses; to show cause and effect, or the continuation of ideas. Words and phrases used in this way are preceded by semicolons, and followed by commas.

Examples:

- We greatly appreciate your excellent on-the-job performance; therefore, we are giving you a raise.
- Computers have replaced the postal system as the "medium of choice" for correspondence; for example, e-mail is far more frequently used than letters of request for obtaining information.
- Listed below are words and phrases that require semicolons and commas when used in these types of constructions:
    - Besides
    - Consequently
    - Furthermore
    - For example
    - However
    - In fact
    - Moreover
    - Nevertheless
    - Therefore
    - Thus

A.01.008: Outline Format

The provisions of the Development Code will be organized according to the following outline *(Note: "X" and "x" are used as a placeholder for the actual Arabic numeral that will be used)*:

Chapter X: (12 pt)
[Name of Chapter] (16 pt)

Division X.XX—[Name of Division] (12 pt)

X.XX.xxx: [Name of Section] (10 pt)

A. [**Subsection Title**]. [standard text] (10 pt)

1. [Paragraph Title]. [standard text] (10 pt)

a. [*Subparagraph Title*]. [standard text] (10 pt)

(1) [**Subparagraph Title**]—[standard text] (10 pt)

(a) [Subparagraph Title]—[standard text] (10 pt)

A.01.009: References and Citations

A. Referencing Text Outside of the Same Section. When a cross-reference is to text outside of the same section being referenced, the cross-reference starts with the Chapter number and continues to the appropriate level for the reference. For example, 2.01.050.B. refers to Subsection B. of Section 050, of Division 01, of Chapter 2. The terms Chapter, Division or Section are used if the reference is to an entire Chapter, Division or Section. Cross-references will include the applicable Chapter, Division or Section number, followed by the name of the Chapter, Division or Section in parenthesis (e.g., "Division 2.01 (Planning Agency)").

B. Referencing Text within the Same Section. When a cross-reference is to text within the same section, the name of the Section level is used (i.e., Subsection, Paragraph, Subparagraph, etc.) and the reference "number" starts with the appropriate subsection letter. For example, the statement: "see Paragraph D.2," refers to Paragraph 2, of Subsection D, of the same Section.

C. Citation of External Documents.

1. Provisions of State law that are cited in the Development Code will be referenced by the abbreviated name (as defined in the Development Code Glossary) of the applicable State code, and either individual or multiple section numbers (e.g., "GC Section 65091," when referring to "Government Code Section 65091," etc.).

2. City documents, other than The Ontario Plan, that are not part of the Ontario Municipal Code (e.g., specific plans, etc.) will be referenced in the Development Code by showing the document title in italics.

3. Provisions of the Ontario Municipal Code that are cited in the Development Code will be referenced by the abbreviation OMC, followed by the applicable Title, Chapter, Article or Section number, and the name of the Title, Chapter, Article or Section in parenthesis (e.g., "OMC Title 5 (Public Welfare, Morals and Conduct), Chapter 29 (Noise)," "OMC Section 5.29.04 (Exterior Noise Standards)," etc.).

Reference B—Architectural Styles

Architectural styles classify architecture in terms of the use of form, techniques, materials, period, region, and other stylistic influences. This reference has been established to ensure consistency of terminology, and appropriate examples of architectural styles, as they are used or reference within the Development Code.

Follows, is a discussion of the below-listed architectural styles and those architectural features that are common to each recognized style:

GOTHIC REVIVAL (1850s - 1880s)

The Gothic Revival movement began 30 years before the founding of Ontario; however, it continued into the late 1940s and early 1950s. The Gothic Revival style is the earliest of the three Gothic Revival styles. The other two are the Late Carpenter's Gothic Revival (1860s through 1900s) and the Late Gothic Revival (1895-1940s). This style often combined classic Greek Revival buildings with Gothic Revival elements.

This style, while not built in Ontario, is compatible with the development of Ontario's downtown area. The Gothic Revival style was most often used on churches.

Common Features

- High-pitched roofs
- Projecting pinnacles
- Decorative bargeboards on gable cornices
- Frequent occurrence of wall gables
- Split pilasters in porches
- Multi-colored bands, used especially with brick
- Open Tudor arches, used most in porches
- Windows were typically pointed, lancet windows with wood frames
- Doorways were typically pointed with lancet arches to match lancet windows
- Doors were typically wood, either plain or ornate, with a stained finish

Colors

Buildings were painted a light color. Exposed brick (not painted) was also typically used. Accent colors for window and doorframes were typically darker, richer colors.

St. Joseph's Church
Denver, Colorado

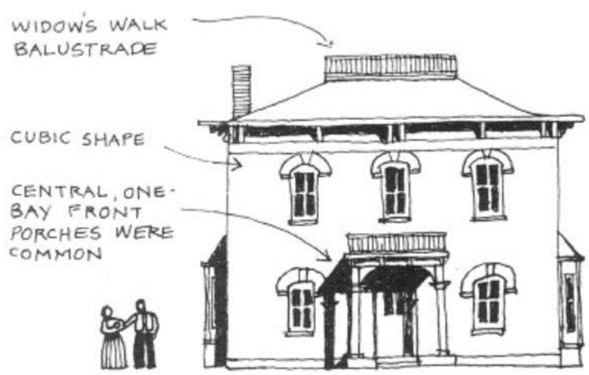
ITALIANATE (1860s - 1880s)

Like many Victorian-era styles, Italianate emphasized vertical proportions and richly decorative detailing. It was found on residential, commercial, and industrial structures in America from about 1870, until the turn of the century.

Some of Ontario's commercial buildings were originally designed with Italianate elements. While not typically built in Ontario, the Italianate style is easily compatible with Ontario's historic neighborhoods.

Common Features

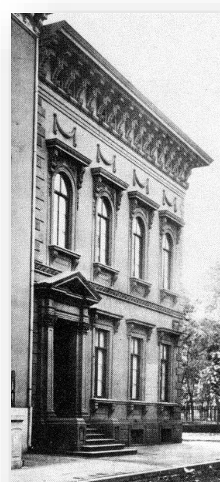
- Low-pitched or flat roof
- Wide, overhanging eaves
- Paired bracketed cornices
- A variety of fenestrations (usually very tall, narrow, double-hung, one-over-one windows)
- Molded window surrounds
- Doors are typically carved wood or other ornate wood doors, with a stained finish
- Square cupola
- Wood frame
- Arcade porch topped with a balustrade balconies
- Rectangular massing of house
- Elaborately decoration
- Balanced, symmetrical façade
- Emphasis on vertical proportions: 2 to 4 stories
- Side bay window
- Heavily molded double doors
- Roman or segmented arches above windows and doors
- Simple Italianate structures have a hip roof, bracketed eaves, and molded window surrounds. A more elaborate or high style example may feature arcaded porches, corner quoins, towers, and ornate detailing. There are also some Italianate structures that are flat-roofed, with a front bay and entrance, and a decorated cornice.



Typical Italianate Architectural Features

Colors

Buildings were typically painted a light color, with a second trim color. A third color was occasionally used on window frames.



LATE CARPENTER'S GOTHIC REVIVAL (1860s - 1900s)

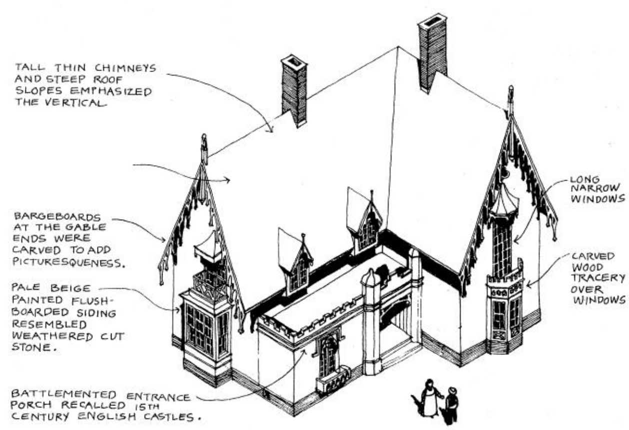
The Late Carpenter's Gothic Revival style is the second of the Gothic Revival styles. This version of the Gothic Revival movement combined Victorian styles, such as Eastlake and Queen Anne, with Gothic Revival Elements. Most churches built in the late 1800s were of this style.

Several early buildings in Ontario history were of the Late Carpenter's Gothic Revival style; unfortunately, no examples of this style remain in the City. The best example was the original First Methodist Church, shown left.

The Late Carpenter's Gothic Revival style is compatible with the development of Ontario's downtown area.

Common Features

- High-pitched roofs
- Rectangular gable roof with tower
- Pointed spire tower roof
- Main entranceway either a lancet or segmented arch.
- Belfry openings lancet arch
- Windows were typically pointed, lancet windows, with wood frames
- Doors were typically wood, either plain or ornate, with a stained finish
- Doorways were pointed, with lancet arches matching the window design



Typical Late Carpenters Gothic Revival Architectural Features

Colors

Buildings were painted in a light color. Accent colors for window and doorframes were typically darker, richer colors.

EASTLAKE (1870s - 1880s)

The Eastlake style is a decorative style that incorporates elements from the other Victorian styles (Queen Anne, Stick, Second Empire, etc.). There are only a few examples of any of the Victorian styles within the City, and there are no known examples of the Eastlake style within the City.

Common Features

- Large decorative porches
- High pitched gable roofs (or variations of the gable roof, i.e. cross gable, etc.)
- Wood siding or shingles for exterior walls
- Turned posts
- Carved gable end decoration
- Cut out patterns on porch frieze
- Other typical features found in the Queen Anne, Second Empire and Stick styles
- Windows were typically individual double or single-hung wood frame windows. Stained glass windows were also used to accent an interior or exterior feature
- Doors were typically ornate, and could include stained or beveled glass panels
- Glass sidelights with either stained or beveled glass to match front door were also used on larger homes, as were double doors for the front entrance

Example of the Eastlake Style

Colors

Homes were typically painted in color schemes consisting of 5 to 7 colors. Palettes were very eclectic, ranging from bright colors to muted tones. Every detail was painted in different colors to accentuate them.

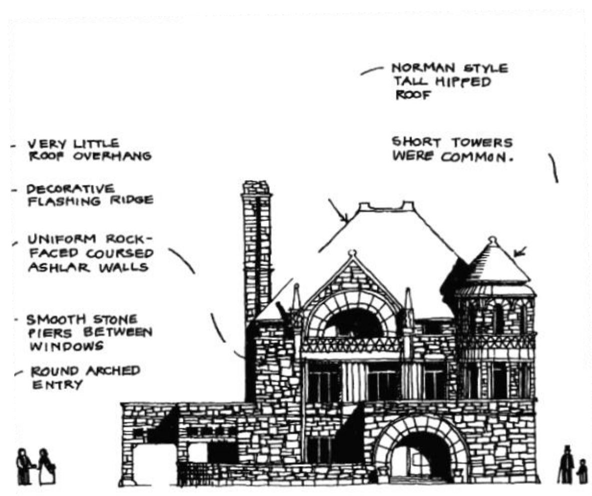
RICHARDSONIAN ROMANESQUE (1870s - 1890s)

Henry Hobson Richardson made this style famous, and it bears his name. It became known with buildings with great prestige. The style is derived from the architecture of France and Spain from the Middle Ages (typically the 11th and 12th centuries). Most building in this style include public buildings, such as churches and government offices, and large homes. A good example of the style is depicted in St. Brigid's Church, located in San Francisco, California, shown left.

There are no known buildings within the City that are of this style; however, the style is compatible with many of the buildings located in Ontario's original downtown.

Common Features

- Use of weight and mass as prime elements
- Medieval type of building form
- Masonry walls
- Arch and dentil details on walls
- Extensive use of arches, typically an early Christian arch, as used in the Middle East
- Arch used a single arch or arcade
- Deep recessed windows
- Squat columns
- Pressed metal bays and turrets
- Windows were typically rectangular and divided into rectangular patterns by mullions and transoms
- Doorways were rectangular, typically with stained wood doors, which were either plain or ornate



Typical Richardsonian Romanesque Architectural Features

Colors

Buildings were typically natural stone. Accent colors for window and doorframes were typically darker, richer colors.

SECOND EMPIRE (1870s)

The Second Empire style takes its name from the French Second Empire, during the Reign of Napoleon III, taking design queues from the grand buildings being constructed in Paris at the time. The style became the most popular in America during the period, with many private homes and public buildings created in the style.

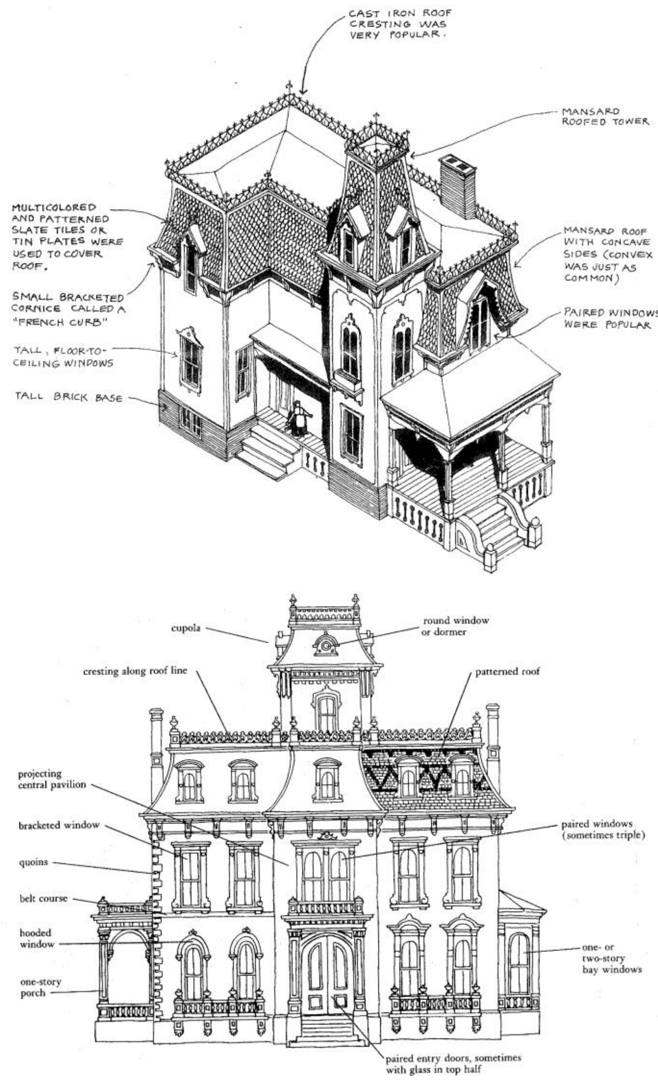
The Second Empire style began to die out before the Chaffey brothers founded Ontario. The style is, therefore, very rare in the City. One of the few and best example of the style within the City is the William Fallis House, Ontario's first Historic Landmark.

Common Features

- Mansard roof
- "Widow watch" towers
- Slate or wood shingle roofs with cast iron cresting
- Dormers in mansard roofs, with
- Wood siding or smooth plaster finish stucco for exterior walls
- Symmetrical design
- Centered front porches
- Tall brick foundations and bases
- Turned porch columns
- Horizontal banding separating floors
- Windows were typically tall, individual double or single-hung wood frame arranged in groups of 2 or 3
- Doors were typically ornate, with stained or beveled glass panels. Glass sidelights, with either stained or beveled glass to match the door were also used on larger homes, as was the use of double front doors

Colors

Homes were typically painted in color schemes consisting of 4 to 7 colors, depending upon the detail of the house. Palettes were very eclectic, ranging from bright colors to muted tones. Details were typically painted in different colors to accentuate them.



Typical Second Empire Architectural Features

STICK (1880s)

The Stick style of architecture was popular from the 1860s through the 1890s. It was one of several styles of architecture employed during the Victorian era. Architectural critics of the day were stressing honesty in architectural design, believing that a building should visibly reflect its materials and method of construction. This was a reaction against the excesses of the ornate Victorian styles. The linear geometric Stick style is a result of this reform movement. Of course, the actual structure of a Stick style is not visible; the stick pattern is purely decorative. However, this pattern was reminiscent of medieval English heavy timber building traditions, in which the actual structural skeleton of the building was visible from the building exterior.

Some early homes in Ontario were built in the Stick style, some of which were mixed with the Queen Anne style. The most prominent Stick style home in Ontario is the Oakley House, shown top.

Common Features

- Overhanging eves, usually with exposed rafter ends
- Wood construction with boxy projections: bays, wings, and towers
- A grid-work of raised boards called "stick work" overlaying the clapboarded wall surface
- Irregular, asymmetrical forms and rooflines
- Vertical, horizontal, or diagonal boards applied over clapboard siding
- Angularity, asymmetry, verticality
- Roof composed of steep intersecting gables
- Large veranda or porch
- Simple corner posts, roof rafters, brackets, porch posts, and railings
- Individual casement windows, or double or single-hung wood frame windows
- Stained glass windows to accent interior or exterior features
- Ornate doors, which could include stained or beveled glass panels
- Glass sidelights, with either stained or beveled glass to match front door, were used on larger homes, as were double doors for the front entrance

Colors

Homes were typically painted in color schemes consisting of 5 to 7 colors. Palettes were very eclectic, ranging from bright colors to muted tones. Every detail was typically painted a different color to accentuate them.

Example of the Stick Style

VICTORIAN ECLECTIC (1880s – 1900s)

Victorian Eclectic structures are highly decorative and exhibit stylistic influences so numerous that they do not fit into any of the previous single styles of architecture. Dating from the 1870s through 1900, these buildings feature an unusual combination of elements from a variety of Victorian styles. Details from the Queen Anne, Gothic, and Italianate styles were borrowed most often, and were combined to create highly decorative building features, as shown to left and below. Victorian Eclectic structures tend to be broader and taller than earlier architectural styles, and much more complex. This style, while needed to address local vernacular architecture, is not an approved architectural style by the California Office of Historic Preservation and cannot be used in Historical Resource Surveys.

Some early examples of the Victorian Eclectic style exist in Ontario. This style was also adapted into a variation of a bungalow, and was often called a Folk Victorian, due to its more whimsical architectural details.

Common Features

- Square, symmetrical shape
- Brackets under the eaves
- Pediments
- Gothic pointed arches
- Sunburst detailing
- Roof cresting
- Semi-circular arched windows
- Oriel window
- Dormers
- Porches with spindle work or flat, jigsaw cut trim
- Carpenter gothic details
- Low-pitched, pyramid shaped roof
- Front gable and side wings
- Windows were typically individual casement or single-hung, with wood frames. Occasionally, metal frames were used to replicate the ironwork used on other details in the house
- Doors were typically carved wood or other ornate wood, with a stained finish

Example of the Victorian Eclectic Style

Colors

Homes were typically painted white with a second trim color. Sometime a third color was used on window frames.

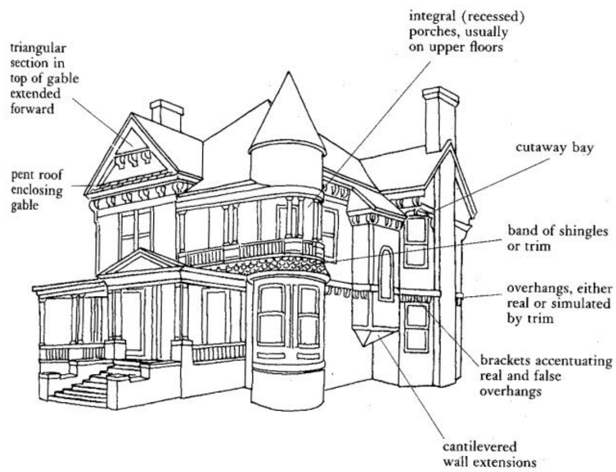
QUEEN ANNE (1885s – 1900s)

The most popular of the Victorian styles, the Queen Anne style was the culmination of all the various Victorian styles and was influenced by them. The Queen Anne style also made a partial comeback, when elements of the style were used in the creation of the Victorian variation of the Bungalow.

The public recognizes the Queen Anne style as "Victorian," and this style continues to have elements replicated on tract homes and farmhouses across the country. Several Ontario Historic Landmarks are of the Queen Anne style. One of the most prominent is the John Stewart House, shown above.

Common Features

- Round, square or octagonal towers
- Steep pitched gable roofs, or variations of the gable roof, such as a cross gable roof form
- Wood siding and/or shingles for exterior walls
- Large front porches
- Rock or brick foundations and bases
- Turned porch columns
- Decorative shingle patterns, typically on gable ends
- Spindle work friezes on porch
- Brick chimneys
- Decorative brackets
- Individual casement, or double or single-hung wood frame windows
- Stained glass windows used to accent interior or exterior features
- Ornate doors were with a stained finish, and may include stained or beveled glass panels
- Front door of larger homes had glass sidelights with either stained or beveled glass.



Typical Queen Anne Architectural Features

Colors

Homes were typically painted in color schemes consisting of 5 to 7 colors. Palettes were very eclectic, ranging from bright colors to muted tones. Every detail was painted in a different color to accentuate them.

SHINGLE (1890s - 1920)

The Shingle style was known for its extensive use of wood shingles, hence the name. While other Victorian styles of the era were very ornate, the Shingle style was not. It was simple in form and detailing, and emphasized the uniformity of its surface materials. The Shingle style was one of the most popular styles on the nation's eastern coast, and was not widely used in California. The most prominent use of the Shingle style was on the New England coast.

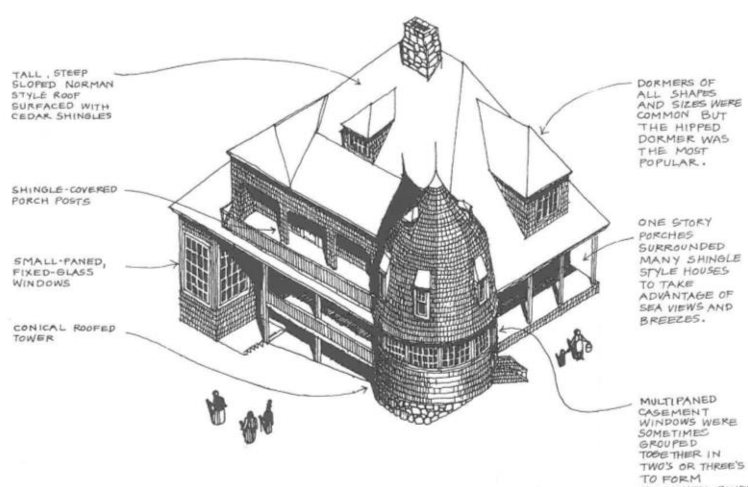
There are no known buildings of this style in Ontario; however, this style may be compatible with some of Ontario's oldest neighborhoods.

Common Features

- Round towers
- Steep pitched gable roofs (or variations of the gable roof, i.e. cross gable, etc.)
- Wood shingles for exterior walls
- Large front porches
- Stone (sometimes brick) foundations and bases
- Extensive use of Dormers
- Use of Palladian windows
- Windows were typically individual casement, double or single-hung wood frame, with a multiple-pane upper sash and a single-pane lower sash. Stained or beveled glass windows were also used
- Doors were typically plain with a stained finish, but could include stained or beveled glass panels. Glass sidelights, with either stained or beveled glass were also used

Colors

Homes were not typically painted. The shingles were either left exposed in order to allow them to weather, or they were stained in a semi-transparent color. Dark, rich accent colors were typically used on window and doorframes.



Typical Shingle Architectural Features

AMERICAN FOURSQUARE (1900s)

The Foursquare is easily recognized by its square plan and overall simplicity. The majority of these houses were built during the first three decades of the 20th century.

The typical Foursquare is a two-story hipped roof structure, with a central dormer, minimal decoration, broad overhanging eaves with brackets or modillions, classical frieze with dentils, and a porch with hipped roof supported by simple Doric columns or square posts. Occasionally, a Foursquare will feature a shaped gable, or will be considerably larger, with ornamentation that is more elaborate. In each case, however, the basic square plan is predominant. Later Foursquare houses often had the same type of interiors as Bungalows, with open floor plans, lots of built-ins, and fireplaces. Popularized by pattern books and Sears Roebuck & Company mail order kits, the American Foursquare spread to residential neighborhoods throughout the United States.

The majority of American Foursquare houses in Ontario are located on the west side of the City's original downtown. There are several such homes located along Euclid Avenue, including the Pollock House, pictured above. Additional examples of the American Foursquare home are pictured below

Common Features

- Box Shape
- Two-and-a-half stories high
- Four-room floor plan
- Brick, stone, or wood siding
- Simple low-hipped roof, with deep overhangs
- Large central dormer
- Side bays
- Doric or square columns
- Decorative brackets
- Dentils
- Classical frieze
- Modillions
- Windows were typically individual casement, or single-hung, with wood frames
- Simple wood doors were used, with a stained finish

Example of the American Foursquare Style

Colors

Homes were typically painted in three earth-toned colors. On some occasions, when the siding material changed between the first and second story (i.e. shingles and clapboard siding), two shades of the same color would be used to distinguish the change in material. Typically, the darker shade would be painted on the upper story.

COMMERCIAL (1883 - 1900)

The Commercial style was created to address the vernacular brick commercial buildings built in Ontario from 1885 until the early 1900s, as shown to the left. The buildings were made of brick and were influenced by a variety of styles, including Queen Anne and shingle styles. This style, while needed to address local vernacular architecture, is not an approved architectural style by the California Office of Historic Preservation and cannot be used in Historical Resource Surveys.

Many of these buildings were altered in the 1950s to give them a more modern appearance, but most of the features are hidden under the alterations.

Common Features

- Brick walls
- Flat roof with decorative cornice
- Towers and other vertical projections at corners
- Recessed and projecting elements
- decorative pilasters
- Windows were typically individual casement or single-hung wood frame
- Storefronts typically consist of large plate glass windows with a short bulkhead located at ground level. Above the storefront were small transom windows (operable or non-operable)
- Doors were typically glass with painted frames

Colors

The base color of commercial buildings was typically exposed brick. Dark, rich accent colors were typically used for window and doorframes.

Examples of the Commercial Style

BEAUX-ARTS (1890s – 1930s)

The Beaux-Arts style, also known as the Classical Revival style, was used predominantly in public buildings, such as libraries and banks. The style was based on the Greek and Roman architectural orders, was very grandiose in nature, and had monumental proportions. Many banks, libraries, churches, and similar buildings chose the style, as the style implied importance. It was also the style typically chosen for homes for the very wealthy.

There were few classical revival buildings ever constructed within Ontario, and even fewer known examples are left standing within the City, such as the Bank of America building, above.

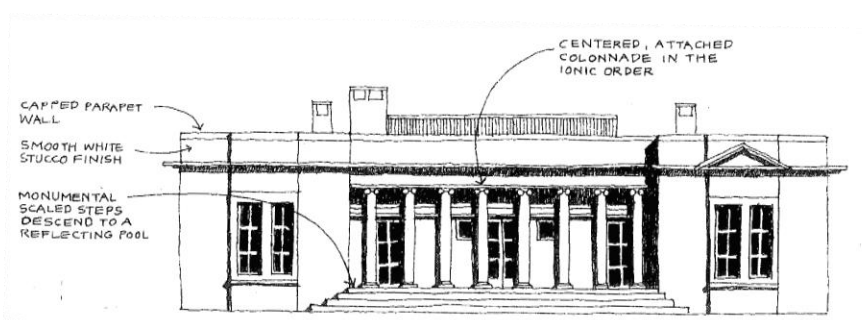
Common Features

- Smooth stone base
- Flat roofs
- decorative cornices
- projecting pediments
- capped parapet walls
- Smooth wall surfaces, usually stucco (smooth cement-plaster finish)
- Windows were typically individual casement or single-hung wood frame
- Storefronts typically consisted of large plate glass windows with a short bulkhead located at ground level. Above the storefront were small transom windows (operable or non-operable)
- Doors were glass, with painted frames. Occasionally, decorative solid doors were used.

Example of the Beaux Arts Style

Colors

The base color of the building was typically white, with an exposed smooth stone base. Trim and accent colors were typically light muted earth tones, with very little variation in color.



Typical Beaux Arts Architectural Features

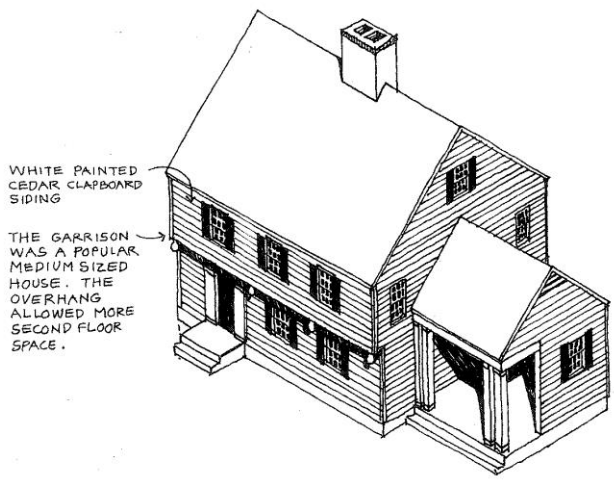
COLONIAL REVIVAL (1890 – 1915)

The Colonial Revival style was simple and symmetrical, and had a variety of different roof forms. Of the many period revival styles that became popular during the 1920s, the Colonial Revival style relied upon architectural elements from America's past. This style was heavily influenced by the Cape Cod, Georgian, and Federal styles. This style was also adapted as a variation of the Bungalow style.

There are very few Colonial Revival homes in the City, but there are many examples of the Colonial Bungalow style, as pictured top left and below right.

Common Features

- Wood clapboard siding (occasionally brick was used, not typical in Ontario)
- Gable or hipped roof
- Small centered porch
- Projecting pediment
- Simple porch columns
- Symmetrical façade
- Windows were typically individual single or double-hung wood frame
- Doors were typically decorative solid wood with glass sidelights



Typical Colonial Revival Architectural Features

Colors

The base color of the building was typically lighter shades of blues, yellows and greens. Typical colors were blue grey and sea foam green. Trim and accent colors were typically white.

Bungalow Variation

The Colonial Bungalow had the elements of the Colonial Revival style with one modification, Colonial Bungalows typically used a hipped gable roof, rather than just the straight gable or hipped roof.

DUTCH COLONIAL REVIVAL (1890 - 1915)

The Dutch Colonial Revival style is a version of the Colonial Revival style. It has all the typical features of the Colonial Revival style, with one major exception, the incorporation of a gambrel roof. There are a small number of Dutch Colonial Revival style homes in the City, exemplified left and below, as the style was not as popular as the Colonial style, or other revival styles.

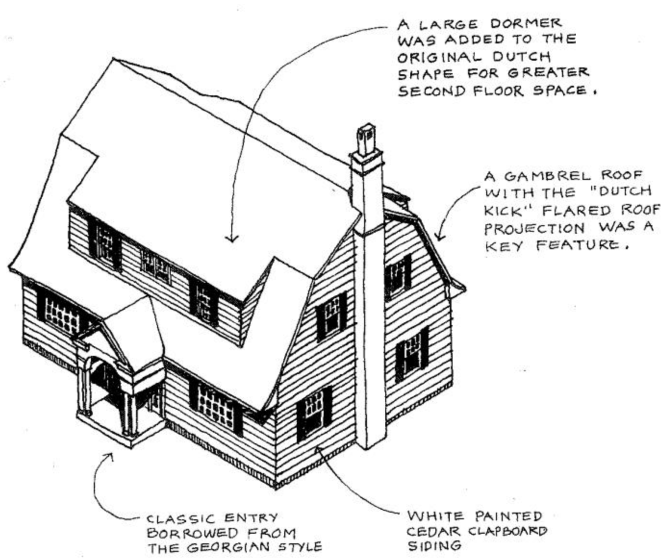
Example of the Dutch Colonial Revival Style

Roof

The typical roof style for a Dutch Colonial Revival is a gambrel roof with dormers on the second story.

Other Features

See Colonial Revival style for other features typically found in Dutch Colonial Revival homes.



Typical Dutch Colonial Revival Architectural Features

LATE GOTHIC REVIVAL (1895 - 1940s)

The most common of the three Gothic Revival styles in California is the Late Gothic style. It is also the most accurate in terms of architectural details and form. Whereas the earlier forms of Gothic Revival architecture combined other styles, such as Greek Revival, or one of the Victorian styles with Gothic Revival elements, the Late Gothic Revival style is more true to the English and French Gothic styles. The Late Gothic style was used primarily in churches and schools.

Several Churches in Ontario were designed in the Late Gothic Revival style, and each of them used unique materials. St. George Church is probably the best example of the style, with its brick exterior. Other good examples are the Bethel Congregational Church, shown above left, which used stone as the exterior material, and the First United Methodist Church, shown below, which used a stucco exterior.

Common Features

- Simple smooth surfaces
- Steep pitched gable roofs or variations of the gable roof, such as the cross gable
- Elaborate stained or leaded glass
- Designed to be low to the ground
- Large towers
- Main entranceway either a lancet or segmented arch.
- Belfry openings lancet arch
- Windows were typically pointed, lancet windows, with wood frames. Stained or leaded glass was also used
- Doors were typically plain or ornate wood, with a stained finish
- Doorframes were pointed with lancet arches to match the window design

Colors

Buildings were painted a light color; however, brick and stone buildings exteriors were not painted. Dark, rich accent colors were typically used on window and door frames.

First United Methodist Church
Ontario, California

BUNGALOW (1900s - 1940s)

Although the bungalow is more of a type of home than a style, it is included in this list to address the smaller homes built from the late 1900s through the 1940s. The bungalow type of home was adapted to many architectural styles, but clear differences still remained. For example, a Craftsman home, such as the Gamble House in Pasadena, is far different from the many Craftsman Bungalows built in Southern California. The bungalow started in California in the early 1910s, primarily as an outgrowth of the Craftsman style.

Bungalows are informal, simple houses, designed to address the need for more affordable housing. Bungalow floor plans are informal, with open spaces. Although there are many larger, two story bungalows, most bungalows were typically one story.

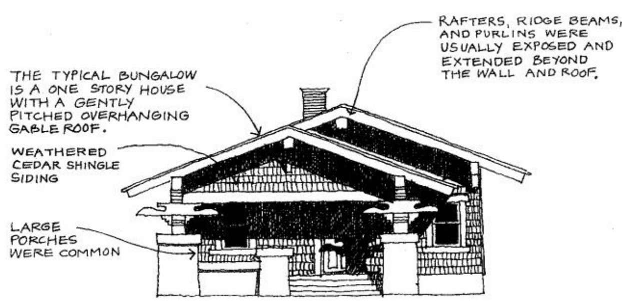
The bungalow became the first style of home to be built on a mass scale by contractor-builders. Tracts of these semi-custom homes were built on a speculative basis by developers, thus setting the foundation for tract home development that occurred after World War II. As a result, the Bungalow is the most common historic home type in Ontario, such as the Craftsman Bungalow pictured above.

As time passed, variations of the Bungalow developed, based upon many different architectural styles, such as Colonial Revival, Victorian, and Mediterranean Revival. In California, a unique variation of the Bungalow was created. Called the California Bungalow, this style was a cross between the Craftsman and Mediterranean Revival styles.

Regardless of the underlying style, Bungalows have many common features and design elements. Many, but not all, of the Bungalow variations are included in the List of Architectural Styles approved by the California Office of Historic Preservation.

Common Features

- Open floor plan
- Large front porches with stoop
- Low pitched roofs
- Windows were typically either single or double-hung, or casement styles, with wood frames (sliding styles were not used)
- Designed with many windows grouped in sets of 2 or 3, to let in natural light
- Front windows were typically large in size
- Front doors were typically large and decorative, matching the style of architecture



Typical Bungalow Architectural Features

Colors

Exterior colors used were consistent with the basic architectural style of the Bungalow.

Bungalow Variations

Follows, are some of the most common variations of bungalows:

Craftsman Bungalow (1905 - 1940). Based upon the Craftsman style home and, most notably, the work of Greene and Greene Architects. This is the most common Bungalow style constructed in the City, and was dominant from the early 1910s through the mid-1920s. See Craftsman style for common features and details.

Colonial Revival Bungalow (1905 - 1940). Based upon the Colonial Revival style of architecture, these homes were built starting in the late 1910s, and became more prevalent as the revival styles became popular in the 1920's. See Colonial Revival style for common features and details.

Victorian Bungalow (1900 - 1920). Based upon the Queen Anne style predominant in the late 1800s, these homes were built in the early 1910s and were not as popular as the other Bungalow styles.

California Bungalow (1920 - 1940). As a mix of the Craftsman and Mediterranean Bungalows, these homes were built in the early to mid-1920s as the popularity of the Craftsman style was dying and the Period Revival styles was rising.

Mediterranean Bungalow (1920 - 1940). Based upon the Mediterranean Revival style, these homes were built in the mid-1920s through the 1930s, and are the second most common Bungalow style constructed in the City.

Vernacular Bungalow (1900 - 1940). This variation of Bungalow is absent of architectural details that would categorize it in any particular style.

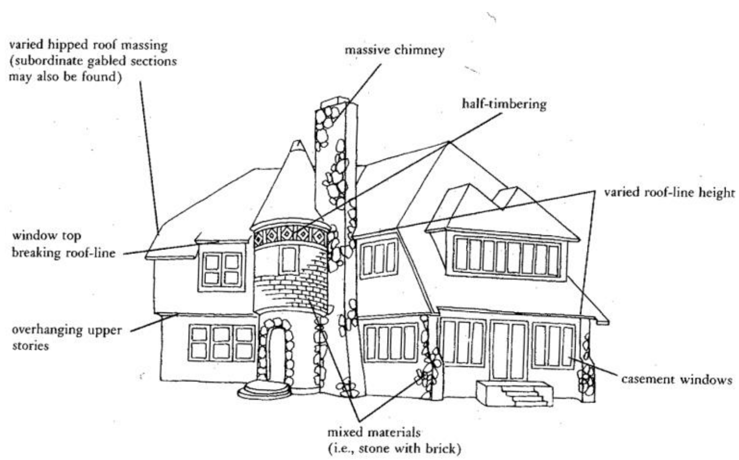
FRENCH ECLECTIC REVIVAL (1900 – 1930s)

One of the many period revival styles that began in the 1920s and became popular in the late 1920s through the early 1930s, the French Eclectic style replicated the cottages that dotted the French countryside, and were popular in fairy tales. French Eclectic Revival also includes a more formal sub-group that relates more toward the larger, formal homes in found in France.

There are many examples of French Eclectic homes, in Ontario, primarily within the Rosewood Court Historic District, as pictured left and bottom-right. There are, however, no examples of the more formal sub-group existing within the City.

Common Features

- Curved roof ridge to simulate thatched roof
- Wood Shake roof with wavy pattern
- Steep pitched gable roofs or variations of the gable roof, such as cross gables
- Stucco for exterior walls
- Small or no porches.
- Multi-paned windows
- Large central chimneys
- Round silo type towers
- Individual casement windows, or double or single-hung multi-paned windows, with either wood or metal frames
- Stained glass windows to accent interior and exterior features
- Simple doors with a stained finish and stained or beveled glass panels



Typical French Eclectic Revival Architectural Features

Colors

Homes were typically painted in color schemes consisting of 3 colors. Base colors were typically light earth tones. Trim colors were typically in contrast to the base color. Window frames were typically painted dark colors.

Example of the French Eclectic Revival Style

TUDOR REVIVAL (1900s – 1930s)

The Tudor style replicated the cottages and homes of the English countryside and became one of the many period revival styles that began in the 1920s, and was popular from the late 1920s through the early 1930s.

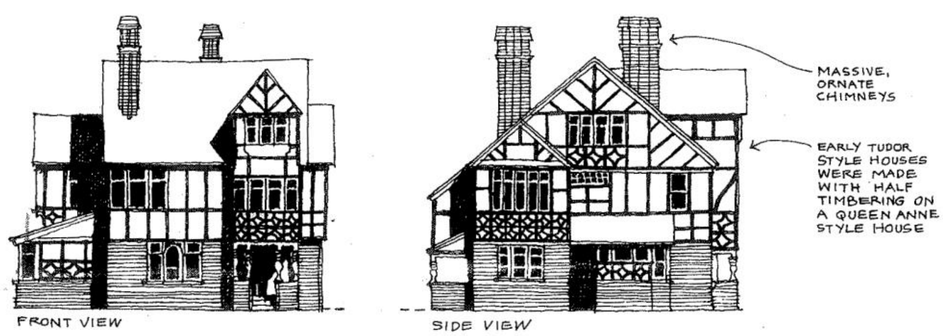
There are many examples of Tudor homes in Ontario, primarily in the Rosewood Court Historic District. An example of the style is pictured left and below.

Common Features

- Slate or Wood Shake roof
- Steep pitched gable or hipped roofs
- Brick for exterior walls, sometimes mixed with stucco (on upper stories)
- Half-timbered details on upper stories or gable ends
- Multi-paned windows
- Large central chimneys
- Cantilevered second floor pop-outs
- Individual casement windows, or double or single-hung multi-paned windows, with either wood or metal frames
- Stained glass windows to accent interior and exterior features
- Simple doors with a stained finish and stained or beveled glass panels

Colors

Homes were typically painted in color schemes consisting of 3 colors. Base colors were typically light earth tones. Trim colors were typically in contrast to the base color. Window frames were typically painted dark colors.



Typical French Eclectic Revival Architectural Features

NEOCLASSICAL REVIVAL (1900s – 1920s)

Often mistakenly called Colonial Revival due to the common belief that that the founding fathers were the first Americans to build houses fronted with white columns; however, the truth is that only a handful of Colonial houses are known to have a Classical portico.

There are many smaller Neoclassical Revival Bungalow homes in the City, as pictured left, primarily located in and around the City's original downtown area; however, none of the larger Neoclassical Revival style homes may be found within the City. Examples of the larger Neoclassical Revival style homes are pictured below. The bungalow variation of the style is very appropriate for infill development within with the historic neighborhoods of Ontario.

Common Features

- Hipped roofs with a prominent central dormer
- Colonnade porch, which may extend either the entire or partial width of the house
- Columns either with or without flutes
- Corinthian or Ionic capitals
- Boxed eaves with a moderate overhang
- Dentils or modillions
- Wide frieze band
- Rectangular double or single-hung windows, with wood frames (typically, a multi-paned upper sash, with a single paned lower sash)
- Simple wood doors with a stained finish

Example of the Neoclassical Revival Style

Colors

Homes were typically painted in color schemes consisting of 3 to 5 colors. Palettes were very eclectic, ranging from bright colors to muted tones. Every detail was painted in a different color to accentuate them.

CRAFTSMAN (1895 - 1920s)

The Craftsman Style was evolved from the Arts and Craft movement that originated in England in the late 1800s. The Craftsman variation of the bungalow is the dominant home style in Ontario's historic neighborhoods. There are several excellent examples of the Craftsman style in Ontario, such as the Latimer House shown left, along with an abundance of Craftsman Bungalows. The Craftsman style flourished in Southern California, with some of the best examples of the style located in local neighborhoods. The most famous Craftsman style architects were Charles and Henry Greene, better known as Greene and Greene Architects. The best collection of their work is in several neighborhoods in Pasadena, including the Gamble House, shown below.

The Craftsman style developed as a contradiction to the Victorian era that preceded it. It was the first style that emphasized natural materials and functionality. The details were simple, contradicting the gingerbread of the Victorian home. The wood was stained, instead of painted, and the homes featured built in cabinets, buffets, and benches. The moldings and other trim work was simple shapes, which could create complex designs. Tile fireplaces were also used.

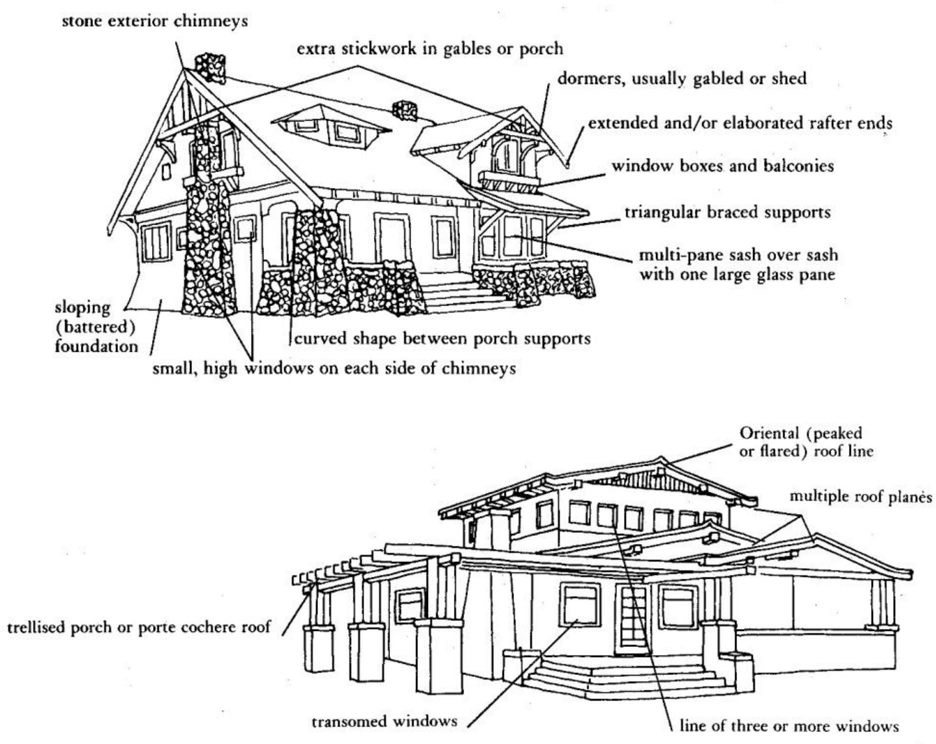
Common Features

- Exposed rafters
- Low-pitched gable roofs or variations of the gable roof, such as the cross gable
- Wood siding or shingles for exterior walls
- Large porches
- Rock foundations and bases
- River rock or brick columns
- Exposed wood beams and posts on porch structure
- Simple and large exposed attic vents
- Rock or brick chimneys
- Individual casement, double or single-hung wood frame windows
- Stained glass windows used to accent an interior or exterior feature
- Simple doors, which could include stained or beveled glass panels
- Larger homes had glass sidelights, with either stained or beveled glass to match front door

Example of the Craftsman Style

Colors

Homes were typically painted in color schemes consisting of 3 to 5 colors. Base colors were typically dark earth tones, usually browns or greens. Trim Colors were typically in contrast the base color. Darker homes used lighter colored earth tones, such as beiges and tans, with lighter homes using darker trim colors. Window frames and end rafters would typically be painted a third accent color, closer in shade to the base color. Exposed roof and porch beams would typically be painted dark brown. One alternative to the color scheme would be mixing color palettes, for example, a maroon base, an olive green trim, and a dark brown window frame.



Typical Craftsman Architectural Features

PRAIRIE (1900s – 1920s)

Developed by Frank Lloyd Wright during the early part of his career, the Prairie style was developed to create a unique American style of architecture appropriate for the Midwest. Although not used historically in Ontario, the Prairie style would be compatible in most neighborhoods as an infill structure, or as part of new development.

The most famous Prairie style homes are in around Chicago and its suburb, Oak Park. The best examples of the Style are the Robie House, pictured above, and the Dana Lawrence House, pictured right.

Many of the features common to a Prairie style house are similar to those on a Craftsman style home. For example, both styles extensively used stained glass and wood on the interior of the homes, and both styles used built-in cabinets and buffets.

Common Features

- Large overhanging roofs
- Covered terraces
- Low pitched hipped roofs
- Stucco for exterior walls
- Large porches
- Extensive use of brick
- Banding of windows
- Individual casement or single-hung windows
- Stained glass windows to accent interior or exterior features
- Simple wood doors with a stained finish, which could include beveled glass panels
- Some larger homes included glass sidelights, with either stained or beveled glass to match the front door

Colors

Homes were typically painted in color schemes consisting of 3 colors. Base colors were typically light to medium earth tones, usually browns. If the base of a home was brick, it would be left exposed. Trim Colors were typically in contrast the base color. Darker colors, usually earth tones, were used. Window frames would be painted a third accent color, usually a darker color, such as maroon.

Example of the Prairie Style

ART DECO (1920 – 1940s)

The Art Deco style became a fad by the late 1920s, remaining popular through the 1930s. It is known for extensive use of decoration, and its use of angular and geometric shapes. Hard edges, geometric shapes, and bright colors emphasized the style. The Art Deco style was popular with, and most famous for, its commercial buildings, but rarely found in homes. There are no examples of an Art Deco home in Ontario, but there are several examples of commercial buildings with strong Art Deco elements within the City's original downtown area (pictured above left and below right).

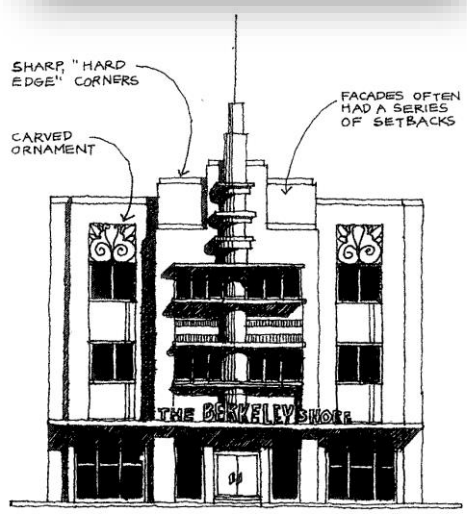
Several famous landmark buildings in Southern California are excellent examples of the Art Deco style, including the Eastern Columbia Building, and the former Bullock's Wilshire building (now Southwestern Law School), both in Los Angeles.

Common Features

- Smooth wall surfaces, usually stucco (smooth plaster finish)
- Flat roof with coping
- Towers and other vertical projections
- Decorative motifs such as chevrons, zigzags (usually on towers)
- Geometric shapes
- Hard corners
- Carved ornaments
- Fluted columns and pilasters
- Windows grouped to create strong vertical lines and to emphasize the tower elements
- Storefronts were typically large plate glass windows, with a short bulkhead located at ground level
- Glass doors with metal frames, usually painted to resemble copper or other metals

Colors

The Art Deco style is known for the use of bright colors, usually pastels, with the darker color for the base. Metallic colors, such as copper, brass, and gold, were used on windows and doors.



Typical Art Deco Architectural Features

ART/STREAMLINE MODERNE (1920s – 1940s)

Developed during the early days of the depression, the Art/Streamline Moderne style is a contrast to the Art Deco style. The style was inspired by technology and the emerging love affair America had with machines. The style is simple, and functional. It is also most famous for its commercial buildings, although houses were also designed in the style. There are numerous examples of Art/Streamline Moderne buildings within Ontario, such as milking barns located within the New Model Colony area, pictured above left, and a small number of commercial buildings within the City's original downtown area, pictured below.

Several famous landmark buildings in Southern California are excellent examples of the Art/Streamline Moderne style, including the Pan Pacific Auditorium and the Walt Disney Studios.

Common Features

- Smooth wall surfaces, usually stucco (smooth plaster finish)
- Flat roof with coping
- Horizontal grooves or lines in walls
- Curved walls and windows
- Horizontal orientation
- Windows grouped to create strong horizontal lines
- Glass block commonly used
- Large plate glass storefront windows, with a short bulkhead located at ground level
- Glass doors with metal frames

Colors

The Art / Streamline Moderne style used subdued colors. Base colors were typically light earth tones, usually off-whites or beiges. Trim Colors were typically bright or dark, to contrast the light color of the walls.

Examples of the Art/Streamline Moderne Style Taken from Ontario's Original Downtown Area

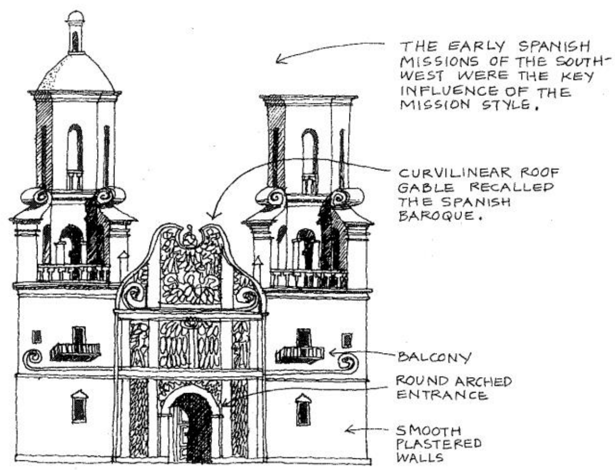
MISSION REVIVAL (1890 – 1915)

Developed earlier than the more well-known Mediterranean Revival style, the Mission Revival style became popular after several expositions and fairs that showcased the style in the mid-1890s.

Several Buildings in Ontario were built in the Mission Revival style, including the Union Pacific Railroad Station (demolished) and the stone warehouses at Guasti. However, the best examples of the style in the City are located on the Chaffey High School campus such as Gardner Springs Auditorium, pictured left, Chaffey Memorial Library, and North Hall, pictured below.

Common Features

- Ornate low-relief carvings
- Curvilinear roof gables reminiscent of the Baroque style
- Balconies on multi-story buildings
- Stucco or plaster walls
- Arcades (arched or post-and lintel)
- Towers (square or round)
- Decorated parapets
- Individual casement windows with wood frames
- On some occasions, metal window frames were used to replicate ironwork used elsewhere on the building
- Carved wood or other ornate wood doors with stained finish



Typical Mission Revival Architectural Features

Colors

Homes were typically painted white, with a second trim color. A third color was occasionally used on the window frames.

MEDITERRANEAN REVIVAL (1900s to 1930s)

The Mediterranean Revival style is a mix of various elements and influences. It incorporates features and elements from the Spanish Colonial and Moorish Architecture in Spain and Portugal, Italian architecture, as well as the California Missions. Most 1920s Mediterranean Revival buildings were influenced by rural Italian villas and could be termed as a Rural Tuscan style.

The Mediterranean Revival style is the second most prevalent style in the City, following the Craftsman style. The best example of the Mediterranean Revival style in the City is the Guasti Villa, pictured left-top, which was influenced by Italian architecture. Numerous other examples of the style can be found throughout the City's historic districts, such as the Ester Anderson House, pictured left-bottom.

Common Features

- Ornate low-relief carvings, highlighting arches, columns, window surrounds, and cornices and parapets
- Curvilinear gables
- Wing walls
- Red tile hipped roofs
- Stucco or plaster walls
- Arched or straight windows, with fancy wrought iron grilles
- Niches
- Decorative vents
- Arcades (arched or post-and lintel)
- Towers (square or round)
- Decorated parapets
- Elaborate chimney tops
- Loggias (galleries or corridors, typically at ground level)
- Extensive use of tile (both interior and exterior)
- Individual casement windows, or single-hung windows with wood frames
- Occasionally, metal window frames were used to replicate ironwork used elsewhere on the house
- Carved wood doors with stained finish.

Colors

Homes were typically painted white, with a second trim color. Occasionally, a third color was used on window frames.

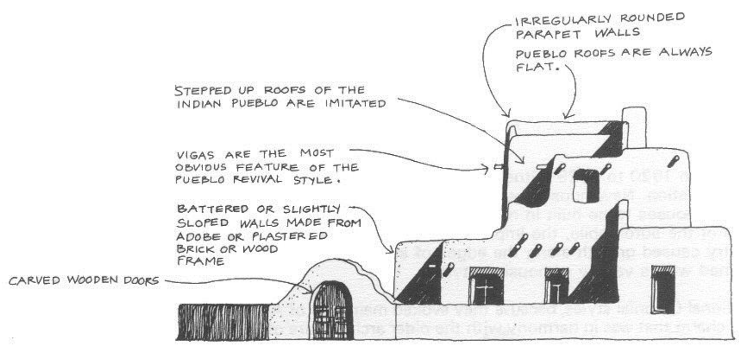
PUEBLO REVIVAL (1900s - 1930s)

Pueblo Revival, popular between 1905 and 1940, was an imitation of the earlier Indian pueblos of the Southwest. The key distinguishing elements are the projecting roof rafters call vigas. These generally round or square rafter ends protrude from the wall near the roofline. The roof of the Pueblo Revival structure is usually flat or slightly sloping, behind a low parapet. Walls are occasionally stepped or terraced. Round corners, battered walls, and straight-headed windows are also characteristic. Most structures are stucco, and are meant to imitate the adobe walls of the Indian pueblo. Some houses may combine elements of the Spanish Colonial Revival with the Pueblo Revival style.

There are not many Pueblo Revival style homes in Ontario. The largest concentration of Pueblo Revival style houses is located in the El Morado Court Historic District. An example of the style is pictured above.

Common Features

- flat roof
- projecting roof rafters (vigas)
- battered walls
- stepping or terracing
- Individual casement windows, or single-hung windows with wood frames
- Occasionally, metal frames are used to replicate the ironwork used elsewhere on the house
- Simple wood doors with a stained finish



Typical Pueblo Revival Architectural Features

Colors

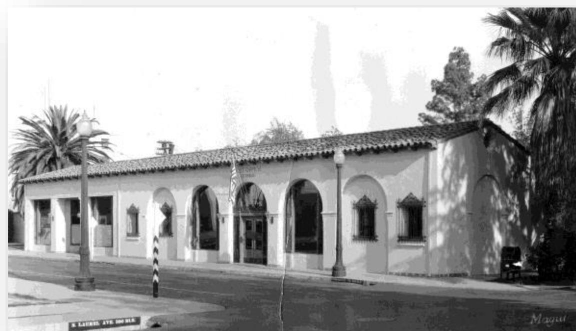
Homes were typically painted white, with a second trim color. Occasionally a third color was used on the window frames.

SPANISH COLONIAL REVIVAL (1915 – 1930s)

The Spanish Colonial style was developed as a direct result of the Mission style. The style became popular after the 1915 San Diego Exposition, which showcased the style. Most formal designs are influenced more by Italian architecture, and most informal designs were influenced by Spanish and Portuguese architecture.

There are only a few known examples of the style in Ontario. The most significant of this style is the Paul William's designed "Old Post Office", pictured below, and located on Transit Street.

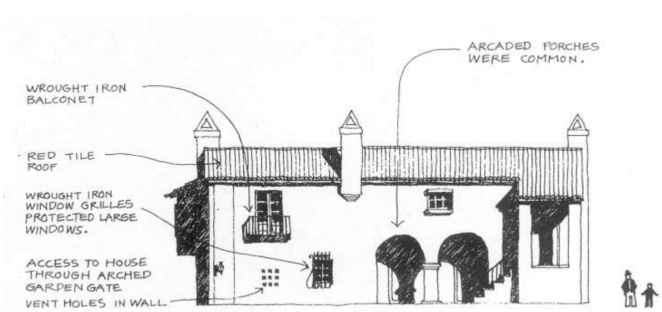
Common Features



- Stucco surfaces
- Low-pitched tile roofs
- Limited number of openings
- Opening deeply recessed into walls
- Close relation to outdoors through use of terraces
- Use of pergolas
- Formal axial garden design
- Use of decorative ironwork on windows, doors, balconies, and roof supports
- Individual casement windows, or single-hung windows with wood frames
- Occasionally, metal frames are used to replicate the ironwork used elsewhere on the house
- Simple wood doors with a stained finish

Colors

Homes were typically painted white, with a second trim color. Occasionally, a third color was used on the window frames.



Typical Spanish Colonial Revival Architectural Features

MONTEREY REVIVAL (1920s – 1940s)

The Monterey style is a cross between the adobe architecture of the California Mission period and the New England Colonial architecture prevalent in the mid-1800s. The homes are a basic New England Colonial design, with an added second floor porch, along with architectural features common to adobe architecture, such as stucco walls.

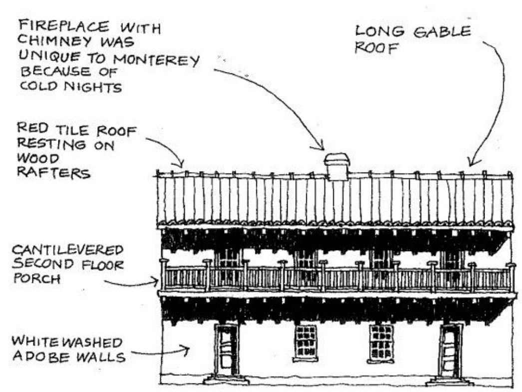
The Monterey style was not as popular as other period revival styles that were popular at the time. The Monterey style is rare in Ontario, with only a handful of examples, as pictured above and below right.

Common Features

- Wood shake or red "mission" tile roof
- Second story porch across entire front of the house, typically cantilevered
- Stucco or plaster exterior walls
- Window shutters
- Symmetrical design
- Individual single-hung windows with wood frames
- Simple wood doors with a stained finish

Colors

Homes were typically painted white or other light colors with a second trim color.



Typical Monterey Revival Architectural Features

USONIAN (1920s - 1960s)

Developed by Frank Lloyd Wright in the 1930s, The Usonian style (named after the United States) was Wrights answer to the growing popularity of the International style. The style integrated elements of the International style with Wright's principles of "Organic Architecture." The Usonian style used the flat roof simplistic styling of the international style, but incorporated elements natural to the particular site, such as stone and wood siding.

The Usonian style was not widely used in Ontario; however, use of the style could be suitable on an infill site. Of the few the Usonian style homes in City, one of the superior illustrations is the Dr. Robert Williams House, pictured above left. Another notable Usonian home is pictured right.

Common Features

- Open plan
- Large overhanging flat roofs, on occasion, low pitched gable roofs were used
- Concealed front entrances
- Board and Batten siding
- Large floor to ceiling windows
- Brick used as accent material
- Banding of windows
- Individual casement windows
- Simple, single panel doors

Colors

Homes were not typically painted except for an accent color. If the siding was left natural to weather and brick, if used, would be left exposed. Window frames and some trim would be painted a complementary accent color, such as maroon.

MINIMAL TRADITIONAL (1930s - 1950s)

The Minimal Traditional style was a transition between the revival styles of the 1920s and 30s and the post war tract homes. The style referenced traditional styles without actually achieving a specific style. Elements common to many styles, but belonging exclusively to none, are favored. These include gables, chimneys, and shutters. Houses of this style may be built of virtually any traditional material; brick and wood are common. Roofs always lack the eaves or overhangs found on styles that are more assertive. Most examples are single story or one and one-half story in height. Homes depicting this style are pictured above and below right.

Common Features

- Asymmetrical design
- Shallow to medium-pitched gable or hipped roof, usually with no eaves, and a front end-gable
- Small entry porch with simple pillars or columns
- Simple floor plan, rectangular in shape and often with small ells
- Garages may be either attached to, or detached from, the main house
- Exteriors incorporate a variety of materials, wood siding or brick were common
- Minimal exterior ornamentation, limited to decorative details on windows (typically shutters)
- Double-hung windows with multiple panes
- Simple wood doors, which may include glass panels

Colors

Homes were typically painted a light or white color with a dark accent color.

Example of the Minimal Traditional Style

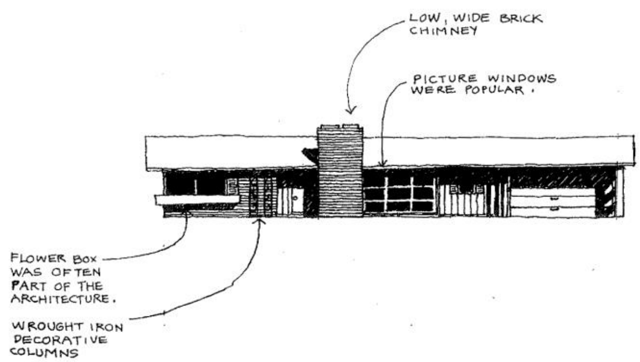
CALIFORNIA RANCH (1930s – 1960s)

The Ranch style was created from a mix of styles, including the Craftsman, Prairie, and Minimal Traditional styles, as well as elements of the Spanish Colonial style. This mix of styles was combined with the emerging lifestyle changes of Americans after World War II.

Although not as popular in Ontario as the Early Tract homes, there are several examples of the Ranch style. One of the best examples of this style is the Rehkop House on Armsley Square, pictured above left.

Common Features

- Asymmetrical design
- Spreading, horizontal orientation
- Hip or gable roof, often with deep overhang
- Logical, open floor plan in a rectangular, L, or U-shaped configuration
- Minimal ornamentation
- Attached garage
- Minimal or no front porch stoop
- Board and batten or clapboard siding, or stucco, or a combination
- Brick chimneys
- Picture and casement windows
- Individual casement, aluminum frame windows. Sliding windows were also used.
- Plain doors painted an accent color



Typical Ranch Architectural Features

Colors

Homes were typically painted in color schemes consisting of 2 to 3 colors. Palettes were muted tones. Trim was usually a brighter color. Sometimes a third accent color was used.

EARLY POST-WAR TRACT (1940s - 1960s)

The Early Post War Tract style has its roots in the international style of architecture, which was popular in the 1940s through the 1960s. After World War II, the demand for housing was high, and developers began creating tracts of homes with similar plans and exterior elevations. This was the first time that housing was mass-produced. Ontario, like many other communities in Southern California, has many early tract homes, as pictured left and below. Many of these homes, however, have been altered over the years, and no longer retain their original appearance.

Common Features

- Stucco exterior walls
- Low pitched gable or hipped roofs
- Small porches, if any
- Front or side facing garages
- Very few exterior details
- Single story
- Aluminum sliding windows (homes built during and immediately after World War II used wood frame single-hung or casement windows), with no trim
- Single panel doors

Colors

Homes were typically painted white on the base, with a variety of trim colors.

Examples of the Early Post War Tract Style

MODERN (1930s – 1960s)

Modern architecture breaks away from cookie-cutter design and traditional aesthetics. It strives to create home designs that go beyond "standard" ideas, and instead, pursue projects inspired by layout, location and function. Frank Lloyd Wright's mentor, Louis Sullivan, famously stated that, "Form follows function". This idea is expressed by Modernisms' tendency to have land or the function of a project dictate much of the design ideas. For example, Wright was famous for building with the land - his residential homes almost always relied on the lot to determine how the building was to be laid out. Wright believed that a building should be "one with the land" and not simply plopped down on top of it. Modernist architecture takes inspiration from the project itself — if the project is meant to showcase something, house something particular, or be occupied by a particular person, Modern architecture's aim is to design for each unique situation and to be inspired by its purpose.

Common Features

- Open floor plans
- Typically free of clutter and unnecessary elements
- Materials are shown in the natural form and are showcased
- Structural elements are revealed to show the structure and supports
- Strong linear elements and bold horizontal and vertical features
- Lines tend to be straight and angled rather than curved
- Multiple roof lines at different levels
- Often feature floor-to-ceiling windows, clerestory windows, and sliding doors
- Incorporates the topography of the land it is built on
- Focus on materials, and new technologies and building techniques

Colors

Where color was used, it was subtle; many buildings were designed to be white or neutral, with black or gray contrasting elements.

Examples of the Modern Style

INTERNATIONAL (1930s)

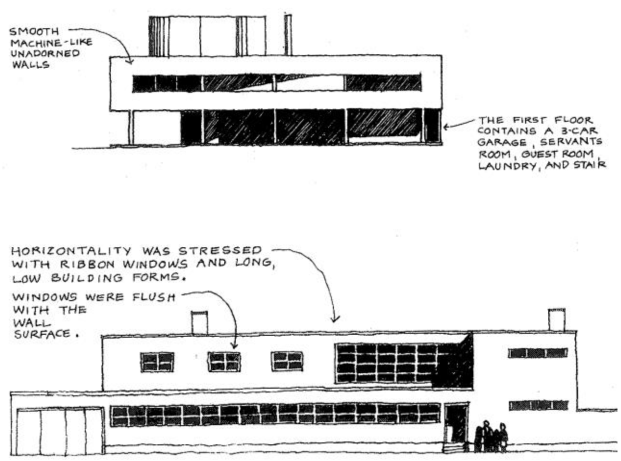
The International style was born from the Modern Art movement, and evolved from the Bauhaus School during the 1920s and 1930s. The style relied on pure geometric forms, with ornamentation stripped from facades to reveal the essential line and curve that defines space.

The International style is predominantly found in the commercial application of skyscrapers and office buildings, and less often in residential architecture. The Sears Tower and the John Hancock Center in Chicago, are the epitome of International design. Single-family residential homes are unusual, but not unknown. Architect Richard Neutra's home, the VDL Research house located at 2300 Silverlake Boulevard (shown above), is a prime example of the use of International design in residential architecture.

Buildings constructed in the International style are characterized by flat, unornamented planes for roofs, walls, and windows. Composition is often asymmetrical, with interesting contrasts between flat planes and curved elements. Strong horizontal lines are apparent in the arrangement of windows and other design features. Building materials were utilitarian; concrete, glass, aluminum, and steel were commonly used. Revealing the skeleton frame construction was frequently an integral part of International design. Windows were often metal framed casements arranged in horizontal bands.

Common Features

- Utilitarian materials such as concrete, steel, and glass
- Flat roof
- Flat, smooth surfaces, and flat unadorned planes
- Use of ribbon windows, often meeting at corners
- Rounded corners
- Metal casement windows and fixed windows with a metal frame
- Simple doors, which could include glass panels
- No window or door trim



Typical International Architectural Features

Colors

Where color was used, it was subtle; many buildings were designed to be white or neutral, with black or gray contrasting elements, and a factory finish (usually anodized aluminum) on window frames.

CORPORATE INTERNATIONAL (1940S)

The Corporate International style consists of a moduled thin metal and glass skin, which is independent of the Structural elements of the building. The style was derived from the architecture of Mies Van der Rohe. Many high profile architects used the Corporate International style, including the architectural firm of SOM (Skidmore, Owings, and Merrill). The style was widely used in Southern California into the 1980s.

There are several buildings constructed in this style, and it is very compatible with large buildings constructed in the eastern part of Ontario.

Common Features

- Vertical Box form
- Form appears set above ground on stilts
- Little articulation of windows and other elements
- Horizontal layering of floors
- Repetitious cell-like character of interior spaces
- Flat roofs
- Extensive use of glass
- Metal frame windows
- No window or door trim
- Simple doors with metal frames, which could include glass panels

Colors

Buildings were typically painted white, with either a second color or no color (factory finish, usually anodized aluminum) on the window frames. Some examples of style were not painted, typically when constructed of poured-in-place concrete, prefabricated concrete panels, or glass.

Example of the Corporate International Style

GOOGIE/50s (1950s)

Often called Coffee Shop architecture, the Googie style became a dominant style for coffee shops and other restaurants. The Googie style was flamboyant and expressive, and developed out of the technological advancements of the time, including jet planes and spaceships. This futuristic style architecture is best exemplified by the buildings seen in Tomorrowland, at Disneyland. Additionally, the original Norm's restaurants, pictured left, were a classic example of this style of architecture.

Common Features

- Large roofs
- Sharp angles, and shapes
- Various material, such as exposed decorative steel beams, glass block, stainless steel, etc
- Stucco for exterior walls
- Large picture windows
- Bright colors
- Signage integrated into design of building, use of neon
- Large, single pane picture windows
- Simple wood doors with a stained finish, which could include glass

Colors

Colors varied building to building, typically because of corporate colors and signage. Colors were very bright and would have a great deal of contrast between colors.

Examples of the Googie/50s Style

BRUTALISM (1960s)

This style was originally used to describe the work of British architects that allowed all of the building elements and systems to be exposed. The concrete buildings of Le Corbusier and others eventually were classified under this style. Brutalism is in direct opposition to the Corporate International Style. Buildings are heavy and monumental, as exemplified by the Trelik Tower, in London, and the J Edger Hoover Building (FBI Headquarters), in Washington DC, pictured below right, in contrast to the lightweight feel of the Corporate International style.

There are not any known buildings within the City that are wholly constructed in the Brutalism style; however, Ontario City Hall, pictured left, contains many elements of Brutalism, exemplified by the use of exposed concrete surfaces left in its rough state, with exposed board and form work. The style would be very compatible with the tilt-up concrete building constructed within the easterly portion of the City.

Common Features

- Variety of forms, including vertical and horizontal projections, roof forms, shapes
- Combining walls and structure into one form
- Structure predominates
- Infill walls created to join walls and structure where separate (typically brick or other materials)
- Openings introduced as holes in structure walls
- Exposed concrete surfaces
- Exposed ductwork, pipes, vents, etc.
- Fixed single-paned windows with metal frames
- Simple metal doors, sometimes with glass panels

Colors

Buildings were typically not painted. Only windows doorframes would have any color.

Examples of the Brutalism Style

NEW FORMALISM (1950s to 1970s)

New Formalism developed in the mid-1950s and continued into the early 1970s, as a reaction against the rigid formulae of the American version of the International Style. New Formalism architecture combines decorative elements and established design concepts of classicism with the new materials and technologies incorporated in the International style. Edward Durrell Stone's New Delhi American Embassy (1954), pictured above, which blended the architecture of the east with modern western concepts, is considered the start of the New Formalism style.

The New Formalism style was used primarily for high profile cultural, institutional and civic buildings. Within the Southern California region, the style was applied mainly to museums, auditoriums, and college campuses. The University of Southern California, the California Institute of Technology, and Harvey Mudd College in Claremont (pictured below, bottom), all have significant buildings of the New Formalism style. Other local examples of New Formalism include the Ahmanson Center in Los Angeles and the Ambassador Auditorium in Pasadena (pictured below, top).

Common Features

- Use of traditionally rich materials, such as travertine, marble, and granite or man-made materials that mimic their luxurious qualities
- Use of arches, columns, and other classical elements
- Buildings usually set on a podium
- Designed to achieve modern monumentality
- Embraces classical precedents, such as arches, colonnades, classical columns and entablatures
- Smooth wall surfaces
- Delicacy of details
- Formal landscape design, such as pools, fountains, and/or sculptures within a central plaza
- Fixed single-paned windows with metal frames
- Simple metal doors, sometimes with glass panels

Colors

Buildings were typically painted in a light or neutral color, also stone or other materials were left exposed. Accent colors were typically dark, rich colors.

Examples of the New Formalism Style

POSTMODERN (1970s)

Postmodern architecture is cited as an international style with examples beginning in the 1950s; however, it did not become a recognized style until the late 1970s. Postmodern architecture replaces structured modernist form and function with an eclectic blending of borrowed styles. Influential early large-scale examples of postmodern architecture are Michael Graves' Portland Building in Portland, Oregon (pictured top left), and Philip Johnson's Sony Building (originally AT&T Building) in New York City (pictured below right), which borrows elements and references from the past and reintroduces color and symbolism to architecture.

Within the City, there are not any known buildings constructed in this style; however, the style would be compatible for use in most areas of Ontario.

Common Features

- Use of features from earlier modern architectural styles, such as Art Deco and Streamline Moderne
- Use of classical columns, usually Tuscan order (or variations thereof)
- Use of arches, typically with keystone
- Circular and Lunette windows
- Prominent entrances
- Occasional use of pediments
- Deliberate placement of incompatible geometric forms
- References to aspects of historical or vernacular architecture
- Traditional and modern construction techniques juxtaposed for effect
- References to the form or detail of adjacent buildings
- Primarily rectangular windows, with circular, arched and lunette windows used at entrances and other areas to accent building
- Simple doors, which can include a variety of different shaped glass panels

Colors

Buildings were characteristically painted in bright colors. Typically, 3 to 5 colors were used.

DECONSTRUCTIVISM (1970s)

Deconstructivism takes an approach to building design that views architecture in bits and pieces. The basic architectural elements of a building are dismantled. Deconstructivist buildings may seem to have no visual logic. They appear to be made up of unrelated, disharmonious abstract forms. The Deconstructivism movement has been led by architect Frank Gehry. His design for the Guggenheim Museum in Bilbao, Spain (pictured top-left), has become world famous. There are many examples of Deconstructivism in Southern California, since Gehry's practice is based here. One of the best examples in Southern California is the Walt Disney Concert Hall located in Downtown Los Angeles (pictured below).

Common Features

- Abstract, unrelated forms
- Smooth exterior surface
- Use of metal, typically a stainless steel or similar material, as exterior siding
- Contrast in shapes and forms
- Large expansive windows in metal frames, hidden in the abstract forms of the walls
- Glass panel doors with simple metal frames

Colors

Buildings were typically painted a variety of colors, or when metal was used, it was left exposed.

Reference C—Downtown Ontario Design Guidelines

(The Downtown Ontario Design Guidelines, adopted by the Ontario City Council on August 18, 1988, by Resolution No. 98-102, follows this page)

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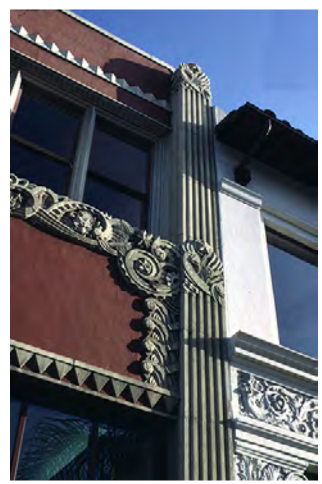
DOWNTOWN ONTARIO DESIGN GUIDELINES

FOR ONTARIO'S HISTORIC MODEL COLONY: A UNIQUE MULTI-CULTURAL URBAN EXPERIENCE

A GUIDE FOR
THE FUTURE
THAT HONORS
OUR PAST


ADOPTED
18 AUGUST 1998

RESOLUTION NO. 98-102

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF ONTARIO, CALIFORNIA APPROVING BUILDING DESIGN GUIDELINES FOR DOWNTOWN ONTARIO

WHEREAS, the Planning Commission of the City of Ontario held a public hearing on May 12, 1998, and recommended City Council approval of the Building Design Guidelines for Downtown Ontario; and

WHEREAS, the Downtown Design Guidelines are a set of architectural, graphic and lighting design principles providing guidance to business owners, homeowners, city staff and the design community in the revitalization of commercial and residential properties within the downtown area; and

WHEREAS, the guidelines apply to the area bounded by "I" Street to the north, Sultana Avenue to the east, Emporia Avenue to the south, and Vine Avenue to the west; and

WHEREAS, preparation of the Downtown Design Guidelines represents one of the recommended strategies to guide the revitalization effort recommended by the Downtown Ontario Economic Enhancement Strategy 1997 approved by the City Council in January, 1997; and

WHEREAS, the Downtown Design Guidelines are a primary part of the overall Downtown enhancement effort and serve as an essential tool to improve the look and associated image of Downtown Ontario; and

WHEREAS, the Downtown Guidelines lay the groundwork to create and sustain a unique physical image for Downtown using history and preservation as downtown's physical "theme" and encouraging creativity and variety in keeping with Downtown's architecture; and

WHEREAS, implementation of the guidelines should improve Downtown's overall image in the marketplace, allowing Downtown to compete with other commercial developments in the community and region; and

WHEREAS, the Planning Commission considered all public comments, the presentation by the Planning Department staff, the staff report, and the Downtown Ontario Design Guidelines.

NOW, THEREFORE, BE IT RESOLVED, that the Downtown Building Design Guidelines is hereby approved.

\- - - - - - - -

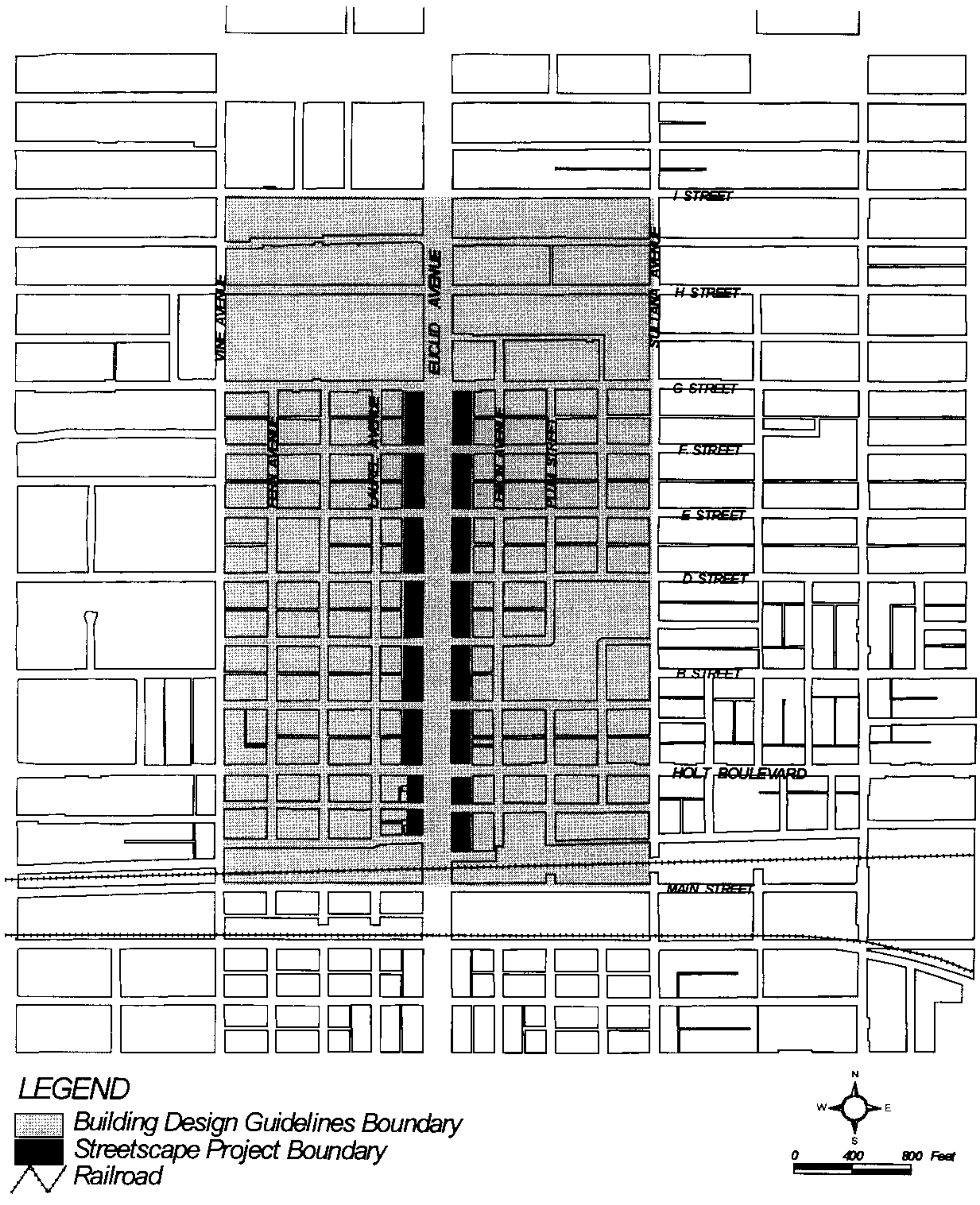
I hereby certify that the above resolution was duly adopted by the City Council of the City of Ontario at a regular meeting thereof, held on the 18th day of August, 1998.

City Clerk of the City of Ontario

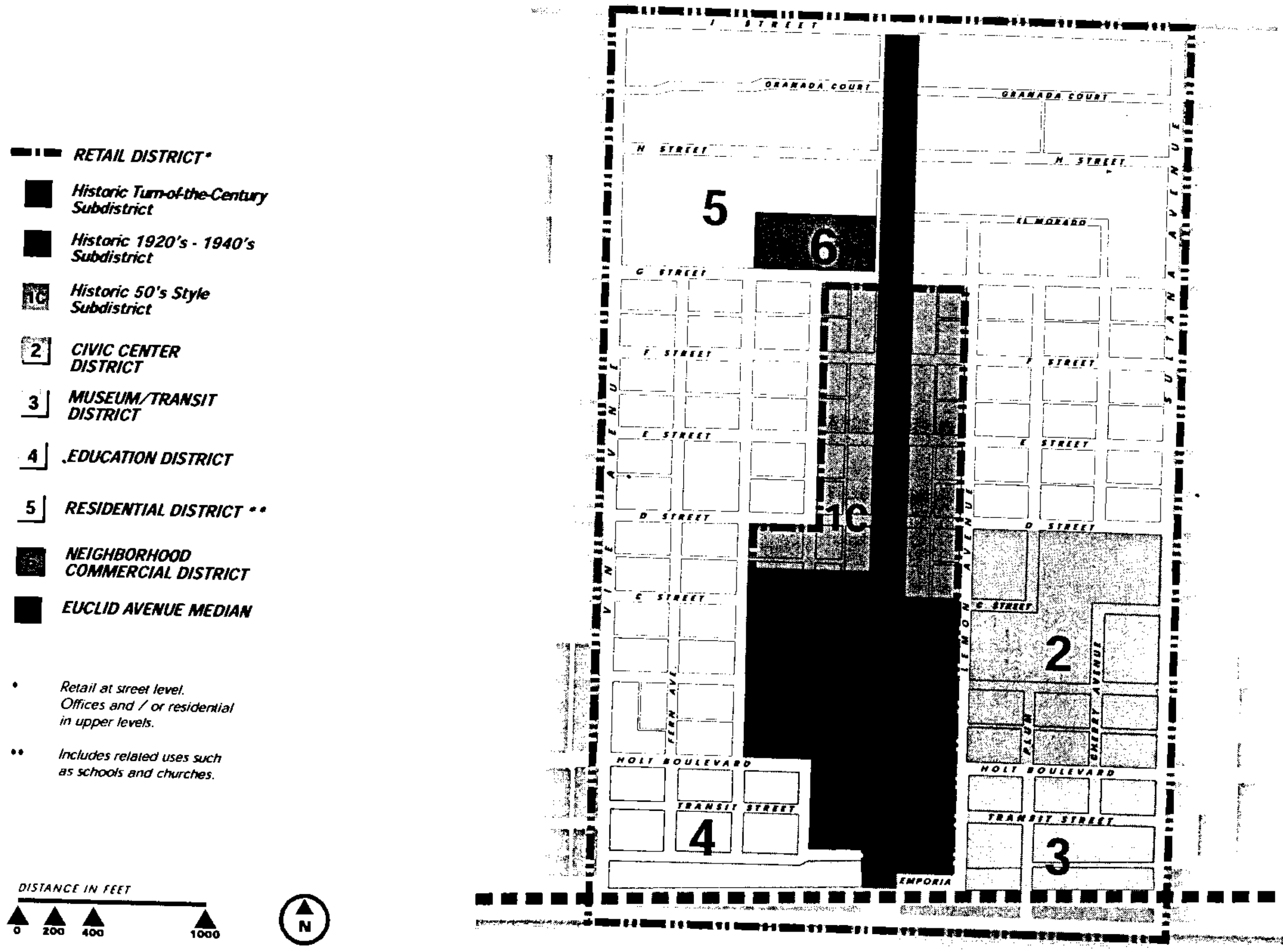
CITY OF ONTARIO
INCORPORATED
DECEMBER
1891
CALIFORNIA

ONTARIO PLANNING DEPARTMENT

Downtown Ontario
BuildingDesign Guidelines Project Area



Consideration of building design guidelines to promote quality and consistency during the rehabilitation of old structures and the construction of new buildings within the downtown area, bounded by "I" Street to the north Sultana Avenue to the east, Emporia Avenue to the south, and Vine Avenue to the west.


RETAIL DISTRICT*
Historic Turn-of-the-Century Subdistrict
Historic 1920's - 1940's Subdistrict
1C
Historic 50's Style Subdistrict
2
CIVIC CENTER DISTRICT
3
MUSEUM/TRANSIT DISTRICT
4
.EDUCATION DISTRICT
5
RESIDENTIAL DISTRICT **
NEIGHBORHOOD COMMERCIAL DISTRICT
EUCLID AVENUE MEDIAN
* Retail at street level. Offices and / or residential in upper levels.
** Includes related uses such as schools and churches.
DISTANCE IN FEET
0
200
400
1000
N
I STREET
GRANADA COURT
H STREET
EL MORADO
G STREET
F STREET
E STREET
D STREET
C STREET
FERN AVE
HOLT BOULEVARD
TRANSIT STREET
EMPORIA
VINE AVENUE
LEMON AVENUE
SULTANA AVENUE
CHERRY AVENUE
PLUM
5
6
1C
2
3
4

CITY OF ONTARIO

MEMORANDUM

TO: Mayor and City Council

FROM: Otto Kroutil, Development Director

DATE: August 18, 1998

SUBJECT: Agenda Item # 25 -
Additional Wording For Downtown Design Guidelines

In order to more clearly define the purpose and applicability of the Design Guidelines as they relate to new major development along Euclid Avenue, I am recommending that a new sentence be inserted on Page 2, 1.1.2 Purpose of the Design Guidelines, end of third paragraph;

"........as defined by Figure 1.1" * Variations from the guidelines may be considered for projects with special design characteristics to encourage and provide for projects of special significance to the community and which are generally in keeping with the District's character.

I recommend that this addition be included in the motion to approve the Council resolution adopting the Design Guidelines. Jerry Blum, City Planner will be available at the meeting to answer any questions you or the City Council have regarding this matter.

Gregory Devereaux

DOWNTOWN ONTARIO DESIGN GUIDELINES

FOR ONTARIO'S HISTORIC MODEL COLONY:

A UNIQUE MULTI-CULTURAL URBAN EXPERIENCE

PRODUCED BY THE ARROYO GROUP, PLANNERS, ARCHITECTS & ASSOCIATED DISCIPLINES

WITH PATRICK B. QUIGLEY & ASSOCIATES, LIGHTING CONSULTANT

ADOPTED BY ONTARIO CITY COUNCIL ON AUGUST 18, 1998

Acknowledgements

City of Ontario City Council

Gus Skropos, Mayor
Alan Wapner, Mayor Pro Tem
Gary Ovitt, Council Member
Jim Bowman, Council Member
Jerry DuBois, Council Member

City of Ontario Planning Commission

James Maletic, Chairman
Debra Dorst Porada, Vice Chairman
Richard Gage, Commissioner
Alexandro Espinoza, Commissioner
Bob Gregorek II, Commissioner
DeAna Hernandez, Commissioner
Gabe DeRocili, Commissioner

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Downtown Revitalization Partnership

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Gary Ovitt, Council Member

Debra Dorst-Porada, Chairperson
Rick Caughman, Vice Chairman
Sue Luce, Director, Secretary/Director, Ontario Public Library
Steve Alvarado, Vice President, Foothill Independent Bank
Yvonne Borrowdale, Resident
Kathleen Brugger, Chaffey College
Angie Salas Dark, Ontario Historical Society/ Friends of Olde Town Ontario
Mike Fortunato, City Commercial Management, Inc.
David Grossberg, State Farm Insurance
Katrina Hamilton, Foothill Independent Bank
Jeff Koontz, President, Ontario Chamber of Commerce
Alan Jones, Professor, Pitzer College
Sarah Londers, Rubel Enterprises
Bart Masciarelli, Wascher Management
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Juanita Ruiz-Alverez, United Hispanic Chamber of Commerce
Nicolo Sciortino, Resident
Robert Traister, Ontario Chamber of Commerce

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Concept Plan

1.1 Background

1.1.1 Introduction

The City of Ontario is currently in the process of revitalizing its downtown. The Ontario City Council recently adopted the **Downtown Ontario Economic Enhancement Strategy 1997: Ontario's Historic Multi-cultural Village** which recommended specific strategies for the revitalization of the downtown. The preparation of the Downtown Design Guidelines is one of the recommended strategies that will help the City Staff in their efforts to guide the enhancement of the character of Downtown.

The Arroyo Group met periodically with a Technical Advisory Committee and with the Downtown Revitalization Partnership comprised of business and property owners, city staff, and local residents to conceptualize the character of Downtown Ontario and the direction for the design guidelines.

The image for Downtown Ontario can be summarized as follows:

"*Ontario's Historic Model Colony – a unique multi-cultural urban experience*"

1.1.2 Purpose of the Design Guidelines

The City Council, Planning Commission and the Planning Department staff in April 1997 recognized that several elements critical to Downtown Ontario could not be easily covered in the Development Code. This document helps to define those elements.

The Design Guidelines are a set of architectural, graphic, and lighting design principles that provide guidance to the business owners, homeowners, city staff and the design community regarding the rehabilitation of their property. If these guidelines are followed, change can occur positively, and each project will contribute to the districts' character.

It is important to note that these guidelines are an adjunct to the City Development Code. The zoning requirements in the Development Code set out precise rules that must be followed throughout the City. These guidelines are more flexible and subject to individual interpretation. They are strongly recommended for all new construction and rehabilitation in the Downtown area as defined by Figure 1.1. Variations from the guidelines may be considered for projects of special significance to the community which are generally in keeping with the District's character.

By following these guidelines, each individual business or home owner can contribute to the quality of the neighborhood and be assured that his or her investment in Downtown Ontario will be protected when others initiate their projects.

1.1.3 Use of these Guidelines

Users of these guidelines include:

Project Sponsors: such as Home or Business Owners, Design Professionals such as architects, interior designers, contractors, and developers should identify the guidelines applicable to their projects. Then, they should interpret and incorporate the guidelines in the design of their construction, addition or rehabilitation.

Planning Staff: will refer to the guidelines when reviewing proposed projects, and will make suggestions to the project sponsors to improve design.

Planning Commission and Development Advisory Board: will refer to the guidelines when reviewing appeals of the Planning Staff decisions regarding project modifications or exceptions.

Neighborhood Groups: may use these guidelines to help protect the characteristics that they value in their community.

It should be noted that innovation and creativity are encouraged within the context of the district character. Exceptions may be considered by the city to allow for maximum creativity and artistic freedom. In each case, granting an exception will be predicated on the proposed design having no significant impact on the neighborhood character or the marketability of the adjacent businesses or the district as a whole.

1.1.4 Applicability of Design Guidelines

The Project Area is bounded by 'I' Street on the north, Vine Avenue on the west, Sultana Avenue on the east and the train tracks on the south. The Design Guidelines also apply to properties that abut the project area along Vine Avenue, Sultana Avenue, and 'I' Street. (Refer to figures 1.1 and 1.4.)

[1] Ontario Historic Landmarks Society, *The Colony Tour: An Experience of Ontario's Heritage* (Ontario: ADS, 1991), p. 2.
[2] ibid., p. 4.

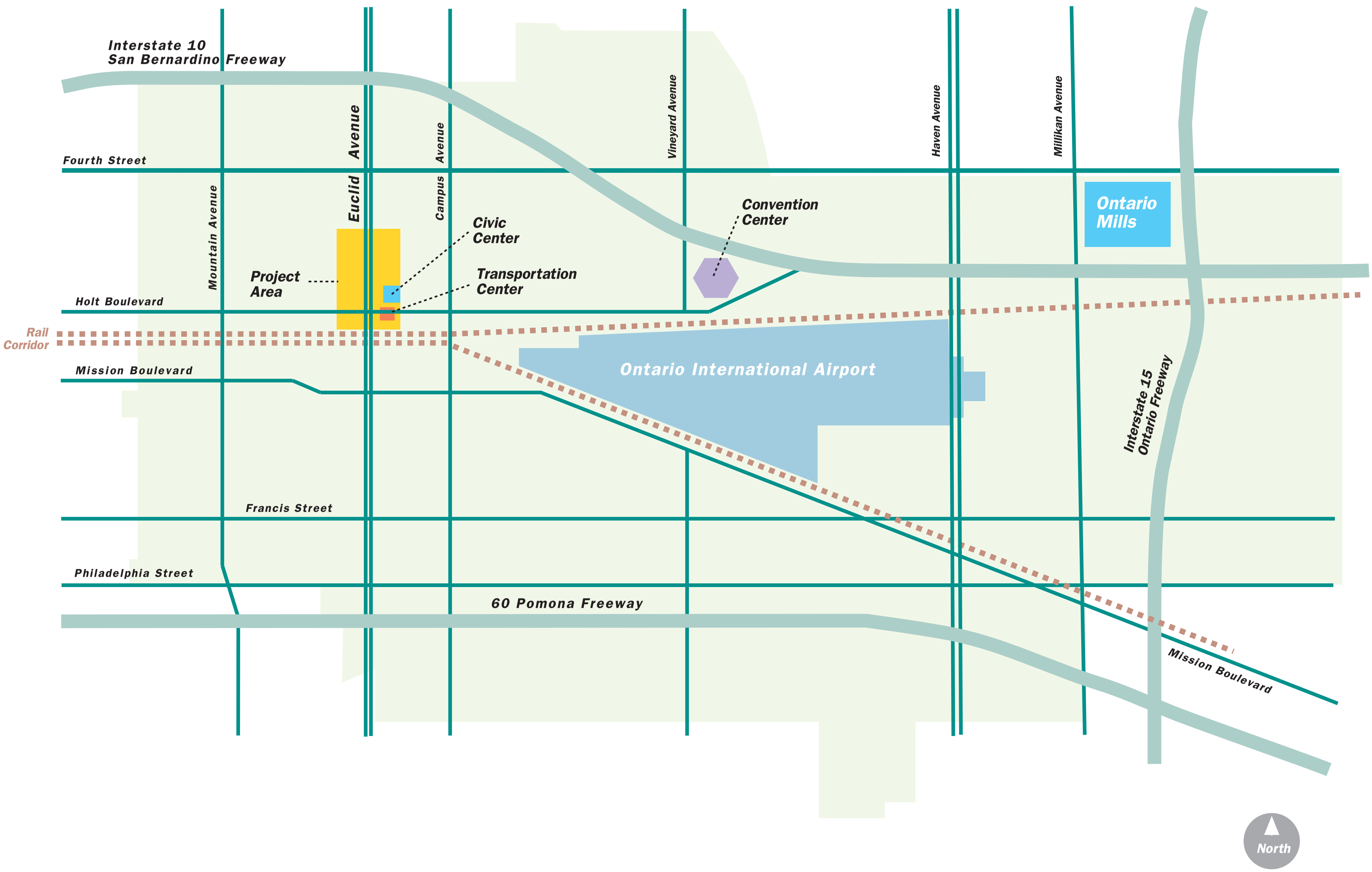


Figure 1.1: Downtown Design Guidelines Project Area, Ontario, CA

1.2 Historical and Aesthetic Resources

1.2.1 History

Founded by the Chaffey Brothers in the 1880's, Ontario was a planned "model" community, a social experiment that set a new standard for rural communities in Southern California.[1] The Chaffey Brothers bought 6,218 acres of the Cucamonga Ranch in 1882 after the Southern Pacific Railway extended its service to the west. Approximately 640 acres were set aside for the community of Ontario, with half of that endowed to the Chaffey Agricultural College. The rest of the acreage was utilized as agricultural land.

The primary feature of the Chaffey city plan was the two hundred foot wide Euclid Avenue. Several innovations included the provision for water rights for each landowner, electric lights, and an electric railway. The gravity Mule Car that ran along the length of Euclid from 1888 to 1895 provided interest to its visitors as did the historic fountain that displayed Ontario's water supply system.[2] The median still exists today and has been a center of public activity since its inception.

The present downtown took shape from the original irrigation system and land subdivision pattern established by the Chaffey Brothers in the 1880's as it grew evenly northwards away from the railroad lines. The area within the current Downtown almost exactly matches the original boundaries of the Model Colony.[3]

The Project Area, as defined by this study, is shown on figure 1.1 on the previous page.

1.2.2 Steps to preserve Ontario's heritage

As a part of the recognition of Ontario's rich heritage, the City Council in July 1991 formally determined:

- *"that the character and history of the City are reflected in its cultural, historical, and architectural heritage, with emphasis on the model colony as presented at the St. Louis World's Fair in 1904 by an act of the US Congress;*
- *that these historical foundations should be preserved as living parts of community life and development to build an understanding of the City's past so that future generations may have a genuine opportunity to appreciate, enjoy and understand the rich heritage of the City,*
- *that in the face of ever increasing pressures of modernization and urbanization, City landmarks, neighborhoods, and other areas of historic interest are threatened with demolition."*

As a result, the City Council adopted a Historic Preservation Ordinance

1. *"to safeguard the City's unique historical heritage as embodied and reflected in the City's architectural history and patterns of cultural development;*
2. *to foster civic and neighborhood pride and a sense of identity based on the recognition and use of Historical Resources;*
3. *to preserve diverse architectural styles, patterns of development, and design preferences reflecting phases of the City's history and to encourage complementary contemporary design and construction and inspire a more livable urban environment."*

1.2.3 Historic Resources Survey

The City conducted a survey in 1983-84 that identified potentially historic structures in the Downtown. In 1987, a Historic Resources Survey that identified and categorized the Historic Resources within the Downtown was started. This survey is ongoing. The categories are:

Designated
Individually Significant
Potentially Historic

The City survey placed most of the older structures in Downtown on a list of "Potentially Historic Structures". As of June 1998, thirty-three buildings within this project's Study Area have been placed on the Designated Buildings list. Figure 1.2 on the facing page shows the Designated and the Potentially Historic structures in Downtown Ontario. A current list and map shall be available at the City of Ontario's Planning Department. Additions and alterations to structures on this list need to be reviewed through the historic preservation process and by the Planning Commission. Please refer to Chapter 5: Design Review Process for further details on this process.

[3] Ontario Historic Landmarks Society, *The Colony Tour: An Experience of Ontario's Heritage* (Ontario: ADS, 1991), p. 2.

Figure 1.2: Historic Properties in Downtown Ontario

1.2.4 Federal Standards

At the federal level, the Secretary of the Interior has published **Standards for Rehabilitation** that have been widely adopted across the United States by communities with historical neighborhoods. These guidelines are recommended for use in Ontario.

The following text is quoted directly from the Secretary's Standards:

The intent of the Standards is to assist in the long-term preservation of a property's significance through the preservation of historic materials and textures. The Standards pertain to historic buildings of all materials, construction types, sizes, and occupancy and encompass the exterior and the interior of the buildings. They also encompass related landscape features and the building's site and environment, as well as attached, adjacent, or related new construction.

The following standards are to be applied to specific rehabilitation projects in a reasonable manner, taking into consideration economic and technical feasibility.

1. *A property shall be used for its historic purpose or be placed in a new use that requires minimal change to the defining characteristics of the building and its site and environment.*
2. *The historic character of a property shall be maintained and preserved. The removal of historic materials or alteration of features and spaces that characterize a property shall be avoided.*
3. *Each property shall be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or architectural elements from other buildings, shall not be undertaken.*
4. *Most properties change over time; those changes that have acquired historic significance in their own right shall be retained and preserved.*
5. *Distinctive features, finishes, and construction techniques or examples of craftsmanship that characterize a historic property shall be preserved.*
6. *Deteriorated historic features shall be repaired rather that replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and other visual qualities and, where possible, materials. Replacement of missing features shall be substantiated by documentary, physical, or pictorial evidence.*
7. *Chemical or physical treatments, such as sandblasting that cause damage to historic materials shall not be used. The surface cleaning of structures, if appropriate, shall be undertaken using the gentlest means possible.*
8. *Significant archaeological resources affected by a project shall be protected and preserved. If such resources must be disturbed, mitigation measures shall be undertaken.*
9. *New additions, exterior alterations, or related new construction shall not destroy historic materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale and architectural features to protect the historic integrity of the property and its environment.*
10. *New additions and adjacent or related new construction shall be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.*

1.2.5 Historic and Aesthetic Resources

Downtown Ontario possesses substantial historic resources that provide an important foundation for the Concept Plan.

These historic resources (see figure 1.3) include a variety of elements as follows:

1. Euclid Avenue Median

The Euclid Avenue Median is a unique element of Downtown creating a special identity because of its role as a central design element of the Chaffey Brothers' plan for the Model Colony. Its historic significance relates both to its prominent role in the Chaffeys' physical development plan for the city and for its role as the setting to give image to the City's evolving infrastructure. Thus the median was a setting for the water fountain which symbolized the availability of the water supply so vital to urbanization and as a pathway for the gravity Mule Car which was a highly visible and entertaining transportation element.

Through the years the Euclid median has served as the container for other historic elements such as the Temperance Fountain and the recently installed band stand. It continues to accommodate important community functions which contribute to the cultural life of the community such as the All States Picnic and the antique automobile shows.

As a linear open space element, the Median provides a unique experience for downtown shoppers, workers and visitors. The Median creates a sense of a grand place which is open and hospitable to pedestrians.

2. Historic Retail District

Ontario has a substantial number of architecturally significant retail structures and a pedestrian-scaled retail fabric composed of relatively small blocks. The process of developing these Design Guidelines has identified three distinct subdistricts within the Historic Retail area that will support the unique identity of Downtown. These include the:

- turn-of-the century subdistrict focused in southerly portion of the District in the vicinity of Euclid Avenue and 'B' Street
- 1920's through 1940's subdistrict located north of 'B' Street in the central portion of the District and
- 1950's subdistrict located in the northerly portion of the District up to 'G' Street.

3. Civic Center

The adjacency of the Civic Center to the Historic Retail area of Downtown can strongly reinforce the character and retail vitality of Downtown. People coming for services and meetings at City Hall, the Public Library or the Community Center are potential shoppers and diners at downtown's stores and restaurants. City and County employees are also important visitors. Downtown Ontario may derive benefit from the professionals who may have frequent reason to visit the City or County facilities and locate their offices in Downtown.

The Civic Center has significant outdoor spaces that can be linked with Downtown to create a pleasant pedestrian experience contrasting interesting shopping and dining with attractive open spaces and streetscapes. All these elements combine to create a special pedestrian-friendly downtown.

Current and future parking at the Civic Center is another major resource for downtown's revitalization. If properly linked with Downtown, and managed as a part of an integrated parking program, daytime parking areas for the Civic Center can provide substantial off-cycle parking for downtown retail, dining and entertainment activities occurring during the evenings and weekends.

4. Museum/Transit Center

The Museum provides both a cultural anchor for downtown as a place that exhibits the history of the Model Colony and also as a reminder of Ontario's growth from this area of the original City Hall location and structure. The Transit Center provides regional linkages to Downtown via Amtrak, Commuter Rail and buses.

5. Education Center

The Education Center area is currently home to outreach facilities from Chaffey College and an area of interest to several other educational institutions. Further development of an educational theme for this area would solidify another unique aspect of Downtown.

6. Residential Neighborhoods

The residential areas which surround the Historic Retail areas provide another unique resource for Downtown– both historically and aesthetically. These residential areas contain a wide range of architectural styles from Victorian to Craftsman to Spanish Revival which have the potential to house a variety of people including families, Civic Center and Retail area employees and the elderly. Upgrading of the Residential areas can provide support for Downtown retailing in terms of both purchasing power and by creating a special environment where retailing history and quality is reinforced and complemented by residential history and quality.

7. Neighborhood Commercial

The Neighborhood Commercial area at Euclid Avenue and G Street provides a shopping resource for grocery and convenience goods needed by the residents of Downtown and adjoining areas. It has the potential to incorporate additional uses as Downtown's revitalization continues.

The photographs on the following pages illustrate some of Downtown's many historical and aesthetic resources.

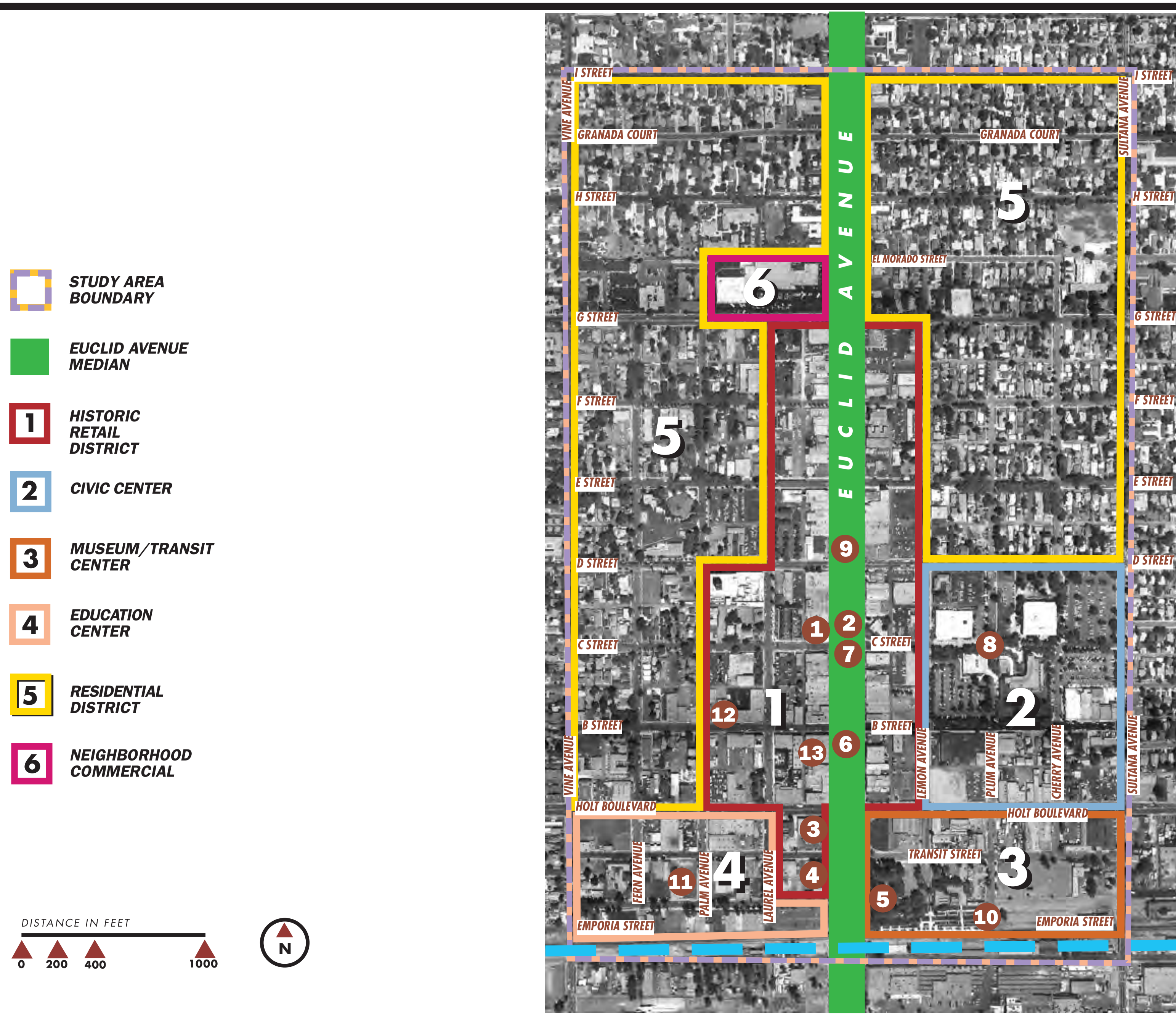


Figure 1.3: Historic and Aesthetic Resources

1 GRANADA THEATER

2 BAND SHELL

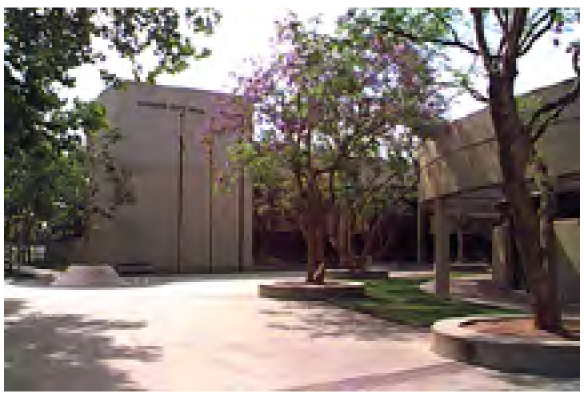
3 HOLT BANK BUILDING

4 FRANKISH BUILDING

5 OLD CITY HALL & HISTORIC FOUNTAIN

6 EUCLID TROLLEY EXHIBIT

7 TEMPERANCE FOUNTAIN



8 CITY HALL, PUBLIC LIBRARY & MODEL COLONY ROOM (not shown, in the same complex)

9 EUCLID MEDIAN

10 TRANSIT CENTER

11 CHAFFEY COLLEGE

12 'B' STREET

13 GEMMEL PHARMACY

1.3 Land Use Districts

The Downtown Ontario Design Guidelines are designed to build upon the Historical and Aesthetic Resources previously identified and discussed. In order to strengthen Downtown's identity and to provide a framework for the Design Guidelines, the following Land Use Districts (see figure 1.4) were defined through a combination of field observations, discussions with City Staff, the Downtown Revitalization Partnership and the Planning Commission.

Zoning and the City Development Code

It should be noted that the Land Use Districts demarcated in this Concept Plan do not supercede the zoning districts set out in the City Development Code. The uses recommended in this Concept Plan are encouraged, not required.

1. Historic Retail District

This Historic Retail District is the heart of the Concept Plan. Extending from the railroad tracks on the south to 'G' Street on the north, the Historic Retail District includes historic structures and reinforces design themes from the Turn-of-the-Century, 1920's through 1940's and the 1950's. This definition of time-related subdistricts within the Historic Retail District enables Ontario to create and sustain a unique identity within this Southern California region as well as to respond to buildings as they really exist rather than superimposing one thematic identity.

2. Civic Center District

The Civic Center District has been given a formal boundary from Holt Boulevard on the South, to Lemon Avenue on the west, to 'G' Street on the north and to Sultana Avenue on the east. It is very important that master planning for the Civic Center and the design of the Civic Center's buildings, open spaces and parking facilities be thoughtfully integrated with Downtown. A well integrated Civic Center can be one of the major resources in the revitalization of Downtown.

3. Museum/Transit District

The Museum/Transit District is bounded by the railroad tracks on the south, Lemon Avenue on the west, Holt Boulevard on the north and Sultana Avenue on the east. This area is an appropriate location for uses related to both the Civic Center, such as offices or mixed use including residential or for transportation related uses. The design of structures in this area must be sensitive to noise impacts from Ontario International Airport.

4. Education District

The Education District is bounded by the railroad tracks on the south, Vine Avenue of the west, Holt Boulevard on the north and Laurel Avenue/Euclid Avenue on the east. Currently the area contains educational uses, such as a Chaffey College outreach facility and other public uses such as the Post Office. The area is well suited for additional educational uses and mixed uses structures which combine retail uses along Holt Boulevard with residential or office uses above.

5. Residential District

The Residential District wraps around the Historic Retail District and extends to the Education and Civic Center Districts. The combination of historic architectural homes and small, pedestrian-scaled blocks provide for a unique and intimate relationship with the other districts in Downtown. Thus the Residential District could provide an appealing place for employees in the Retail, Civic Center, Transportation and Education Districts to live and can also support a more active, pedestrian-oriented Historic Retail District.

6. Neighborhood Commercial District

The Neighborhood Commercial District, located at the northwest corner of Euclid Avenue and 'G' Street, provides a shopping amenity for the grocery and convenience needs of the Residential District as well as to other nearby neighborhoods.

- RETAIL DISTRICT*
- 1 HISTORIC RETAIL DISTRICT
- 2 CIVIC CENTER DISTRICT
- 3 MUSEUM/TRANSIT DISTRICT
- 4 EDUCATION DISTRICT
- 5 RESIDENTIAL DISTRICT **
- 6 NEIGHBORHOOD COMMERCIAL DISTRICT
- EUCLID AVENUE MEDIAN

* Retail at street level. Offices and / or residential in upper levels.

** Includes related uses such as schools and churches.

DISTANCE IN FEET

0 200 400 1000

N

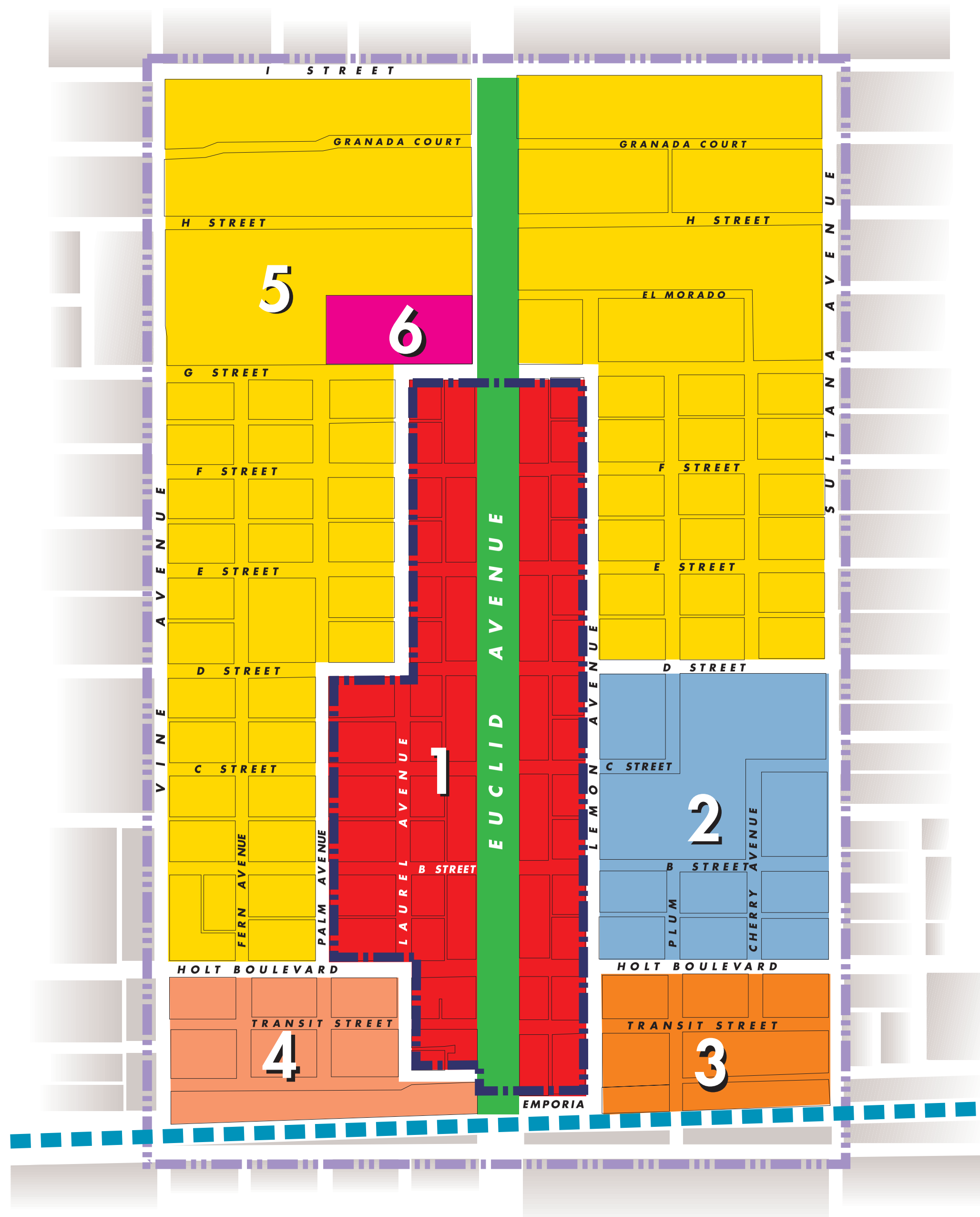


Figure 1.4: Land Use Districts

1.4 Urban Design Structure

The Urban Design Structure (see figure 1.5) defines a conceptual structure for linking the Districts within Downtown to each other, to the City and surrounding region, and to regional and national rail and bus connections. Elements of the Urban Design Structure and their roles include:

Downtown Entry Points

To create a sense of arrival in Downtown along Euclid Avenue and Holt Boulevard.

Euclid Avenue Median

To maintain a unique open space image for Downtown and to accommodate community events.

Historic Retail District

To provide the activity and aesthetic focal point for Downtown through preservation, rehabilitation and adaptive reuse in combination with sensitive, infill construction.

Potential Parking Areas

To provide a convenient supply of parking for Downtown on a Parking District basis rather than a building-by-building basis. The Downtown Parking Areas should be planned to work with the already available parking at the Civic Center.

Mid-block Pass-throughs

To make access to Downtown's retail, restaurant and entertainment uses more convenient from the parking areas.

Alley Walkways

To improve the pedestrian experience in traversing from the parking areas to Euclid Avenue via the Mid-block Pass-throughs or to the east-west streetscapes and to encourage stores to provide rear entrances from the alleys where appropriate.

Pedestrian Connections

To encourage ease of pedestrian travel between Districts – particularly from the Civic Center District, the Museum/Transit District and the Education District.

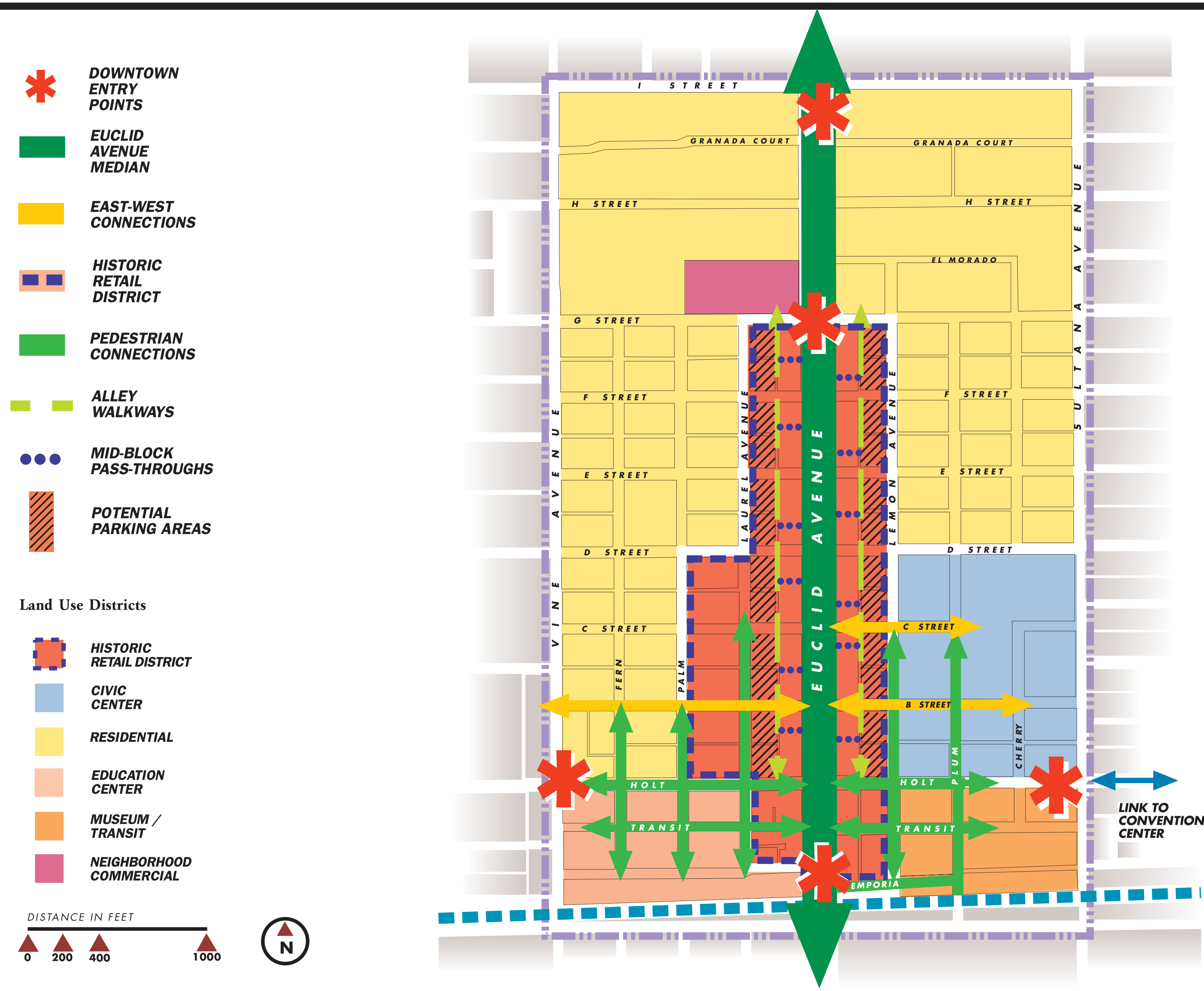


Figure 1.5: Urban Design Structure

Retail Design Guidelines

2A.1 General Concepts

2A.1.1 General Concepts: Overview

Downtown Ontario was built over several decades from the 1880's through the 1950's. The first buildings were built near the rail tracks at the historic intersection of Euclid Avenue and Holt Boulevard. The downtown grew north, away from the railroads.

Each building is a record of not only the architectural history of the building itself but its construction date is also a record of the city's urban growth over the past century. These Design Guidelines aim to reflect this multi-decade feel. The Retail District shall be divided into three subdistricts based on the ages of the buildings.[1] (See figure 2A.1) The three subdistricts incorporate three major periods of architectural development in the United States. They are:

1. Turn-of-the-century (1880's to 1910's) subdistrict
2. 1920's through 1940's subdistrict
3. 1950's subdistrict

The map in Figure 2A.2 on the facing page shows the subdistricts' boundaries.

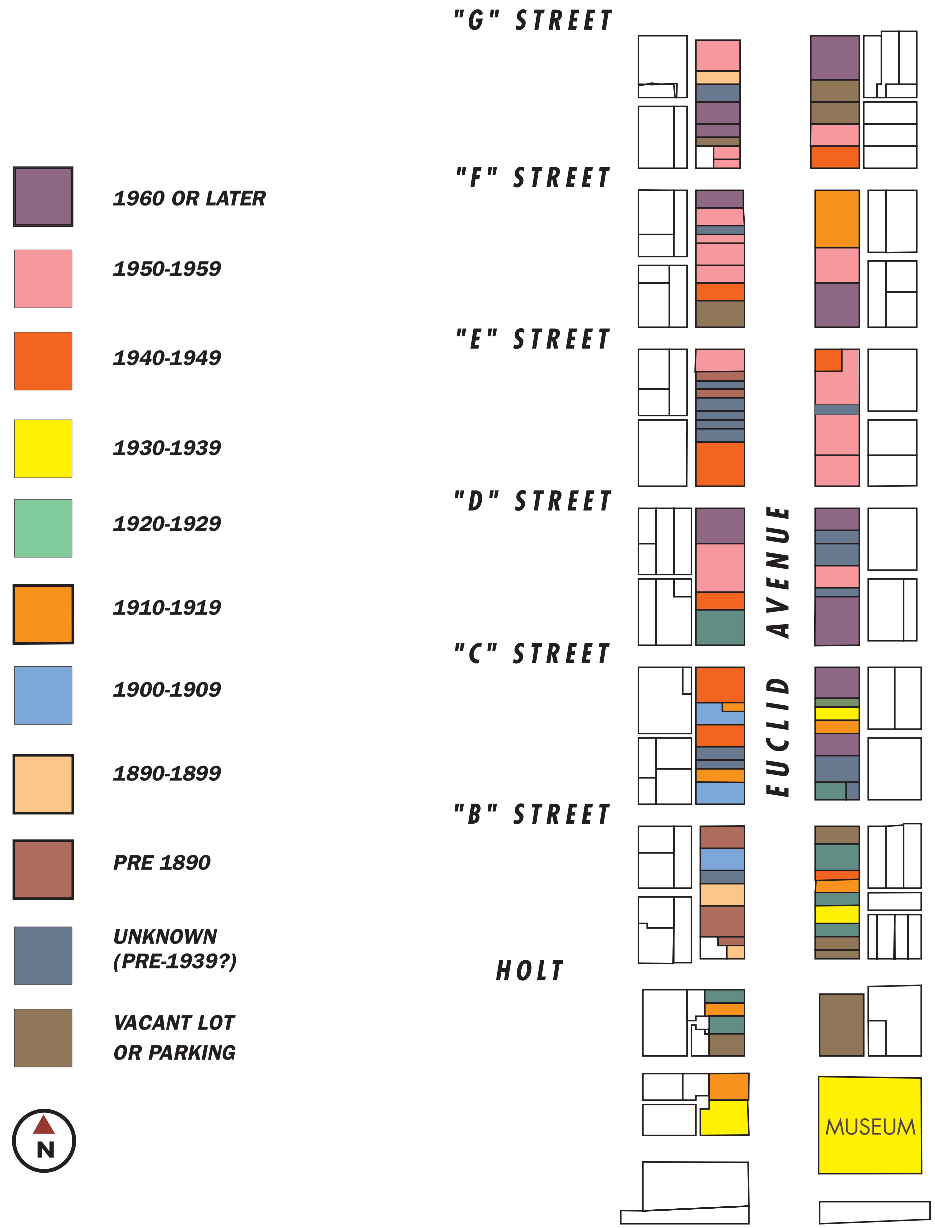
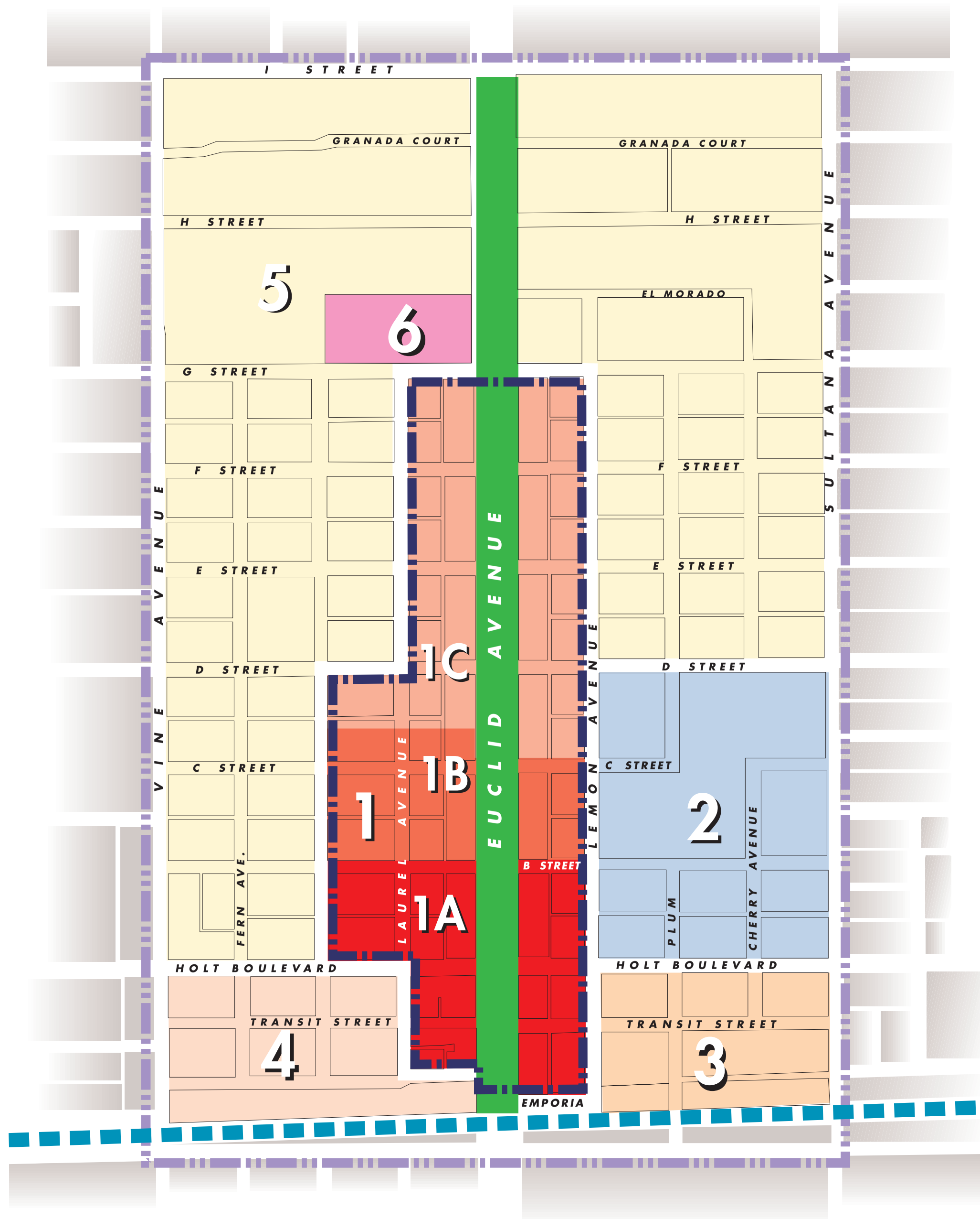


Figure 2A.1: Building Ages along Euclid Avenue

[1] This information has been provided by the City Of Ontario's Planning Department.



- RETAIL DISTRICT*
- 1A Historic Turn-of-the-Century Subdistrict
- 1B Historic 1920's - 1940's Subdistrict
- 1C Historic 50's Style Subdistrict
- 2 CIVIC CENTER DISTRICT
- 3 MUSEUM/TRANSIT DISTRICT
- 4 EDUCATION DISTRICT
- 5 RESIDENTIAL DISTRICT **
- 6 NEIGHBORHOOD COMMERCIAL DISTRICT
- EUCLID AVENUE MEDIAN

* Retail at street level. Offices and / or residential in upper levels.

** Includes related uses such as schools and churches.

DISTANCE IN FEET

0 200 400 1000

N

Figure 2A.2: Retail Subdistricts

2A.1.2 General Concepts: Architectural

Buildings in the Downtown Retail District fall into one of the following three categories:

- **Designated Buildings** (on the City of Ontario Historic Building List).

  The original architectural character of these buildings may exist to a substantial extent. Buildings in this category should be restored as close as possible to the original structure. These buildings may be present in any of the three subdistricts.

- **Significant Buildings** (Buildings built before 1950 for which historical information is available – either referenced in the Design Guidelines or available in the Model Colony Room).

  The original architectural character of these buildings is currently intact to a major extent, though not necessarily visible. Buildings in this category should draw upon the photographic resources available to rehabilitate the facades. The facades should be renovated to incorporate the distinctive architectural features of the relevant historic type. These buildings may be present in any of the three subdistricts.

- **Context Buildings** (Buildings built before 1950 for which **<u>no</u>** historical information is available or for which no historic fabric remains; or buildings built after the 1950's).

  The original character of these buildings no longer survives to any extent. The rehabilitation of these buildings shall be dependent on their location within the subdistricts in the Downtown Retail District. (Refer to figures 2A.2 and 2A.3) These buildings should follow the architectural facade design guidelines of their subdistrict. These guidelines should also be followed for any new infill structures in these subdistricts.

2A.1.3 General Concepts: Lighting

Lighting guidelines for the retail district are aimed at using light to enhance the characteristics of each individual building as well as the atmosphere of the entire retail district. Illuminated facades should unite the various disparate elements within each block. The facades of the more prominent buildings at the end of the blocks should be lit creating a "bookend" effect. This district-wide concept should be accentuated by highlighting individual historic structures within the district.

2A.1.4 General Concepts: Signage

Signage in the turn-of-the-century subdistrict should follow principles of traditional storefront signage with the primary signage restricted to the space between the transom and the storefront cornice. Secondary signage should include elements such as blade signs, gold lettering on storefront windows, and other lettering on canopies.

The sign guidelines for the 1920's – 1940's subdistrict should follow the principles of the type-styles, colors, placement and materials consistent with that period.

The sign guidelines for the 1950's subdistrict should be more flexible with the signage being the primary vehicle for creating the intended stylistic effect.

Figure 2A.3: Historic Building Designations

2A.2 Designated Buildings

Designated Buildings are buildings within the Study Area that are on the City of Ontario Historic Building List. These buildings substantially contribute to the documentation of Ontario's economic history. The current City of Ontario Historic Building List (as of June 1998) is summarized in Table 2A.1 on the facing page. Please refer to the Appendix for a detailed visual and written description of the Designated Buildings within the Downtown boundaries.

These buildings are distributed throughout the district and have been built over a time-period ranging from 1886 to 1940. The architectural styles represented include Art Deco, Classical, and Commercial. Most of these buildings have gone through remodeling efforts over the course of their lifetime. However, the original architectural character of these buildings may exist to a substantial extent.

The City maintains documentation for each of these buildings in the form of photographs, news articles regarding the buildings and historical accounts. Original drawings for some of the buildings may also be available. Additional information may exist in the Ontario Public Library's Model Colony Room.

It should be noted that more buildings may be placed on this list as additional information makes these buildings eligible for designation.

2A.2.1 Design Guidelines for Designated Buildings

The following guidelines will be followed for the restoration of Designated Buildings:

1. Design.

Building facades in this category should be restored as close as possible to the original structure. The photographs and/or original drawings shall be used to prepare the restoration drawings for these building facades.

2. Materials.

The original material used on the facades should be restored, if possible. The processes used for the maintenance and repair of the facades shall play an important part of the restoration process. Depending on the original style of the buildings, the materials used shall vary. However, the goal of a storefront to allow clear views into the retail space shall transcend stylistic variations. Materials consistent with different styles are documented in their respective sections.

3. Color.

The color scheme chosen for the buildings should be sensitive to the time period the building was built. Colors consistent with different styles are documented in their respective sections.

4. Signage.

The signage for these buildings should be governed by the guidelines for the particular style in which each of the buildings was built. In addition, a Historic/Commemorative Information Plaque may be installed at an appropriate location. (See Chapter 2C – Sign Design Guidelines for details)

5. Lighting.

These buildings should be illuminated to enhance their presence in the district. Uplighting of interesting building features such as cornices, window frames, and facade moldings is recommended. (See detailed lighting guidelines)

2A.2.2 Example of Facade Rehabilitation for a Designated Building

An example of the application of the design guidelines for Designated Buildings in the Turn-of-the-Century Subdistrict is illustrated in figure 2A.5. Figure 2A.4 shows available photographs of the Fallis Store at different points in its lifetime.

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	STREET ADDRESS	CONSTRUCTION DATE	BEST KNOWN AS	ORIGINAL USE	FACADE REMODELINGS	CURRENT USE	STYLE
1	100 S. Euclid	1928	**Holt Bank Bldg.**	First National Bank		Check Cashing Firm	Art Deco
2	108 S. Euclid	1919	**McCann Block**	Department Store			Commercial
3	110/112 S. Euclid	1920-1921	**Beverly Hotel**	Upper two stories: Envoy Hotel		Retail	Commercial
4	200 S. Euclid	1913	**Frankish Bldg.**	Commercial		Retail	Italianate
5	225 S. Euclid	1937	**Museum of History & Art**	City Hall		Museum of History & Art	Mediterranean Revival
6	225 S. Euclid	1886	**Frankish Fountain**	Fountain	moved to current location in 1983	Fountain	
7	101/103 N. Euclid	1895	**Ritmo Latino**	Citizens Bank Block	1948	Music Store	Commercial
8	105/107 N. Euclid	1888	**Mexico Lindo**	W.W. Smith's Grocery	1948	Retail	Commercial
9	107/109 N. Euclid	1889	**Rose Block**	Rose Block	1914, 1947	Retail	Commercial
10	114 N. Euclid	1939	**Mission Furniture**	Citizen's National Bank		Mission Furniture	Art Deco
11	121/123 N. Euclid	1894	**Fallis Bldg.**	Retail - first floor; meeting rooms - 2nd floor	1951, 1966, and 1961 center wall	Retail	Commercial
12	122 N. Euclid	1913	**Pawn Shop**	Lerch Bldg. - Euclid Theater, Park Theater	1951 and 1990 earthquake repair	Pawn Shop	Commercial
13	128/130/132 N. Euclid	1920	**Yangtze Restaurant**	Commercial Hotel		Restaurant/Vacant	Commercial
14	203 N. Euclid	1908	**Ostran's**	Ostran's Dept. Store	1951, 1965, 1993	Retail	Commercial
15	207 N. Euclid	1910	**Wight's Lodge**	Wight's Jewelry		Vacant	Commercial
16	231/233 N. Euclid	1904	**Masonic Lodge**	Masonic Lodge	1928, 1979, 1990 earthquake repair	Restaurant	Commercial
17	235 N. Euclid	1916	**The Golden Web**	Commercial	1928	The Golden Web boutique	Commercial
18	303 N. Euclid	1926	**Granada Theater**	Movie Theater		Theater for concerts & plays	Moderne/Art Deco-Commercial

Table 2A.1.1: Designated Buildings in Downtown Ontario's Retail District

	STREET ADDRESS	CONSTRUCTION DATE	BEST KNOWN AS	ORIGINAL USE	FACADE REMODELINGS	CURRENT USE	STYLE
19	401 N. Euclid	1940	**Blue Seal**	Blue Seal Laundry Bldg.	1996	Restaurant	Art Deco
20	536 N. Euclid	1912	**Bethel Church**	Church		Church	Gothic Revival (stone)
21	625 N. Euclid	1893	**Moore House**	Residence	1989-1990 restoration	Real Estate Office	Queen Anne house
22	738 N. Euclid	1911		Women's Club		Office	Craftsman
23	747 N. Euclid	1920		Mission Revival		Residence	Mission Revival
24	748-750 N. Euclid	1937		Bungalow Court		Mixed Use	Mediterranean/Spanish Revival
25	802 N. Euclid	1942	**Woodlawn Apartments**	Apartments		Mixed Use	French Eclectic
26	836 N. Euclid	1915		Residence		Residence	Craftsman
27	104/108/110 W. Holt	1895		Citizen's Bank Block			Commercial
28	123 W. Holt	1940	**Post Office**	Post Office		Post Office	Moderne
29	214 E. Holt	1923	**Dietz Garage**	Commercial		Thrift Shop/Vacant	Commercial
30	112 W. "B" St.	1922	**Odd Fellows Hall**	Odd Fellows Hall			Commercial
31	115/117/119 W. "B" St.	1922		Ontario Herald			Commercial
32	217 S. Lemon Avenue	1910	**Cal Poly Occur**	Ontario power Co.		Educational	Vernacular Brick
33	211/215 S. Laurel Ave.	1928		Motor Transit Co.		Counseling	Commercial Brick
34	125 W. Transit Street	1926	**Civil Air Patrol**	Old Post Office			Renaissance
35	128 E. "G" Street	1900		Residence		Residence	Queen Anne
36	520$^{1/2}$ N. Vine	Unknown	**Carriage House**	Carriage House		Vacant	

Table 2A.1.2: Designated Buildings in Downtown Ontario's Retail District

Present day photograph

Circa 1920

Circa 1900

Circa 1955

Circa 1945

Figure 2A.4: Designated Building: Fallis Store - Present Day and Historical Photographs

 Historical photographs provided by the Model Colony Room, Ontario Public Library.

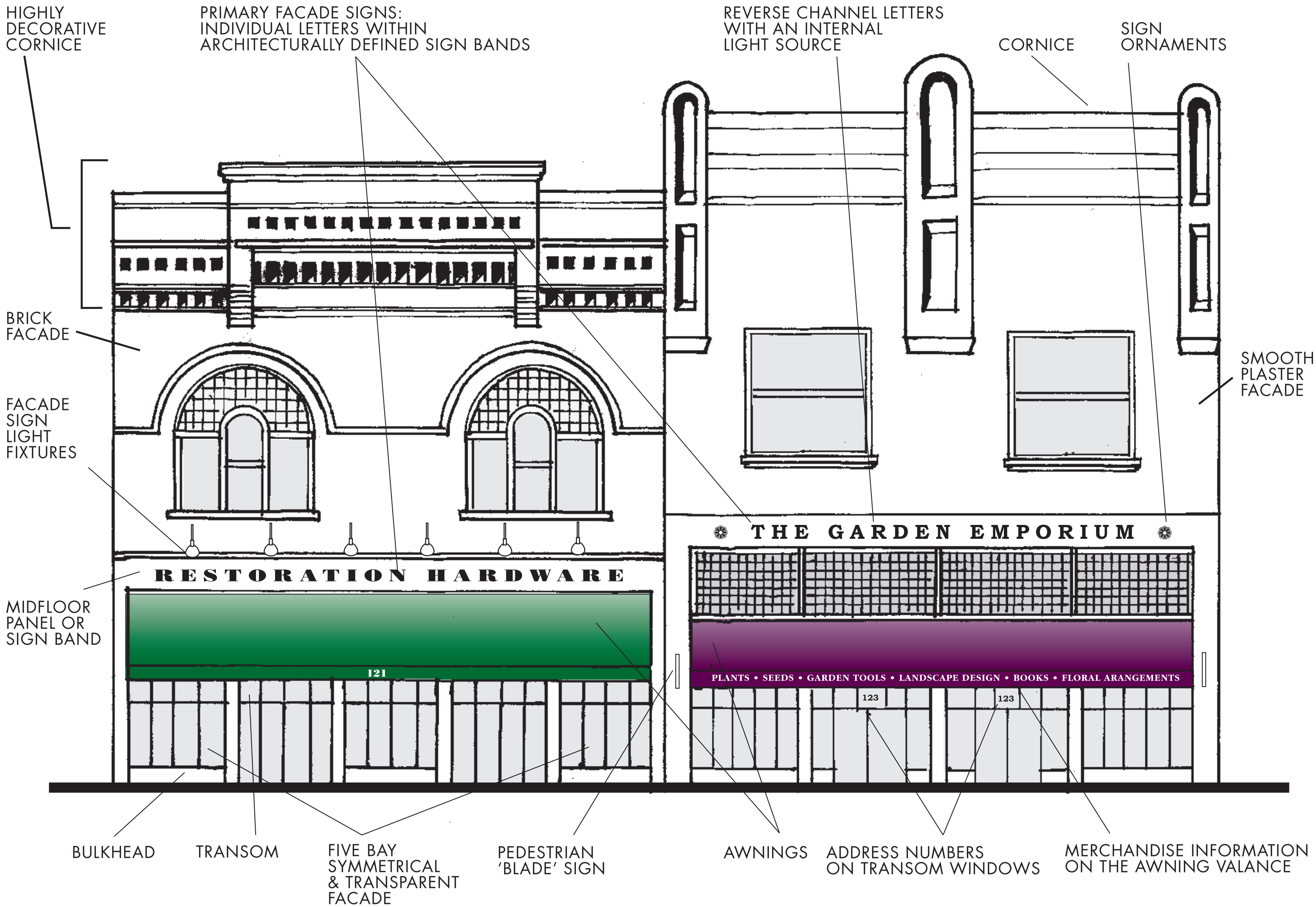


Figure 2A.5: Designated Building: Fallis Store - Example of Rehabilitation in the Turn-of-the-Century District

2A.3 Significant Buildings

Significant Buildings are those buildings that were built before 1950 and for which historical information is available – either referenced in the Design Guidelines or available in the Model Colony Room, Ontario Public Library, Main Branch. These buildings contribute to the economic history of Ontario. These buildings are shown as 'Potentially Historic Structures' in Figure 2A.3 on page 21.

These buildings have undergone substantial remodeling over their existence and the original architectural character is not necessarily visible. Buildings in this category shall draw upon the photographic resources available to rehabilitate the facades. The facades shall be renovated to incorporate the distinctive architectural features of the relevant historic type. ***If historical elements are discovered during the course of the actual renovation, the rehabilitated facade shall incorporate the uncovered features as much as possible.***

A Significant Building may be placed on the City of Ontario's Historic Building List. At that time, the guidelines governing the Designated Buildings shall apply to the building.

2A.3.1 Design Guidelines for Significant Buildings

The following guidelines will be followed for the rehabilitation of Significant Buildings:

1. Design.

Building facades in this category shall be renovated to include the distinctive architectural elements. The renovated facade should embody the design essence of the original structure. The photographs and/or available drawings should be used to aid in the preparation of the rehabilitation drawings for these building facades. Each building shall be recognized as a physical record of its time, place and use.[2] Substantial previous changes that did not negatively impact the original architecture should be taken into account in the current renovation process.

2. Materials.

The materials used for the facade should be the same as those on the original facade, if such information is available. Depending on the original style of the buildings, the materials used shall vary. However, the goal of a storefront to allow clear views into the retail space should transcend stylistic variations. Materials consistent with different styles are documented in their respective sections.

3. Color.

The color scheme chosen for the buildings should be sensitive to the time period the building was built. Colors consistent with different styles are documented in their respective sections.

4. Signage.

The signage for these buildings should be governed by the guidelines for the particular style each of the buildings was built. (See Chapter 2C – Sign Design Guidelines)

5. Lighting.

These buildings should be illuminated to enhance their presence in the district. Uplighting of interesting building features such as cornices is recommended. (See Chapter 2D – Lighting Design Guidelines)

[2] Secretary of the Interior's Standards for Rehabilitation of Historic Buildings.

2A.4 Context Buildings & New Infill Structures

Context Buildings fall into two categories:

- those buildings within each subdistrict that were built before the 1950's and for which no historical information is available at this time or for which no historic fabric remains.
- those buildings that were built after the 1950's.

These buildings are shown in Figure 2A.3 on page 21.

These buildings by the nature of their location contribute to the character of Downtown Ontario and their subdistrict. For that purpose, these buildings shall follow the basic massing, storefront modulation, building treatments, detailing, signage, etc. of their subdistrict as detailed in the Design Guidelines for each of these three subdistricts. The design guidelines for these buildings allow for a consistency in character to be developed for the subdistrict without imposing a false sense of history on these buildings.

A Context Building may be placed on the Significant Building List by the City of Ontario Planning Department, if information or material during actual rehabilitation is uncovered. At that time, the guidelines governing the Significant Buildings shall apply to the building.

Any new infill structures shall also follow the same guidelines as those for the Context Buildings.

All Context Buildings and New Infill Structures should be sensitive to any adjacent Significant or Designated Buildings.

Based on the ages of the buildings (figure 2A.1 on page 18), the Retail District has been further divided into three subdistricts:

1. Turn-of-the-century (1880's to 1910's) subdistrict
2. 1920's through 1940's subdistrict
3. 1950's subdistrict

Figure 2A.2 on page 19 shows the subdistricts' boundaries.

The design guidelines for each of the subdistricts are described in the following sections.

2A.4.1 Context Buildings: Turn-of-the-century (1A) Subdistrict

The turn-of-the-century subdistrict labeled 1A in figure 2A.2 extends along Euclid Avenue from Emporia Street to 'B' Street. The construction dates of the buildings in this subdistrict are in the large part between 1880 and 1920. Most of these buildings have gone through several structural or facade modifications, as evidenced by the photographic documentation available in the Model Colony Room in the Ontario Public Library.

Buildings that fall into the 'Designated' and 'Significant' categories in this subdistrict shall follow the guidelines discussed previously in this chapter for those buildings.

The rest of the buildings (Context) and new infill buildings shall conform to the Design Guidelines described in this section.

The Context Buildings for the turn-of-the-century subdistrict are intended to be simple derivations of a traditional commercial storefront from that period.

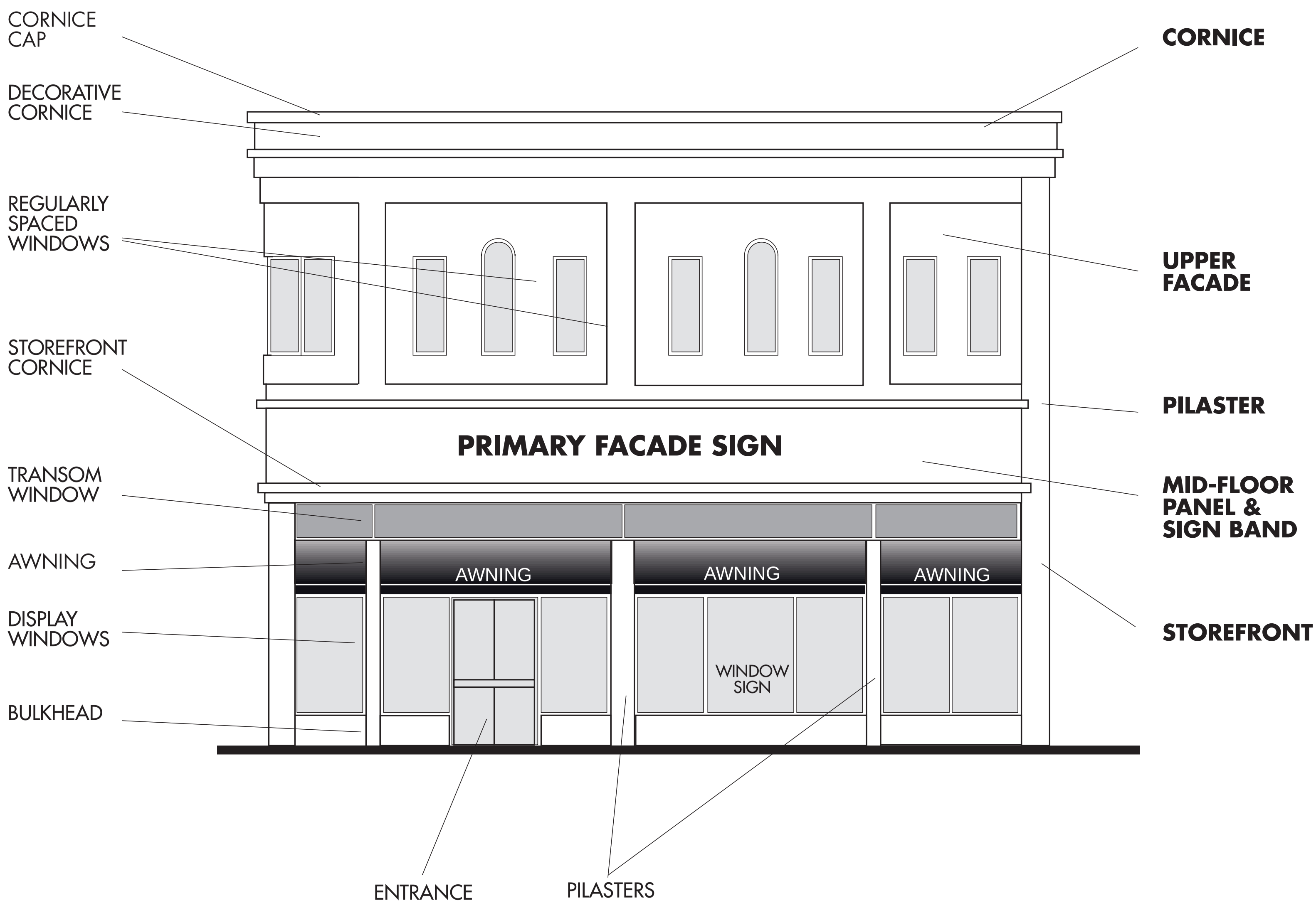
2A.4.1.1 Traditional Storefront Design

Brick-front stores and Italianate storefronts, with either iron-front, brick or wood construction were the most popular in commercial areas.[1] These buildings ranged from one to three stories in height. In Ontario, the buildings were mostly two stories. These buildings had retail stores at the street level and apartments, offices or storage in the floors above.

The facade's design was centered on the overall framing of the shape: the structural system, post and beam as suggested by the edges; the large lateral panels; and the cornice. The cornice functioned as a cap under which other elements were arranged and balanced.[2]

The individual storefront generally had three bays. The entrance was usually centered on the facade. However, off-centered entries were not uncommon. The storefront was divided horizontally into the bulkhead at the base, the display window, and the transom window at the top. The continuous panel between the floors (mid-floor panel) united the street level facade and also functioned as the location for the primary facade sign (sign band).

1 Herbert Gottfried and Jan Jennings, American Vernacular Design 1870-1940, (New York: Van Nostrand Reinhold Company) 1985, p. 239.
2 Ibid., p. 240-41.



Note: Please refer to accompanying text for typical dimensions.

Figure 2A.6: Elements of a Context Building in Turn-of-the-Century Subdistrict

2A.4.1.2 Design Guidelines for Context Buildings in the Turn-of-the-Century Subdistrict

New Infill Structures and Context Buildings shall conform to the following Design Guidelines in the turn-of-the-century subdistrict:

1. Building Usage.

All buildings along Euclid Avenue should have retail at the street level and residential or commercial on the upper level(s).

2. Massing.

Six story structures are allowed in the C2 District by the Development Code.

A new structure in a mid-block location shall be built at the property line along the sidewalk to maintain street level retail continuity and shall have no vertical setbacks for the first three stories. A setback of 15 feet shall be required for the fourth floor and an additional 15 feet setback for the fifth floor.

Corner buildings may be six stories with no vertical setback at all. The building footprint at the corner shall be limited to 50 feet by 50 feet. The remaining portion of the building shall follow the massing guidelines for a mid-block building. (See figure 2A.7)

False Front Structures. Single story gabled buildings shall have false fronts extending the facade vertically and horizontally so as to match the roof-line of adjacent buildings and add to the dense urban feel of the area.

3. Setbacks.

The zero setback line shall be maintained.

4. Storefront Modulation.

A typical storefront module shall range from 25 to 30 feet and has a three bay modulation with a centered entrance.

Buildings wider than two modules (50-60 feet) shall have a different modulation. These buildings shall either repeat the basic three-bay module of 25 to 30 feet or increase the number of bays while keeping the individual bay width to 8 to 10 feet.

Buildings wider than 120 feet shall be visually broken into two buildings in terms of the facade treatments to prevent a building from overpowering the block in terms of scale.

5. Entrances.

Corner entrances are encouraged in corner buildings. Rear entrances for both the retail and upper levels are encouraged. If street side entrances are provided for the upper levels, the width of the entry shall be limited to 15 feet at the street level to maintain retail continuity.

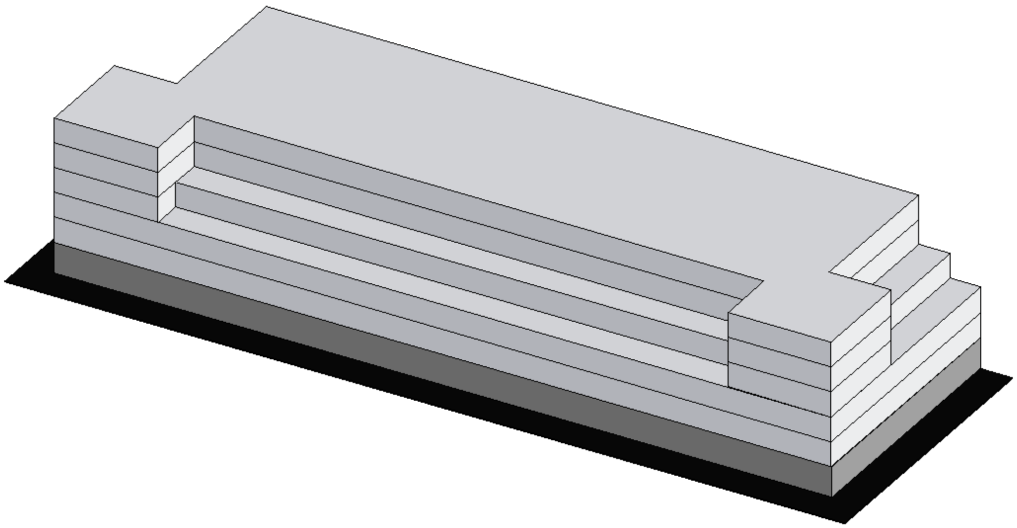
6. Roof Design.

Visible sloped roofs are not permitted. If a building has a sloped roof, a false horizontal parapet shall be provided.

7. Mechanical Equipment.

Mechanical equipment mounted on the roof as well as electrical and plumbing equipment should be screened from the view of pedestrians and users of nearby buildings. Roof equipment should be screened by the building parapet. If building parapets do not provide adequate screening of mechanical equipment from upper floors of adjacent buildings, screening shall be installed as an integral part of the overall architectural design, and painted such a color as to allow its blending with its visual background.

Please refer to the City of Ontario Development Code for further information on screening of mechanical equipment.



Sketch showing massing of a block in the Turn-of-the-Century Subdistrict.

Examples of an infill structure that fits into the Turn-of-the-century Subdistrict context

Figure 2A.7: Turn-of-the-Century Subdistrict – Building Modulations and Infill Examples

8. Building Elements.

Context buildings in the turn-of-the-century subdistrict should have the following typical elements:

- Cornice
- Pilasters
- Upper level windows
- Mid-floor panel
- Transom windows
- Display windows
- Entrance door
- Bulkhead

Cornice

Each structure shall have a simple cornice.

A brick-front building may have a corbelled cornice. A plaster front building may have a stone sill at the parapet line. Examples are shown in figure 2A.8.

Storefront Frame (Pilasters)

The pilasters on the buildings should be emphasized on the facade so as to frame it visually.

Upper Level Windows

The upper level windows should be tall and narrow, symmetrically arranged. The number of windows should be based on the storefront modulation at the lower level. The number of windows may range from three to eight on a typical storefront based on the storefront width.

The upper level window should have a distinguishable sill and lintel. The windows may be combined into pairs, triples or bands. The sill, lintel or surround may be made of stone or plaster.

Mid-floor Panel

A mid-floor panel between the floors shall be provided. The height of the mid-floor panel shall be at least 2 feet and not more than 3 feet. Proportionally, the mid-floor panel is 15-20% of the height of the street level storefront.

Transom Windows

Transom windows above the display windows should be provided. The transom window height depends on the overall floor height and ranges from 2 to 3 feet. The awning, if provided, may be mounted so as to cover the transom window.

Display Windows

To promote a retail environment, all display windows shall provide a clear view of the store merchandise or a view into the business interior. To achieve this purpose, the greater portion of the window should remain clear, free from obstructions.

The display windows may either be composed of a single pane of glass or be divided into smaller lights by glazing bars or muntins.

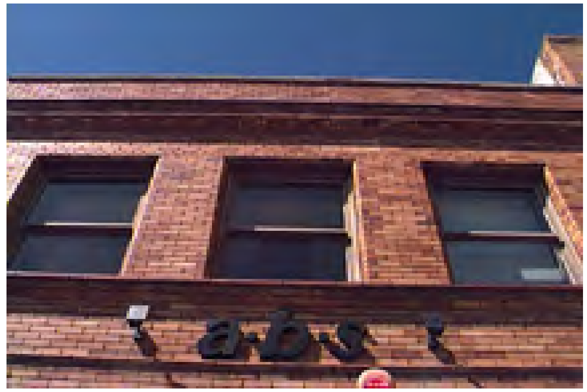
Entrance Door

The entrance door should be kept simple. A wood and glass door of traditional design is encouraged. Special touches like a brass door pull or brass kickplate are also encouraged. Fake historical or highly decorated contemporary doors are not permitted.

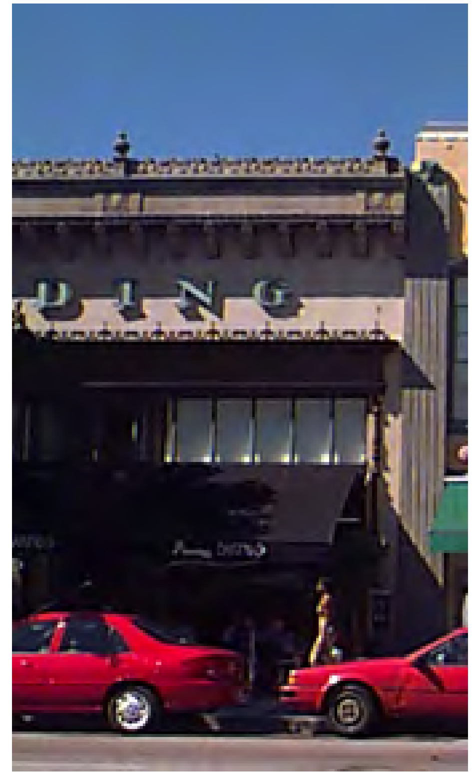
Bulkhead

A bulkhead shall be provided at the base of the storefront display window. The height of the bulkhead shall be at least 15” and no more than 24”.

Brick Cornice



Brick Cornice



Highly decorative cornice detail


Elaborate stucco and stonework detailing

Retractable canvas awning mounted between transom window and display window

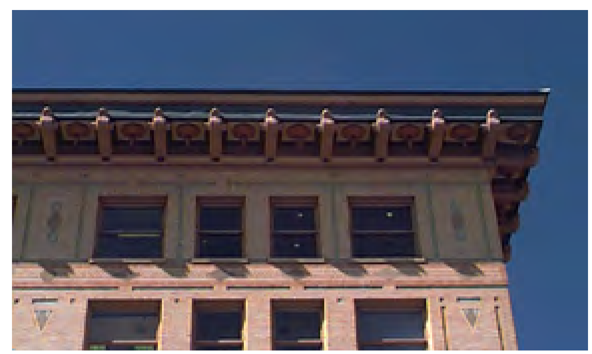

Highly decorative cornice detail

Figure 2A.8: Turn-of-the-Century Subdistrict – Building Elements Detail Examples

9. Awnings.

If awnings are provided, they should be sympathetic to the storefront frame. The awning shall not cover the storefront piers or pilasters on either end of the structure. The awning shall be mounted between the transom and display windows or covering the transom window.

The awning should be mounted such that its valance is at least seven feet but not more than eight feet above the sidewalk. It should project between four and eight feet from the building face, but no closer to the street curb than three feet.

The awning shape shall be limited to the traditional shape (see example in figure 2A.9). Retractable awnings are encouraged.

10. Materials.

Materials for the Context Buildings facades shall be derived from the palette of materials used traditionally in the turn-of-the-century areas.

The facade shall use the following materials:

Storefront Frame

The storefront shall be either brick or wood framed. The storefront columns or pilasters shall be brick or smooth-finish plaster. Cast iron cladding shall be encouraged.

Facade

The facade may be brick or smooth-finish plaster.

Display Windows

The display windows shall be made of clear glass. The window shall be kept free of all visual obstructions into the store itself. Reflective tinting, or mirrored glass is not allowed. Even if the business is a non-retail business, the windows shall be kept unobstructed to maintain appearance of facade and retail continuity along the sidewalk.

Transom Window

The transom window shall be made of clear, tinted, etched or stained glass.

Bulkheads

The bulkhead shall be made of one of the following materials: wood panels, stone, brick, or tile.

Entrance Doors

The entrance door shall be as transparent as possible. The use of large glass panels is recommended. However, an all-glass door is not permitted. Wood doors with clear glass panels were used traditionally and are encouraged. If an aluminum door is used, it should be of a simple design with a dark anodized finish or primed and painted with an accent color.

Awnings

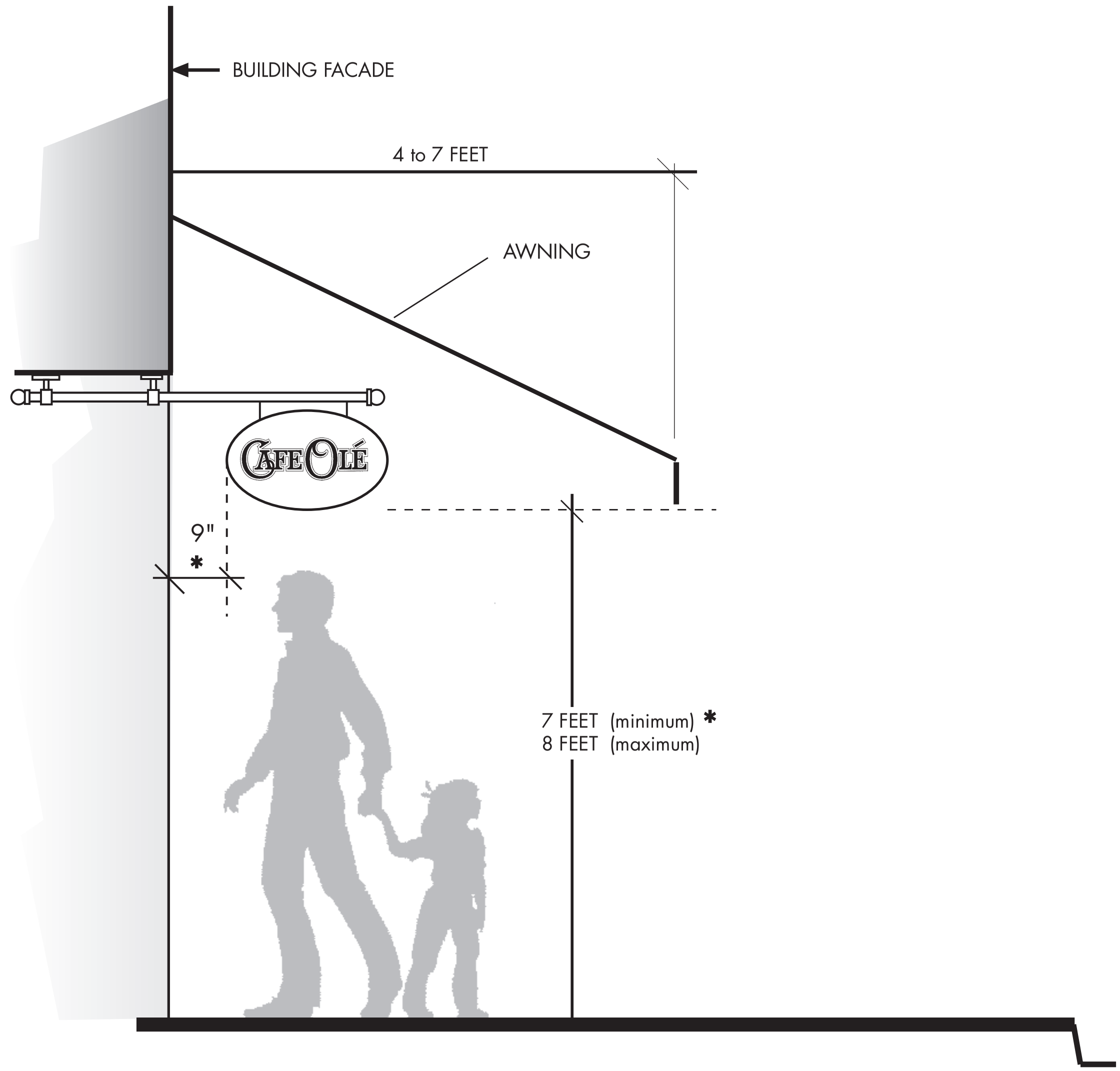
In keeping with the character of the turn-of-the-century period, the awnings, if used, shall be made of canvas. Vinyl or other shiny materials shall not be allowed.

Restricted Materials

Materials that have no relationship with the architectural themes for the style shall not be used. Restricted materials in the turn-of-the-century subdistrict include: fake brick, fake river rock, cultured rock, imitation wood siding, antiqued or imitation old brick, oversized brick and white brick mortar, among others.

Highly detailed facade ornamentation adds to the building character. Note the detailing on the transom window is derived from the facade ornaments.

Projecting pedestrian sign and canvas awning



* These dimensions must be followed to maintain visual harmony between adjacent facades

Figure 2A.9: Turn-of-the-Century Subdistrict: Building Elements – Awnings

11. Colors.

Colors chosen should accentuate the architectural details of the building. The levels of coloration on the building and the corresponding usage are as follows and are shown in figure 2A.10:

Base Color

The base color is used on the majority of the building surface. It is generally the lightest of the four. The base color is used on the wall surfaces, storefront piers and the cornice when the material is the same as the walls.

Major Trim Color

The major trim color has secondary importance in the color hierarchy of the facade. It is used to accentuate certain elements of the facade such as the cornice, window hoods, window frames, storefront cornice, storefront and bulkhead.

Minor Trim Color

The minor trim color is used to highlight elements such as window sashes and doors. This color category could be combined with the major trim color.

Accent Color

The accent color is used to highlight small details on window hoods, cornices, columns and bulkheads. The accent color should contrast with the base and trim colors and is used sparingly.

Signage Colors

The colors for the graphics should be derived from the family of colors used on the building itself. The color used for the accent color, major or minor trim color on the buildings, may be used as the color of the signs.

Awning Colors

The awning colors selected shall be compatible with the building colors. Garish colors are not encouraged. Darker saturated colors that pick up the highlights of the building colors are preferred. Simple stripes or tweeds are allowed. As mentioned in the Materials section, vinyl awnings shall not be allowed.

The following colors are listed as examples of preferred awning colors from the Sunbrella and Sunbrella FireResist Lines of Glen Raven MillsColors[1]:

Spruce, Royal Blue, Navy, Captain Navy, Mediterranean Tweed, Mediterranean Blue, Sapphire Blue, Sky Blue, Plum, Hemlock Tweed, Forest Green, Alpine, Burgundy, Black Cherry, Walnut Brown, Terra Cotta, etc.

Color Palettes

Several paint manufacturers[1] offer historic combinations of colors or color palettes. Sherwin Williams, ICI Paints, Benjamin Moore, etc. are a few such paint companies. The following combinations from the Sherwin Williams 'Preservation Palette for exterior Colors' are listed to illustrate the principles set out in this section:

Combination 1:

Base Color: Roycroft Vellum (SW 2833)
Major Trim Color: Craftsman Brown (SW 2835)
Minor Trim Color: Quatersawn Oak (SW 2836) or Aurora Brown (SW 2837)
Accent Color: Roycroft Bottle Green (SW 2847) or Rookwood Copper Red (SW 2802)
Signage Color: Copper Red, Gold, and Brown
Awning Color: Forest Green or Mediterranean Tweed or Black Cherry.

Combination 2:

Base Color: Roycroft Mist Gray (SW 2844)
Major Trim Color: Bunglehouse Gray (SW 2845)
Minor Trim Color: Roycroft Suede (SW 2842) or Roycroft Brass (SW 2843)
Accent Color: Polished Mahogany (SW 2838) or Fairfax Brown (SW 2856)
Signage Color: Copper Red, Gold, and Brown
Awning Color: Burgundy or Hemlock Tweed or Terra Cotta.

Combination 3 (for a brick facade):
In this case, the trim and accent colors should be lighter than the base color.

Base: Brick
Major and Minor Trim: Brick
Accent Color: White (SW 2123) or Downing Sand (SW 2822)
Signage Color: Copper Red, Gold, and Brown
Awning Color: Mediterranean Tweed, Sapphire Blue or Charcoal Tweed.

[1] It is to be noted that this listing of brand names is for illustrative purpose only. This listing is not intended, nor should be construed, as an endorsement of the manufacturers or their product line.

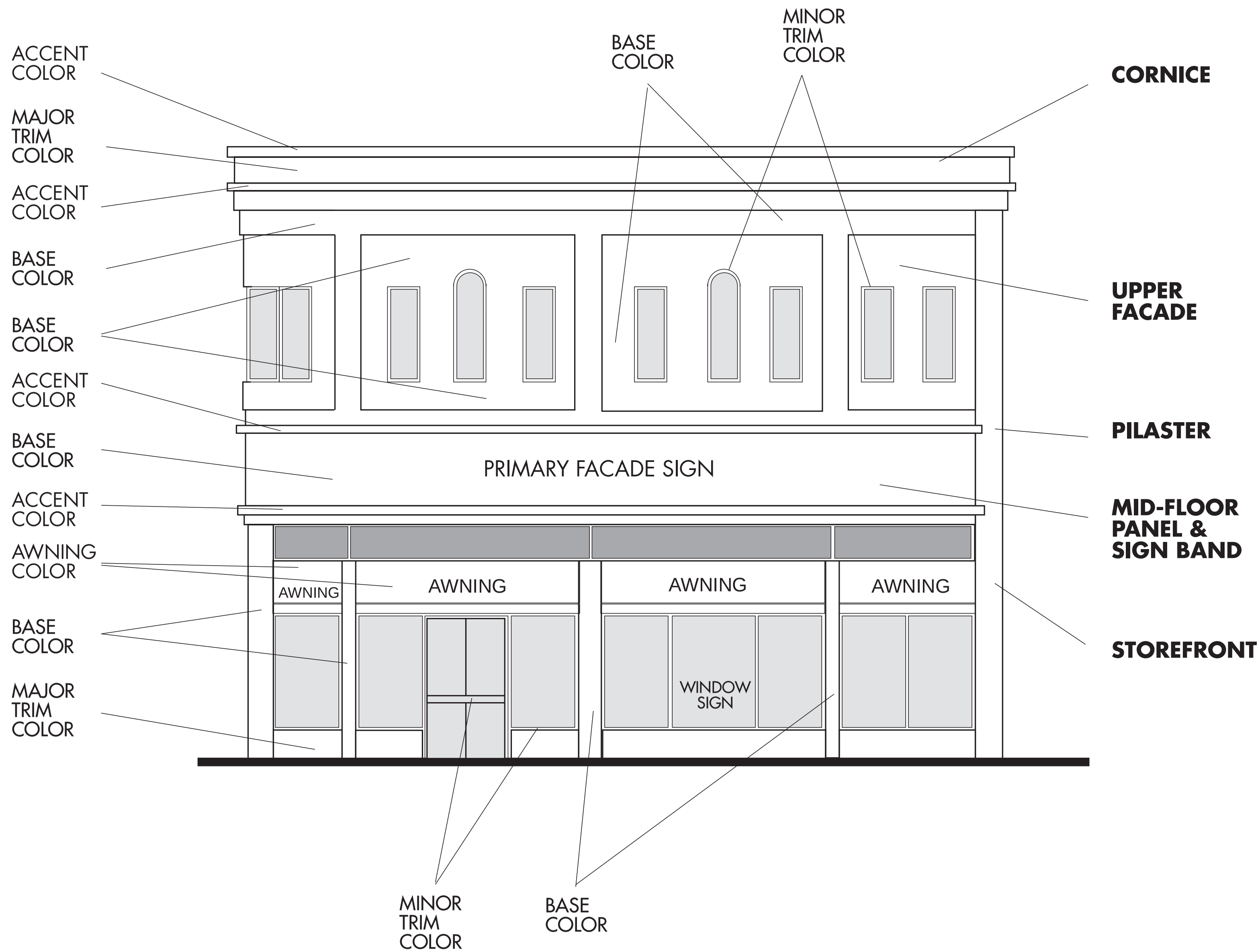


Figure 2A.10: Context Building in Turn-of-the-Century Subdistrict – Building Color Guide

2A.4.1.3 Example of Facade Rehabilitation in the Turn-of-the-Century Subdistrict

An example of the application of the design guidelines for Context Buildings in the Turn-of-the-Century Subdistrict is illustrated in figure 2A.12. No historical information is currently available for these two buildings. The buildings' current appearance is shown in figure 2A.11.

Figure 2A.11: Context Building in Turn-of-the-Century Subdistrict – Present Day Photograph

Figure 2A.12: Context Building in Turn-of-the-Century Subdistrict – Example

2A.4.2 Context Buildings: 1920's through 1940's (1B) Subdistrict

The 1920's through 1940's subdistrict labeled 1B in figure 2A.2 on page 19 extends along Euclid Avenue from 'B' Street to 'C' Street on the east side of Euclid and one building north of 'C' Street on the west side of Euclid. The construction dates of the buildings in this subdistrict are in the large part between 1920 and 1940. Most of these buildings have gone through several structural or facade modifications, as evidenced by the photographic documentation available in the Model Colony Room in the Ontario Public Library.

Buildings that fall into the 'Designated' or 'Significant' categories in this subdistrict shall follow the guidelines discussed previously in this chapter for those buildings.

The rest of the buildings (Context) and new infill buildings shall conform to the Design Guidelines described in this section.

The Context Buildings for the 1920's through 1940's Subdistrict are intended to be simple derivations of a typical commercial storefront from that period.

2A.4.2.1 1920's through 1940's Styles: Typical Storefront Design

The two best known architectural styles from this time period between the two World Wars are Art Deco and Art Moderne. In America, these styles were also influenced by the onset of Modernism in Europe and the Depression at home. This period also saw several period revivals. However, for the purposes of these guidelines, Art Deco and Art Moderne are the principal styles in this subdistrict to which the context buildings respond.

Art Deco (1925 – 1940)

Art Deco was the dramatically modern style that avoided past styles, yet created an opulent ornamentation with intricate crystalline or curvilinear ornament and materials from crafted terracotta to machine-age machine alloys.[1]

Art Deco was characterized by a geometric composition of simple cubic forms with a vertical emphasis. This style was highly decorative. The facades of the buildings often were arranged in a series of setbacks emphasizing the geometric form. The vertical was emphasized by the use of narrow recessed windows with decorative spandrels that were set off by vertical piers. Entrances were stepped as well. Finials at the roofline added to the vertical effect.

Prominent and most visible features of the building were highly ornamented. The ornament had a pronounced verticality and the favored motifs were faceted surfaces, zigzags, chevron patterns, and octagonal shapes.[2] This ornamented style was very popular with the general public.

The ornamentation was often in the same materials as the building facades. Commonly used materials included various metals such as aluminum, structural glass, colored glazed bricks, or mosaic tiles. Other materials used extensively were Formica, black glass and marble, neon tubes, and bronze and terra-cotta in decorative grilles and panels. Materials used in the buildings also provided texture and additional colors to the style.

Streamline Moderne (1930 – 1945)

The starkness of the International Style taking hold in Europe at the end of the 1920's made Art Deco seem fussy and tawdry. The Art Moderne style was stripped of almost all ornamentation. The Art Moderne or Streamline Moderne was symbolic of the dynamic 20th century of speed and machines, fast motor cars and railway trains and steamships.[3]

The unbroken horizontality and smooth curves also distinguished this style from Art Deco. The flat surfaces and bold shadows were dramatic. The windows were grouped in bands, and the spandrels were expressed as continuous horizontals. Neon lighting and graphics were integral parts of the design composition.

Art Moderne, popular during the Depression years, was drastically stripped of ornament. Large expanses of glass, glass brick, chrome, and stainless steel allowed the creation of the clean smooth surfaces integral to this simple style. In addition, pour-in-place concrete and cast-concrete ornament were commonly found. Aluminum and stainless steel provided shiny smooth surfaces that signified futuristic trends.

1 Carole Rifkind, *A Field Guide to American Architecture,* (New York: New American Library) 1980, p. 218.
2 Ibid., p. 220.
3 Marcus Whiffen and Frederick Koeper, *American Architecture Volume 2: 1860-1976,* (Cambridge, MA: The MIT Press) 1981, p.331.

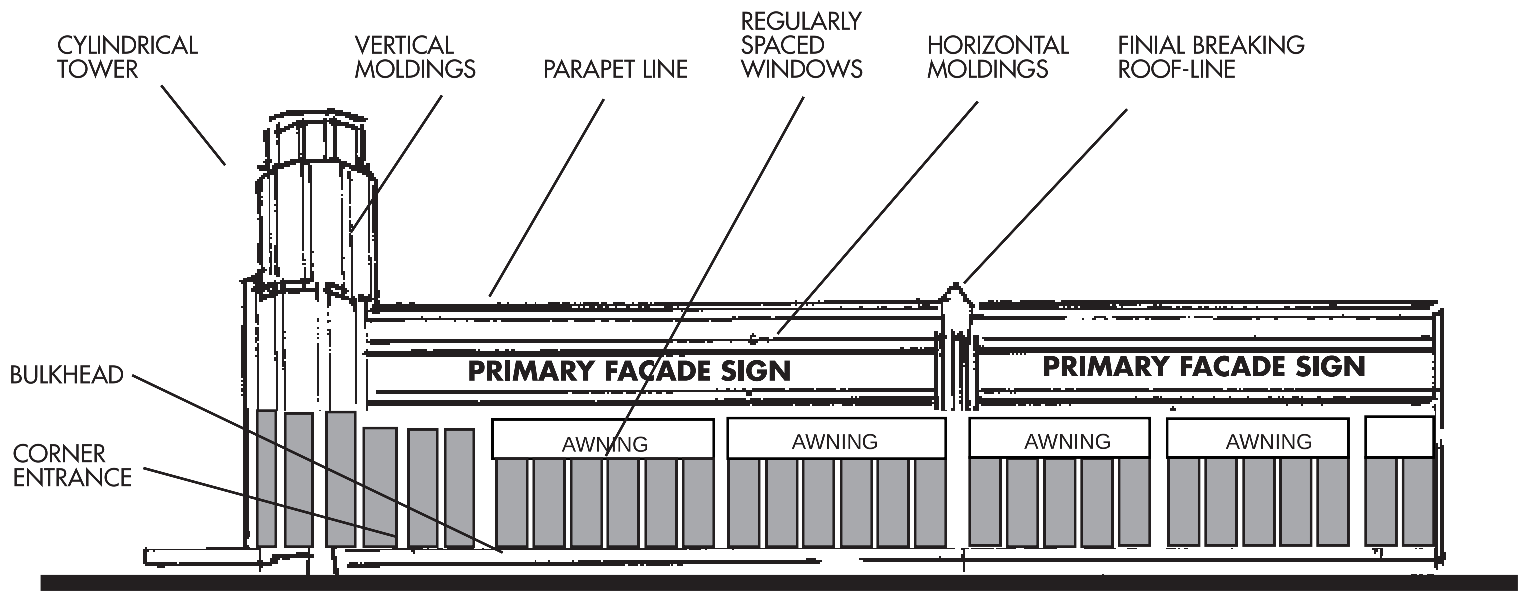


Figure 2A.13: Elements of a Context Building in the 1920's through 1940's Subdistrict

2A.4.2.2 Design Guidelines for Context Buildings in the 1920's through 1940's Subdistrict

New Infill Structures and Context Buildings shall conform to the following design guidelines in the 1920's through 1940's subdistrict:

1. Building Usage.

All buildings along Euclid Avenue should have retail at the street level and residential or commercial on the upper level(s).

2. Massing.

Six story structures are allowed in the C2 District by the Development Code.

A new structure in a mid-block location shall be built at the property line along the sidewalk to maintain street level retail continuity and shall have no vertical setbacks for the first three stories. A setback of 15 feet shall be required for the fourth floor and an additional 15 feet setback for the level after that.

Corner buildings may be six stories with no vertical setback at all. The building footprint at the corner shall be limited to 50 feet by 50 feet. The rest of the building shall follow the massing guidelines for a mid-block building. (See figure 2A.10 on page 39.)

Simple cubic forms are encouraged. Curved elements such as cylinders may be allowed.

3. Setbacks.

The zero setback line shall be maintained.

4. Storefront Modulation.

The buildings shall have a tripartite division with the central facade being the most prominent. The central plane shall also be the tallest. A typical storefront module shall range from 25 to 30 feet.

Buildings wider than two modules (50-60 feet) shall have a different modulation. These buildings shall either repeat the basic three-bay module of 25 to 30 feet or increase the number of bays while keeping the individual bay width to 8 to 10 feet.

Buildings wider than 120 feet should be visually broken into two buildings in terms of the facade treatments to prevent a building from overpowering the block in terms of scale.

5. Entrances.

Corner entrances are encouraged in corner buildings. Rear entrances for both the retail and upper levels are encouraged. If street side entrances are provided for the upper levels, the width of the entry shall be limited to 15 feet at the street level to maintain retail continuity.

6. Roof Design.

Visible sloped roofs are not permitted. If a building has a sloped roof, a false horizontal parapet shall be provided.

7. Mechanical Equipment.

Mechanical equipment mounted on the roof as well as electrical and plumbing equipment should be screened from the view of pedestrians and users of nearby buildings. Roof equipment should be screened by the building parapet. If building parapets do not provide adequate screening of mechanical equipment from upper floors of adjacent buildings, screening shall be installed as an integral part of the overall architectural design, and painted such a color as to allow its blending with its visual background.

Please refer to the City of Ontario Development Code for further information on screening of mechanical equipment.

Examples of building modulation and building elements such as tripartite divisions, window sunshades, window spandrels and centralized entrances.

Figure 2A.14: Examples of Context Buildings in the 1920's through 1940's Subdistrict

8. Building Elements.

A commercial building shall have the following typical elements:

- Parapet
- Pilasters
- Decorative friezes
- Upper level windows
- Mid-floor panel
- Cantilevered sunshades
- Transom windows
- Display windows
- Entrance door
- Bulkhead

Stepped parapet

The parapet line should be stepped to emphasize verticality. The facade itself may be stepped away from the street line to accentuate the qualities of lightness and rhythm. Finials at the roof-line may be added to increase the vertical effect.

Storefront Frame (Pilasters)

The pilasters on the buildings shall be emphasized on the facade so as to frame it visually.

Decorative friezes

Spandrels may be provided over the upper level windows.

Cantilevered sunshades: canopies (also known as "eyebrows")

Cantilevered sunshades for the upper level windows and canopies to provide shade at the street level should be provided. The sunshades may be a continuous line. In corner buildings, the sunshades and canopies may wrap around the building de-emphasizing the corner. Canopies are preferred over awnings.

The canopy shall be a minimum of 8 feet above the sidewalk level. It should project between 6 and 8 feet from the building face but no closer than 3 feet from the street curb.

Upper level Windows

The upper level windows shall be symmetrically arranged. The number of windows shall be based on the storefront modulation (tripartite division) at the street level.

The windows may be combined into pairs, triples or bands. The sill, lintel or surround may be made of stone or plaster.

Mid-floor Panels: Horizontal Banding

At the mid-floor level, the smooth and continuous wall facade may be augmented by metal or plaster moldings that accentuate horizontality. The primary facade sign shall also be located there.

The height of the mid-floor panel shall be at least 2 feet and not more than 3 feet. Proportionally, the mid-floor panel is 15-20% of the height of the street level store front.

Transom Windows

Transom windows above the display windows should be provided. The transom window height depends on the overall floor height and ranges from 2 to 3 feet.

Display Windows

To promote a retail environment, all display windows shall provide a clear view of the store merchandise or a view into the business interior. To achieve this purpose, the greater portion of the window shall remain clear, free from obstructions.

The display windows may either be composed of a single pane of glass or be divided into smaller lights by glazing bars or muntins.

Entrance Door

The entrance door shall be kept simple. Anodized aluminum or stainless steel framed doors with large glass panels are encouraged. Special touches like a period door pull or kickplate are also encouraged. Fake historical or highly decorated contemporary doors are not permitted.

Bulkhead

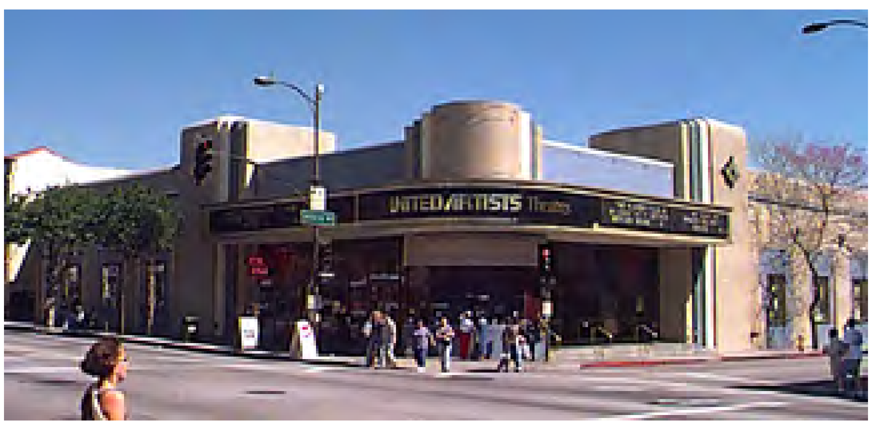
A bulkhead shall be provided at the base of the storefront display window. The height of the bulkhead shall be at least 15" and no more than 24".

See examples in figures 2A.14, 2A.15, and 2A.16)

Vertical molding and facade detailing is typical of the Art Deco era.

Vertical molding in the pilasters, horizontal molding at the parapet line and centralized facade are typical of this era.

Detail of photograph at the left



Corner tower elements and vertical moldings accentuate verticality in this theater building.

Window spandrel detail

Figure 2A.15: 1920's through 1940's Subdistrict – Building Elements Details

9. Materials.

Materials for the Context Buildings and Infill Structures facades shall be derived from the palette of materials used traditionally in Art Deco or Art Moderne buildings.

The following materials shall be used on the facades:

Facade

The facade may be smooth-finish plaster. Ceramic tile, stone, and metal finishes are permitted.

Ornamentation

Window spandrels should be made of one of the following materials: stone, terra-cotta, cast-concrete, aluminum, or stainless steel.

Horizontal Moldings

Horizontal moldings should be made of one of the following materials: stone, aluminum, stainless steel, Formica, chrome, tiles and plaster.

Transom Windows

Transom windows should be made of one of the following materials: clear, tinted, etched or stained glass, glass blocks, or metal grilles.

Display Windows

Display Windows should be made of clear glass. Window frames shall be anodized aluminum or stainless steel.

Entrance Doors

Entrance doors shall be made as transparent as possible. The use of large glass panels is recommended. Doors with anodized aluminum or stainless steel frame with clear glass panels are encouraged.

Bulkheads

Bulkheads shall be made of one of the following materials: stone, aluminum or stainless steel grilles, tiles, plaster, glass block, or Formica.

Restricted Materials

Materials that have no relationship to the architectural themes for the style shall not be permitted. Restricted materials in the 1920's - 1940's Subdistrict include: fake brick, fake river rock, cultured rock, imitation wood siding, antiqued or imitation old brick, oversized brick and white brick mortar, among others.

Period signage and neon lighting create an interesting atmosphere

Neon signage and moldings create horizontality on the facade.

Note the use of a contrasting accent color on the facade moldings, window shade edging and the signage.

Figure 2.A.16: 1920's through 1940's Subdistrict – Lighting and Color Elements

10. Color.

Colors chosen should accentuate the architectural details of the building. Materials used in the buildings provided texture and additional colors to the style. The levels of coloration on the building and the corresponding usage are as follows:

Base Color

The base color is used on the majority of the building surface. It is generally the lightest of the three, often white or buff. The base color is used on the smooth wall surfaces as well as other less visible features.

Trim Color

The trim color is used to accentuate certain elements of the facade such as facade modulations, facade setbacks, spandrels, horizontal moldings, and parapet trim. The color may be provided by the material used: such as an anodized aluminum strip used as a streamlined molding along the facade.

Accent Color

The accent color shall be used to highlight elements such as sun shades or canopies, window sashes and doors, horizontal moldings, string course along the coping of parapet wall, as well as other ornamental details. The accent color should contrast with the base and trim colors and is used sparingly.

Signage Colors

The colors for the graphics shall be derived from the family of colors used on the building itself. The color used for the accent color, trim color on the buildings, is recommended for use as the color of the signs as well.

2A.4.2.3 Example of Facade Rehabilitation in the 1920's through 1940's Subdistrict

An example of the application of the design guidelines for Context Buildings in the 1920's through 1940's Subdistrict is illustrated in figure 2A.17. No historical information is currently available for this building.

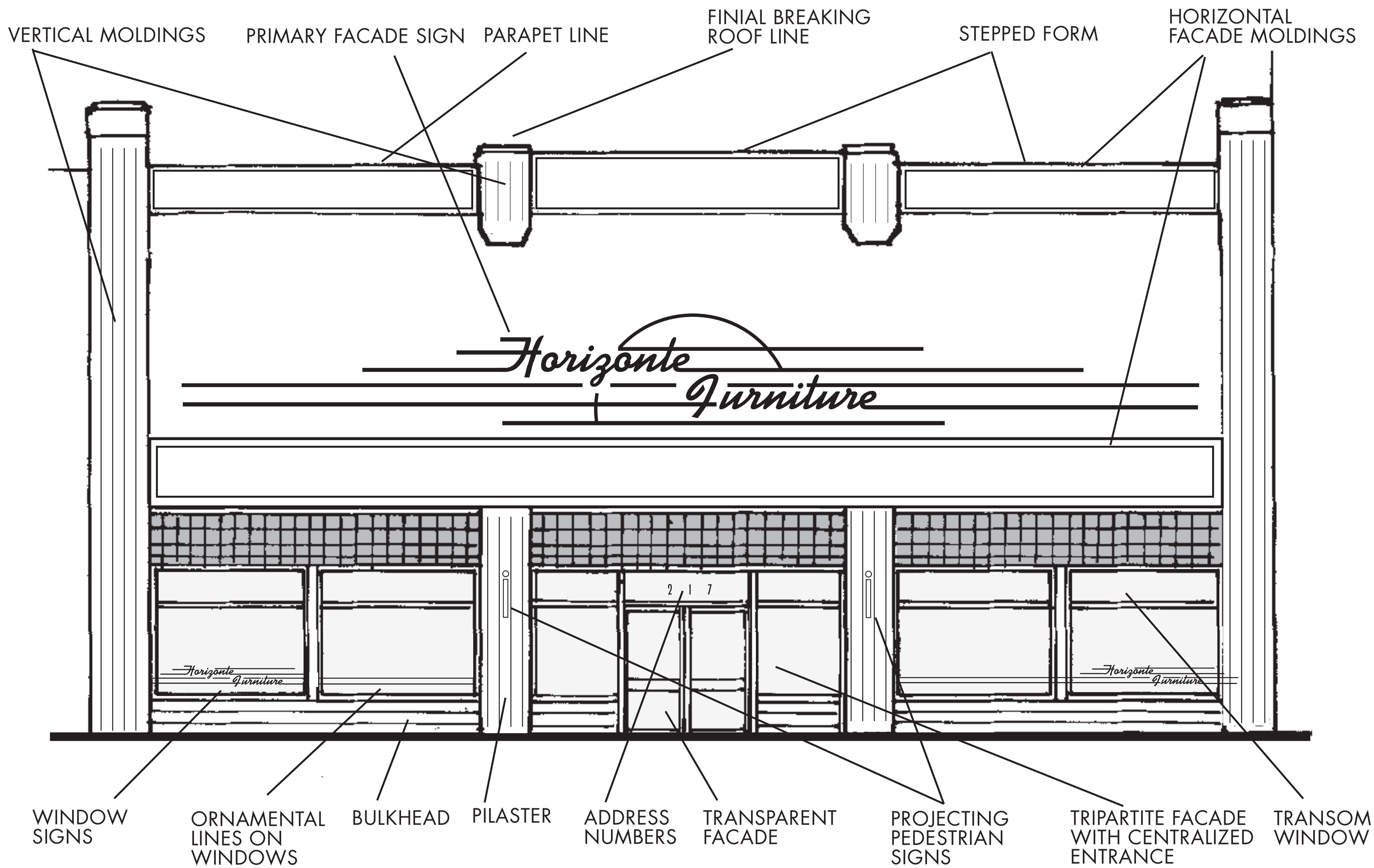


Figure 2.A.17: Context Building in the 1920's through 1940's Subdistrict – Example

2A.4.3 Context Buildings: 1950's (1C) Subdistrict

The 1950's subdistrict labeled 1C in figure 2A.2 on page 19 extends along Euclid Avenue from 'C' Street to 'G' Street on the east side of Euclid and from one building north of 'C' Street to 'G' Street on the west side of Euclid. The buildings in this subdistrict are in the large part built in the 1950's.

Buildings that fall into the 'Designated' or 'Significant' categories in this subdistrict shall follow the guidelines discussed previously in this chapter for those buildings.

The remaining buildings (Context) and new infill buildings shall conform to the Design Guidelines described in this section.

The Context Buildings for the 1950's Subdistrict are intended to be simple derivations of a typical commercial storefront from that period.

2A.4.3.1 1950's styles: Typical Storefront Design

The fifties were the period in America that celebrated the postwar economic boom and consumerism that accompanied the boom.[1] The fifties were also associated with the technological advances associated with the atomic age. Jet travel and its gleaming symbols of space rockets symbolized the futuristic imagery that pervaded the public consciousness.

The fifties architecture built on the Art Deco and Art Moderne architecture of the previous decades. The sleek lines of the Deco and Moderne styles and the use of innovative materials such as glass blocks, aluminum and stainless steel was continued. Other materials such as plastics, recently invented in the thirties, were popularized to the extent that plastics became the fourth largest basic industry in the country.[2]

Organic forms such as spider web suspensions, seashells, branches of trees and soap bubbles influenced the architectural forms in the fifties as much as technological forms such as rockets and jet planes did.

This Subdistrict is most stylistically flamboyant of the three retail subdistricts. The distinction between major architectural details and sign elements was frequently indiscernible in this style. Signs of the 1950's era were visually more important in the overall architectural design of the building than in earlier architectural styles. The name "Googie's," often used for this style of commercial architecture, was from the name of a chain of coffee shops of the era.

The materials used in the fifties ranged from various metals such as aluminum, structural glass, colored glazed bricks, or mosaic tiles. Other materials used extensively were molded plastic, Formica, glass, marble, neon tubes, and chrome.

The 1950's style was characterized by bright colors and contrasting accent colors that demonstrated the style's exuberance. Materials used in the buildings provided texture and additional colors to the style. The animated signage and graphics were the primary conveyors of the visual image of the business. The extensive use of neon lent additional color to the facades, especially at night.

[1] Alan Hess, Googie: fifties coffee shop architecture (San Francisco, CA: Chronicle Books), 1985, p. 33-34.
[2] Ibid., p. 34.

This coffee shop was a remodel of a Big Boy's from the fifties. Note the roof form and signage. This kind of fifties building could only be built as a freestanding structure.

This coffee shop is the original "Googie's" that lent its name to an entire style of commercial architecture in the 1950's.

The neon signage, colorful bulkhead, and projecting sign contribute to the fifties character of this diner.

Note the projecting canopy, the rounded canopy edge, and the facade materials.

Figure 2A.18: 1950's styles Subdistrict – Examples

2A.4.3.2 Design Guidelines for Context Buildings in the 1950's styles Subdistrict

New Infill Structures and Context Buildings shall conform to the following design guidelines in the 1950's styles subdistrict:

1. Building Usage.

All buildings along Euclid Avenue should have retail at the street level and residential or commercial on the upper level(s).

2. Massing.

Six story structures are allowed in the C2 District by the Development Code.

A new structure in a mid-block location shall be built at the property line along the sidewalk to maintain street level retail continuity and shall have no vertical setbacks for the first two stories. A setback of 15 feet shall be required for the third floor and an additional 15 feet setback for the level after that.

Corner buildings may be six stories with no vertical setback at all. The building footprint at the corner shall be limited to 50 feet by 50 feet. The rest of the building shall follow the massing guidelines for a mid-block building. (See figure 2A.19)

New infill structures should be simple forms with strong roof elements.

3. Setbacks.

The zero setback line shall be maintained at the street level.

4. Storefront Modulation.

The building facade may be asymmetrically organized. A typical storefront module shall range from 25 to 30 feet with a 8 foot bay modulations.

Buildings wider than two modules (50-60 feet) shall have a different modulation. These buildings shall either repeat the basic three-bay module of 25 to 30 feet or increase the number of bays while keeping the individual bay width to 8 to 10 feet.

Buildings wider than 120 feet should be visually broken into two buildings in terms of the facade treatments to prevent a building from overpowering the block in terms of scale.

5. Entrances.

Corner entrances are encouraged in corner buildings. Rear entrances for both the retail and upper levels are encouraged. If street side entrances are provided for the upper levels, the width of the entry shall be limited to 15 feet at the street level to maintain retail continuity.

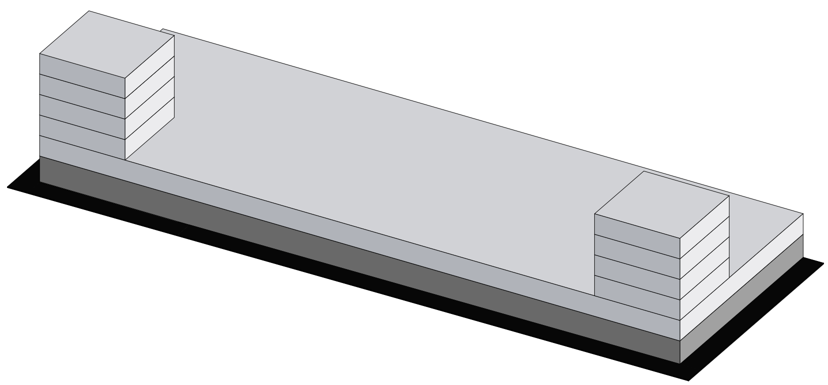
6. Roof Design.

Visible sloped roofs are permitted in this subdistrict. The Planning Department shall review the designs for all visible sloping roofs prior to approval .

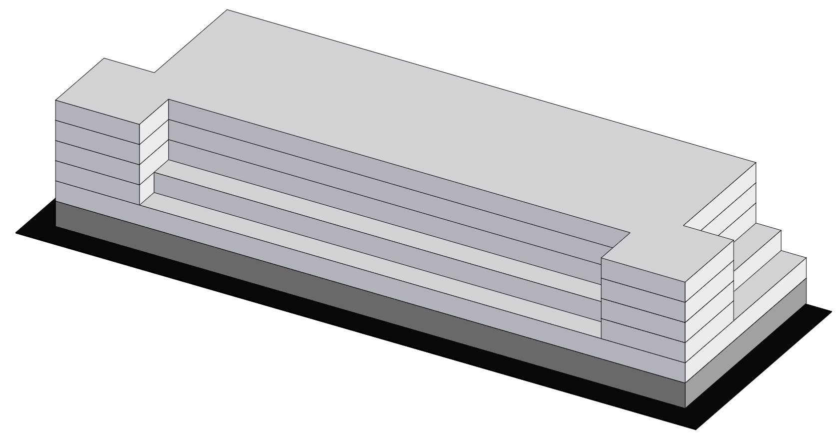
7. Mechanical Equipment.

Mechanical equipment mounted on the roof as well as electrical and plumbing equipment should be screened from the view of pedestrians and users of nearby buildings. Roof equipment should be screened by the building parapet. If building parapets do not provide adequate screening of mechanical equipment from upper floors of adjacent buildings, screening shall be installed as an integral part of the overall architectural design, and painted such a color as to allow its blending with its visual background.

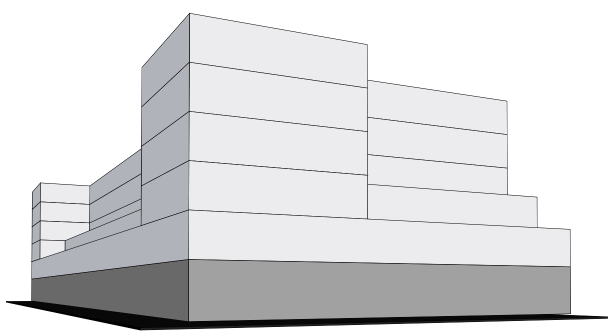
Please refer to the City of Ontario Development Code for further information on screening of mechanical equipment.



Stage 1: Block massing diagram that depicts the mid-block minimum 2 story with no setback requirement and the allowed 6 story, 50 feet by 50 feet corner tower.



Stage 2: Block massing diagram that depicts the mid-block minimum 2 story with no setback requirement; required 15 foot setback for the next floor; the required additional 15 foot setback for the next floor; and the allowed 6 story, 50 feet by 50 feet corner tower.



View of Stage 2 from eye level. Note that the top four levels are barely visible; the lower three levels dominate the pedestrian's view.

Note: The purpose of these massing diagrams is to depict appropriate massing techniques and setback requirements; they are not intended to describe storefront modulation or other architectural design treatment.

Figure 2A.19: 1950's styles Subdistrict – Building Massing Diagrams

8. Building Elements.

A commercial building in this subdistrict shall have the following typical elements:

Roof: roof-signs, overhangs
Upper level windows
Mid-floor panel : Horizontal banding
Transom windows
Display windows
Entrance door
Bulkhead

Roof

The parapet line may not be horizontal. Roof-signs that project beyond the parapet line shall be allowed. The facade itself may be stepped away from the street line to accentuate the qualities of lightness and rhythm. The parapet line shall be accentuated by a simple molding. Grilles and metal panels that project beyond the parapet line shall be allowed.

Cantilevered sunshades: canopies

In a single story structure, the roof overhang may be used to provide shade at the street level. In two-story structures, cantilevered sunshades for the upper level windows and canopies to provide shade at the street level may be provided. The sunshades may be a continuous line. In corner buildings, the sunshades and canopies may wrap around the building de-emphasizing the corner. Canopies are preferred over awnings.

The canopy shall be a minimum of 8 feet above the sidewalk level. It should project between 6 and 8 feet from the building face but no closer than 3 feet from the street curb.

Mid-floor Panels: Horizontal Banding

At the mid-floor level, the smooth and continuous wall facade may be augmented by metal or plaster moldings that accentuate horizontality. The primary facade sign shall also be located there.

Windows and Entrances

The storefront shall be mostly transparent to aid views inside to the merchandise. The storefront entrance may not be centered on the facade. Large expanses of glass with steel or aluminum mullions are encouraged. Transom windows and bulkheads shall be provided.

Transom Windows

Transom windows above the display windows should be provided. The transom window height depends on the overall floor height and ranges from 2 to 3 feet.

Display Windows

To promote a retail environment, all display windows shall provide a clear view of the store merchandise or a view into the business interior. To achieve this purpose, the greater portion of the window shall remain clear, free from obstructions.

The display windows may either be composed of a single pane of glass or be divided into smaller lights by glazing bars or muntins.

Entrance Door

The entrance door shall be kept simple. Anodized aluminum or stainless steel framed doors with large glass panels are encouraged. Special touches like a period door pull or kickplate are also encouraged. Fake historical or highly decorated contemporary doors are not permitted.

Bulkhead

A bulkhead shall be provided at the base of the storefront display window. The height of the bulkhead shall be at least 15” and no more than 24”.

Roof signs that are good examples from the 1950's time-period.

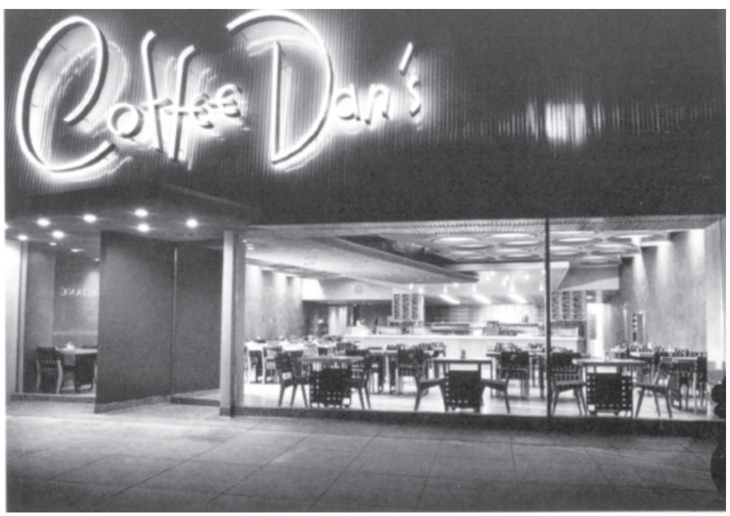


Figure 2A.20: 1950's styles Subdistrict Building Elements – Roof Signs

9. Materials.

Materials for the Context Buildings and Infill Structures Facades shall be derived from the materials used traditionally in Fifties buildings.

Facade

The facade should be smooth-finish plaster. Surface sheathings of any of the following materials are permitted: stone, aluminum, sheet metal, stainless steel, Formica, chrome, tiles and plaster.

Horizontal Moldings

Horizontal moldings shall be made of one of the following materials: stone, aluminum, sheet metal, stainless steel, Formica, chrome, tiles and plaster.

Transom Windows

Transom windows shall be made of one of the following materials: clear, tinted, etched or stained glass, glass blocks, or metal grilles.

Display Windows

Display Windows shall be made of clear glass. Window frames shall be anodized aluminum or stainless steel.

Entrance Doors

Entrance doors shall be made as transparent as possible. The use of large glass panels is recommended. Doors with anodized aluminum or stainless steel frame with clear glass panels are encouraged.

Bulkheads

Bulkheads shall be made of one of the following materials: stone, aluminum or stainless steel grilles, sheet metal, tiles, plaster, glass block, or Formica.

Quality of Materials

It must be noted that even though most of the materials used in Fifties buildings were relatively inexpensive; cheap-looking and flimsy materials shall not be allowed. The review of the facade design by city staff and/or a Design Review Board shall include material quality.

8. Color.

Colors chosen shall accentuate the architectural details of the building. Materials used in the buildings shall also provide texture and additional colors. However, color in the large part shall be provided by graphics and lighting.

The levels of coloration on the building and the corresponding usage are as follows:

Base Color

The base color used on the majority of the building surface shall generally be the lightest of the three. The base color shall be used on the smooth wall surfaces as well as other less visible features.

Secondary Color

The secondary color shall be used to accentuate certain elements of the facade such as facade modulations, facade setbacks (recessed elements), spandrels, horizontal moldings, and parapet trim. The color may be created by the material used.

Accent Color

The accent color shall be used to highlight elements such as sun shades or canopies, window sashes and doors, horizontal moldings, string course along the coping of parapet wall, as well as other ornamental details.

Signage Colors

The colors for the graphics should be derived from the family of colors used on the building itself. The color used for the accent color, trim color on the buildings, is recommended for use as the color of the signs as well.

2A.4.3.3 Example of Facade Rehabilitation in the 1950's styles Subdistrict

An example of the application of the design guidelines for Context Buildings in the 1950's styles Subdistrict is illustrated in figure 2A.19. No historical information is currently available for this building.

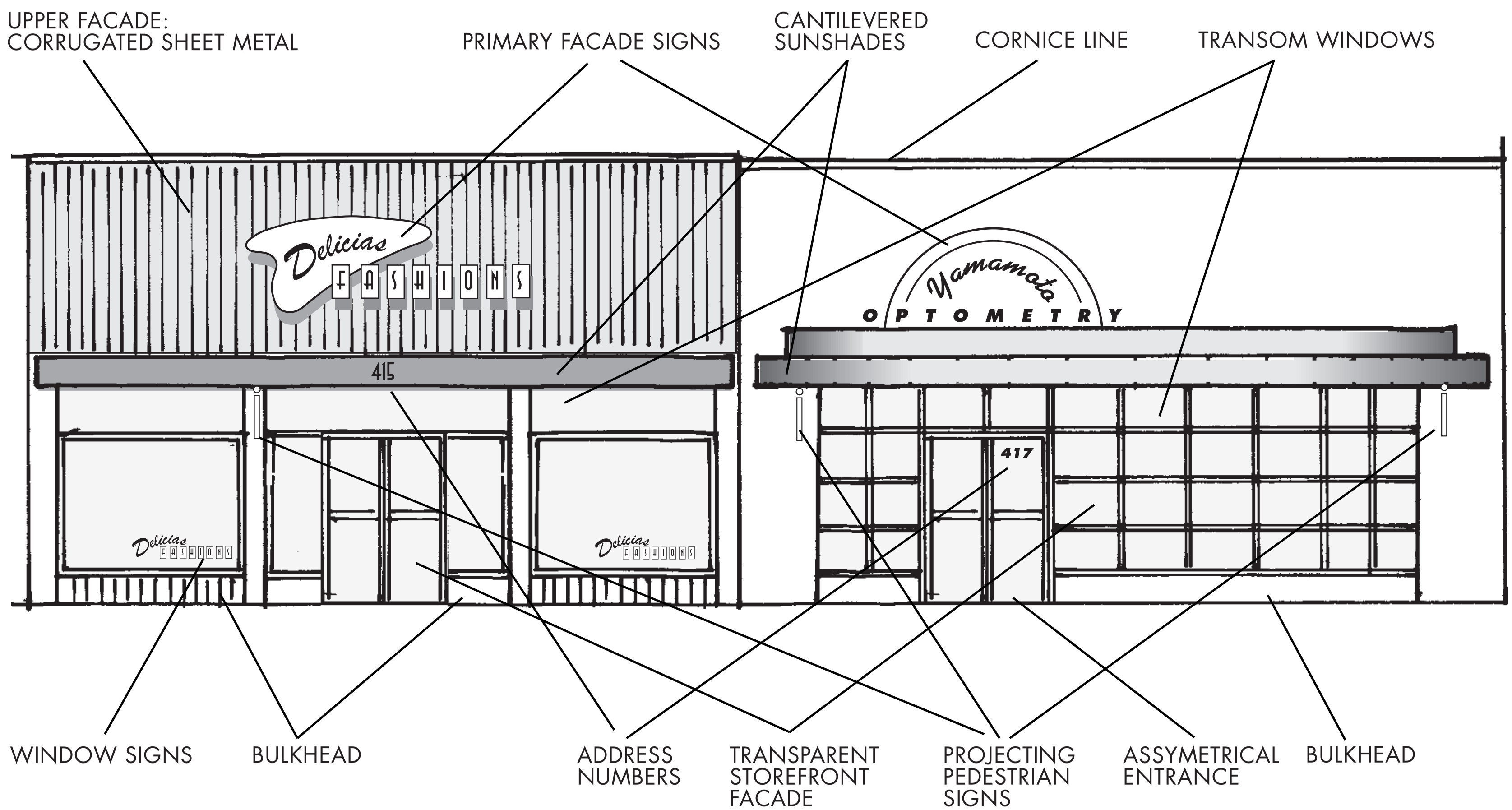


Figure 2A.21: Context Building in 1950's styles Subdistrict – Example

2A.5 Alley Walkways

The following guidelines shall be followed in the renovation of the alley walkway facades:

2A.5.1 Building

1. Enhance historic building form by retaining steeped parapet profile and all window openings.
2. Repair and retain historic exterior security grilles. Remove non-historic grilles.
3. Repair exposed building roof drains and make them a distinct positive architectural element of the building.
4. Restore exposed brick surfaces with approved cleaning process. Heavily damaged brick may be painted to enhance visual impact of facade from back street.
5. Provide inviting transitional elements (ramps, stairways, etc.) to accommodate changes in floor elevations between alley and building.
6. Provide inviting doors and repair windows to promote visually enticing image.

Please refer to the signage, lighting, and landscape sections for additional details.

2A.5.2 Rear Entries

1. Provide distinct building entry and facade lighting
2. Provide inviting doors and repair windows to promote visually enticing image.
3. Enhance rear-entry with distinct elements such as awnings and canopies that complement the historic form of the building.
4. Remove all inappropriate awnings. Replace with new awnings and signage.
5. Provide inviting transitional elements (ramps, stairways, etc.) to accommodate changes in floor elevations between alley and building.

Please refer to the signage, lighting, landscape and alley walkways sections for additional details.

2A.5.3 Outdoor Dining

1. Utilize vacant space between building and alley right-of-way with well defined exterior entry or dining patios.

Please refer to Section 2A.7 on page 64 for additional details.

2A.5.4 Utilities

1. Consider 1 or 2 common trash compactors to serve the refuse needs of each block. Individual trash dumpsters should be grouped in common areas disguised by enclosures and landscaping.
2. Repair exposed building roof drains and make them a distinct positive architectural element of the building.

2A.5.5 Landscape

1. Consider 1 or 2 common trash compactors to serve the refuse needs of each block. Individual trash dumpsters should be grouped in common areas disguised by enclosures and landscaping.
2. Utilize vacant space between building and alley right-of-way with well defined exterior entry or dining patios.

Please refer to Chapter 2B starting on page 72 for additional details.

2A.5.6 Signage

1. Develop distinctive exterior signage identifying store.
2. Remove all inappropriate awnings. Replace with new awnings and signage.
3. Enhance rear-entry with distinct elements such as awnings and canopies that complement the historic form of the building.

2A.5.7 Lighting

1. Provide distinct building entry and facade lighting.

Enhance historic building form by retaining stepped parapet profile and all window openings.

Repair and retain historic exterior security grilles. Remove non-historic grilles.

Develop distinctive exterior signage identifying store.

Enhance rear entry with distinct elements, such as awnings and canopies which complement the historic form of building.

Provide inviting transitional elements (ramps, stairways, etc.) to accommodate changes in floor elevations between alley and building.

Group exposed utility lines and meter boxes into common areas disguised by architectural elements.

Provide inviting doors and repair windows to promote visually enticing image.

Utilize vacant space between building and alley right-of-way with well defined exterior entry or dining patios.

Restore exposed brick surfaces with approved cleaning process. Heavily damaged brick may be painted to enhance visual impact of facade from back street.

Repair exposed building roof drains and make them a distinct positive architectural element of the building.

Provide distinct building entry and facade lighting.

Consider 1 or 2 common trash compactors to serve the refuse needs of each block. Individual trash dumpsters should be grouped in common areas disguised by enclosures and landscaping.

Remove all inappropriate awnings. Replace with new awnings and signage.

Figure 2.A.22: Alley Walkways – Elements

2A.6 Mid-block Pass-throughs in Private Structures

Mid-block pass-throughs in private structures are encouraged to facilitate ease of pedestrian circulation from parking areas along the Alley Walkways to Euclid Avenue retail frontages. Mid-block pass-throughs can increase retail exposure for building owners. However, they can also reduce leasable area. Therefore, the City will not include permanently designated pass-throughs within a building in the calculation of required parking.

The following guidelines shall be followed relative Mid-block Pass-throughs:

1. **Width:** The pass-throughs shall be a minimum of 6 feet wide.
2. **Height:** The pass-throughs shall be a minimum of 8 feet tall.
3. **Exposure to adjacent retail or dining areas:** A minimum of 50% of the wall length shall be visible from adjacent retail or dining for pass-throughs located at one property line. This 50% requirement shall also apply to both sides of a pass-through located apart from a property line.

Prominent and distinct building identification signage.

Distinctive enhanced facade lighting.

Enhanced rear entry landscaping.

Inviting transitional elements between the alley and interior floor levels.

Prominent signage scaled to building facade.

Distinct new facade with architectural elements which relate to the historic fabric of the existing building.

Distinctive yet simple entry awnings.

Alley elements retained and enhanced within alley "look".

Retained and enhanced roof drainage elements.

Distinctive signage identifying the use.

Historic form of facade retained and enhanced with inviting doors and repaired windows.

Clearly defined exterior dining patio in space between building and alley.

Figure 2A.23: Alley Walkways and Mid-block Pass-throughs – Elements

2A.7 Outdoor Dining

Ontario's climate is well suited for outdoor dining. The provision of outdoor dining in the historic retail area of Downtown will add interest, vitality and contribute to the reality and perception of safety and security.

2A.7.1 Definition

"Outdoor Dining Space" is an area adjacent to a street level eating or drinking establishment, and is located within the sidewalk area of the public right-of-way, and is defined by a barrier which separates the dining area from the remainder of the sidewalk, in place during hours of operation, and is used exclusively for dining, drinking and circulation therein. Outdoor dining may be provided with either self-service or waiter/waitress service.

2A.7.2 Design Guidelines for Outdoor Dining Spaces

The following guidelines shall be followed relative to Outdoor Dining Spaces:

1. **Street Frontage Locations.**

   Outdoor Dining shall be permitted within the public sidewalk rights-of-way along Euclid Avenue between Holt Boulevard and 'G' Street subject to the clear widths available. (See 4 below)

2. **Alley Walkway Locations.**

   Outdoor Dining shall be permitted within private property adjacent to the public alley walkways that parallel Euclid Avenue between Holt Boulevard and 'G' Street.

3. **Adjacency to Buildings.**

   Outdoor Dining within the public sidewalk rights-of-way shall be located immediately adjacent to the buildings with the pedestrian path immediately along the curb.

4. **Maintenance of Clear Passage.**

   Outdoor Dining within the public sidewalk rights-of-way shall maintain a clear pathway, free from all obstructions, for pedestrians not less than 6' - 8' depending on the exact sidewalk width and extent of pedestrian activity in the streetscape segment.

   For purposes of calculating the clear pathway dimension, trees, traffic signs, meters, and all similar obstacles shall count as obstructions. Exact clear pathway requirement shall be defined by City Staff, within this range, on a case-by-case basis.

   Exemption to the minimum requirements may be granted by the Planning Commission based on the particular site conditions.

5. **Demarcation of Storefront Dining Areas.**

   The outdoor dining area adjacent to the building shall be demarcated by barriers such as railings, fencing, or a combination of railings or fencing, and landscaping in planter boxes, or movable bollards. No solid walls shall be allowed.

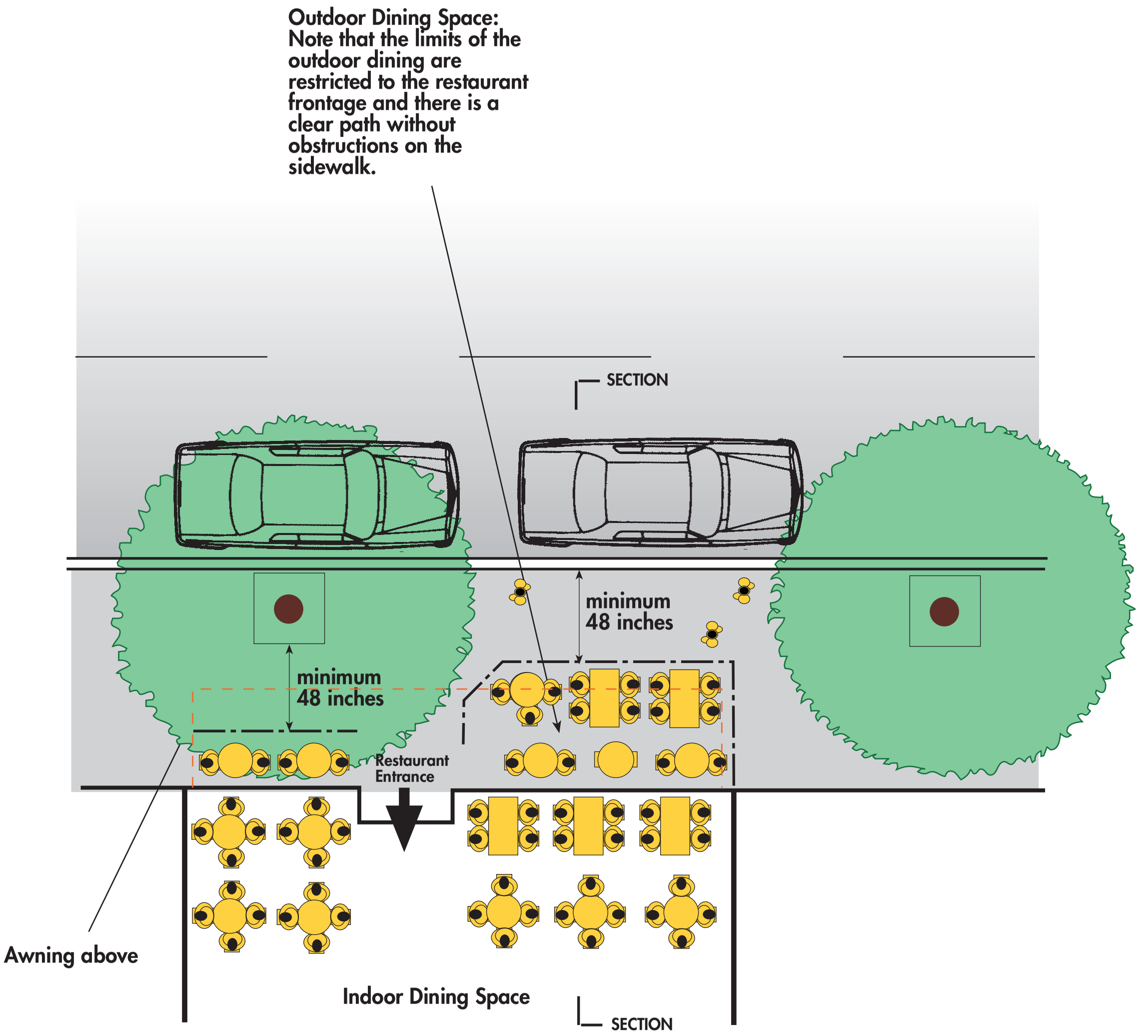
   All the outdoor barriers shall be movable and removed from the sidewalk at the close of the business establishment daily. Some discretion in terms of pots and planters placed directly adjacent to the building facade shall be allowed.

6. **Demarcation of Alley Walkway Dining Areas.**

   The outdoor dining area adjacent to the Alley Walkways shall be demarcated by either temporary or permanent boundary definers such as railings, fencing, or a combination of railings or fencing, and landscaping in planter boxes, or movable bollards.

7. **Outdoor Dining within arcades along sidewalk rights-of-way or alley walkways**

   The provision of a dining space in a covered arcade that is open to the sidewalk is permit-



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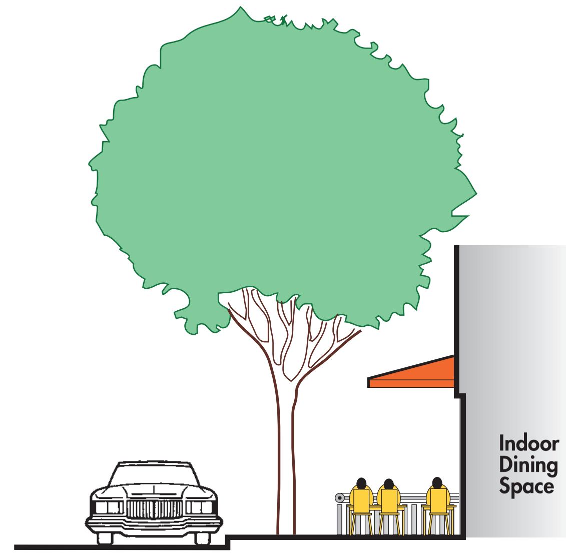


SECTIONAL VIEW

Figure 2A.24: Typical Layout of Outdoor Sidewalk Dining Space ted as long as the architectural integrity of the facade is maintained in conformance with the other sections of these Design Guidelines.

8. Windows or Doors to Outdoor Dining along sidewalk rights-of-way or alley walkways.

The provision of windows and doors from indoor dining areas that open to the sidewalk or alley walkway is permitted and encouraged as long as the architectural integrity of the facade is maintained in conformance with the other sections of these Design Guidelines and the open doors and windows do not obstruct the pedestrian right-of-way.

9. Materials.

The style and materials of the barriers that demarcate the outdoor dining space should be compatible in color and finish with the adjacent structure and approved by City Staff.

10. Hours of Operation.

The outdoor dining space hours of operation shall be limited to the hours of operation of the associated dining establishment.

11. Maintenance of Outdoor Dining Furniture.

Outdoor dining furniture shall be maintained to be safe, sanitary and attractive at all times.

12. Conformance to ADA and Title 24 requirements.

All outdoor dining areas shall conform to federal and state requirements as per the Americans with Disability Act and California Title 24 Accessibility Guidelines. All other requirements per the City Engineering and Building Departments shall also be addressed.

See figure 2A.24 for a typical layout of an outdoor sidewalk dining space and figure 2A.25 for examples of existing outdoor dining in Pasadena, CA.

Removable bollards demarcate the dining space. Potted plants and temporary sun-umbrellas are used to create a pleasant ambience.

Removable metal fencing is used to demarcate the dining space. Planters and temporary sun-umbrellas create an attractive environment.

A dining patio on private property adjacent to the sidewalk along Colorado Boulevard is demarcated with metal fencing. Plantings and temporary sun-umbrellas are used.

Removable bollards demarcate the dining space. Shade is provided by the retractable canopy overhead.

A private outdoor dining patio is created facing the alley. Trees, planters and temporary sun-umbrellas are used to create a pleasant ambience.

Figure 2A.25: Examples of Outdoor Dining Spaces

2A.8 Adding Leasable Area to Existing Buildings in the Historic Retail Area

Addition of leasable space to existing buildings in the Historic Retail area between Holt Boulevard and 'G' Street is permitted. The purpose of allowing such additions is to enhance the economic performance of the structures in order to add to the financial feasibility of projects and to add to the economic vitality of the overall Downtown.

2A.8.1 Design Guidelines for adding leasable areas

The following guidelines shall be followed relative to adding Leasable Area:

1. **Types of Added Space Allowed:** The following types of additions are allowed.

A. Additional Space by **Basement Excavation**

Existing basements may be excavated to increase their ceiling heights.

B. Additional Space by **Story Addition**

One additional story may be added to a structure provided that such addition is setback from the storefront facade a minimum of fifteen feet after the third story.

C. Additional Space by Building **Expansion** adjacent to Alley Walkway.

Please refer to figure 2A.26.

2. **Building Integrity Requirements**: Any of the above types of additions shall be done in conformity with the Design Guidelines for building appearance contained in the rest of this document. The Secretary of Interior Standards shall be applied as noted elsewhere in these Guidelines.

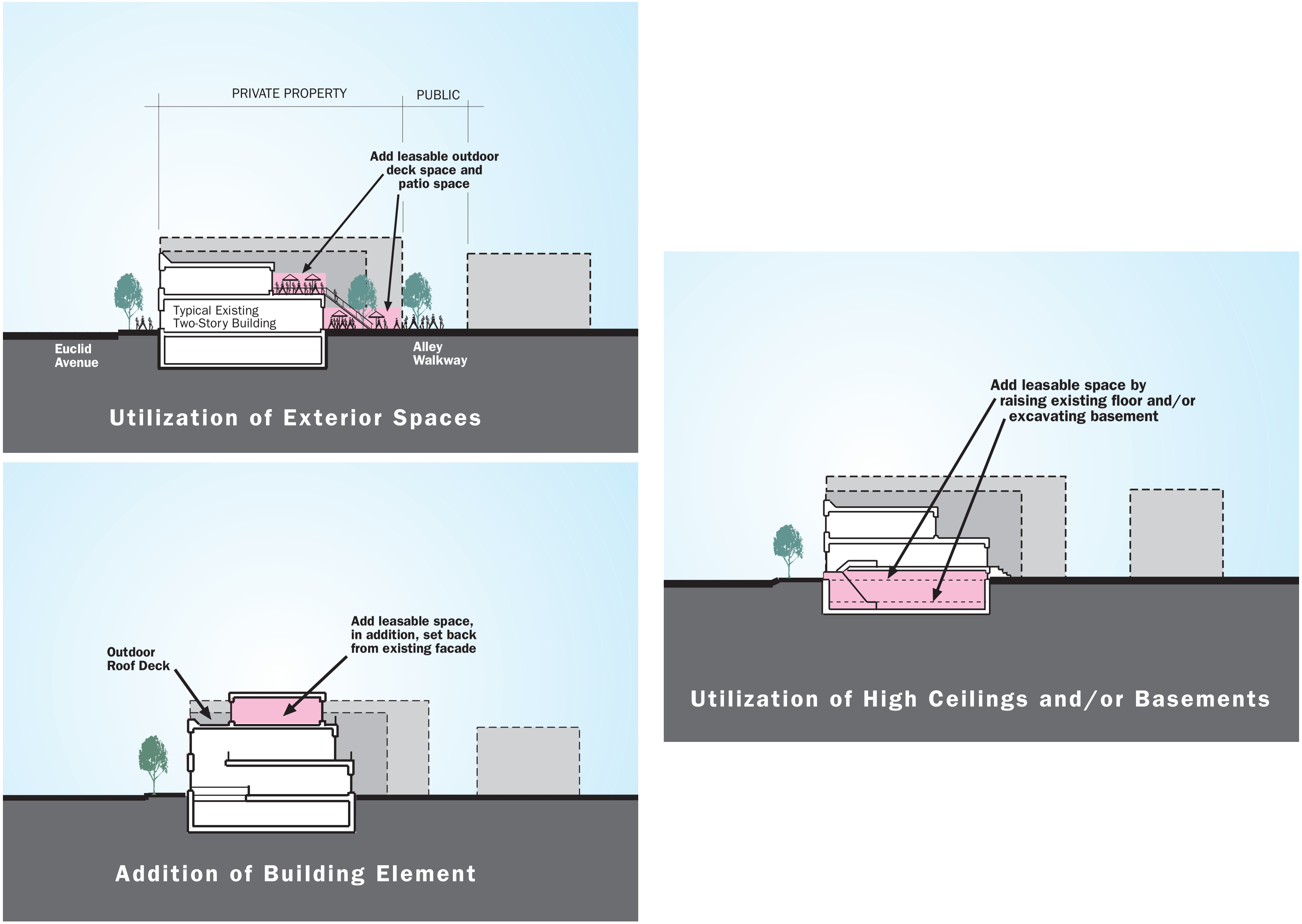


Figure 2A.26: Diagrams showing addition of leasable space to existing buildings

Landscape Design Guidelines

Landscape plays an important role in creating an attractive downtown environment. Street trees and planters in the public right-of-way should be supplemented by landscaping on the adjacent private properties.

The following design guidelines should be followed with respect to landscape in the retail districts within Downtown Ontario.

2B.1 Street Sidewalk

Street Landscape

Street trees create a rhythm along the street as well as provide shade. Smaller landscape elements can help define spaces such as outdoor dining areas on the sidewalk. Flower pots can also add interesting color and life to the street activity.

Figure 2B.1 shows examples of flower pots and planter boxes.

Outdoor Dining

The outdoor dining areas shall be temporary, i.e., outdoor seating on the sidewalk shall be removed overnight. The outdoor dining areas can use flexible planting systems including potted plants and planter boxes to create a buffer between the diners and pedestrians. Please refer to the Outdoor Dining Design Guidelines for illustrations on creating sidewalk dining spaces.

2B.2 Alleys

Blank Walls

The blank facades of buildings on the alleys can be softened with the use of landscape. There are two types of vines that may be used to achieve that appearance:

1. **Clinging vines:** These vines are often non-flowering and can either be evergreen or deciduous. These vines cling to the wall surface and grow without additional support. They require planting pits of a minimum of 3 square feet openings in the pavement. The width of the planting pit may be as narrow as 18" in front of the wall. A width of 3 feet is recommended.

   If the building abuts the property line, clinging vines are recommended. If more space is available, flowering vines may be used.

2. **Vines that need support:** These vines may twine or need to be tied to a support structure such as a wooden trellis frame. They may be deciduous or evergreen and are mostly flowering. They need a minimum planting pit of 3 square feet. The planting pit should be at least 2 feet wide in front of the wall. A width of 3 feet is recommended. If more space within the property limits is available, small shrubs and trees that silhouette against the blank walls may be grown.

   If close to the property line, care to prevent damage to the plantings should be taken. Final approval of the planting design shall be granted by the Planning Staff.

Outdoor Dining

The outdoor dining areas along the alley of the buildings may be permanent. The restaurant owner has more opportunities to create a pleasant, sheltered, patio-like outdoor dining space.

Besides potted plants and planter boxes, the use of small trees, shrubs and flowering vines on trellises and pergolas is encouraged.

Landscape Elements

Potted plants and planter boxes within the property should be used to mark rear entries to the business.

Alleys and Parking Lots Screens

If there is a parking lot across the alley, high-branching shade trees along the edge of the parking lot are recommended to shade the alley and shrubs to aid in screening the lots. Low growing shrubs should be planted where visibility for safety is needed and taller growing shrubs in areas where screening is needed and safety is not an issue.

If space within property limits is available, shrubs should be used to screen off the alley.

Trash Enclosures and Utilities

Grouping of trash containers and electrical transformers is strongly encouraged. If pos-

Palette of pots and planters for use in the mid-block passthroughs, rear outdoor dining areas, and rear entries.

Figure 2B.1: Palette of Landscape Elements sible, these should be fenced around to remove from view. Vines should be grown around these fenced enclosures to soften their appearance. Shrubs may be used as screening if there is space for planting areas around the enclosure.

2B.3 Mid-block Pass-throughs

Blank walls

The blank facades of buildings along mid-block pass-throughs can be softened with the use of landscape. The two types of vines recommended for alleys may also be used to achieve that appearance:

Clinging vines

Vines that need support

Outdoor dining

The outdoor dining areas along mid-block pass-throughs may be permanent. The restaurant owner has more opportunities to create a pleasant, sheltered, patio-like outdoor dining space.

Besides potted plants and planter boxes, the use of small trees, shrubs and flowering vines on trellises and pergolas are encouraged.

Landscape Elements

Potted plants and planter boxes within the property should be used to mark side entries to the business.

2B.4 Palette of Landscape Materials

The following information is a very brief sampling of landscape materials for use in the Retail Districts. This is not an encompassing list; the plant types listed are among the more commonly used plants in retail areas in Southern California.

2B.5 Maintenance

The business owner shall maintain the landscape materials in good condition. Regular removal of dried plant materials, regular pruning and watering shall be undertaken.

2B.6 Design Review Process

The business owner shall go through the regular approval process as detailed in Chapter 3: Deisgn Review Process.

The following information shall be submitted to the City Planning Dept. for review:

1. Planting Plan.

2. Irrigation Plan.

3. Encroachment Permit requirements.

COMMON NAME	SCIENTIFIC NAME	FLOWERING CHARACTERISTICS	EVERGREEN/ DECIDUOUS
Coolibah	*Eucalyptus microtheca*	Inconspicuous creamy white flowers	Evergreen
Nichols Willowleaf Peppermint	*Eucalyptus nicholii*	Small creamy white flowers in summer	Evergreen
Silver Dollar Gum	*Eucalyptus polyanthemos*	Small creamy white flowers in spring and summer	Evergreen
Australian willow	*Geijera parviflora*	Small cream colored flowers in summer	Evergreen
Maidenhair tree	*Ginkgo biloba*	Golden yellow leaves in fall	Deciduous
Jacaranda	*Jacaranda mimosifolia*	Lavender-blue flowers in the spring	Partially deciduous
Chinese Flame Tree	*Koelreuteria bipinnata*	Small yellow summer flowers	Deciduous
Chinese Pistache	*Pistachia chinensis*	Bright red fruit. Non-showy flowers	Deciduous
Victorian Box	*Pittosporum undulatum*	Long creamy white flowers in early spring	Evergreen
Fern Pine	*Podocarpus gracilior*	Very small and inconspicuous flowers	Evergreen
Ornamental Pear	*Pyrus calleryana*	Clustered white in spring	Semi-evergreen
London Plane tree	*Platanus spp.*	Inconspicuous spring flowers	Deciduous
Holly Oak	*Quercus ilex*	Cream-colored catkins	Evergreen
Sawleaf Zelkova	*Zelkova serrata*	Inconspicuous spring flowers	Deciduous

Table 2B.1: Palette of Shade Trees

COMMON NAME	SCIENTIFIC NAME	FLOWERING CHARACTERISTICS	EVERGREEN/ DECIDUOUS
Manzanita	*Arctostaphylos 'Howard Mchinn'*	Waxy, bell-like, winter flower	Evergreen
Rock Rose	*Cistus hybridus*	White with yellow center spring flower	Evergreen
Hopseed Bush	*Dodonea viscosa 'purpurea'*	Insignificant flowers, purple leaves	Evergreen
Escallonia	*Escallonia 'newport dwarf'*	Deep pink flowers spring – fall	Evergreen
Lantana	*Lantana camara*	Red, yellow, orange flowers in spring or summer	Evergreen
Oregon Grape	*Mahonia aquifolium*	White summer flower, blue berries	Evergreen
Dwarf Myrtle	*Myrtus communis 'compacta'*	White summer flower, blue berries	Evergreen
Oleander	*Nerium oleander 'Petite Salmon'*	Salmon-colored summer flowers	Evergreen
New Zealand Flax	*Phormium*	Red or yellow flowers in long clusters	Evergreen
Mock Orange	*Pittosporum tobira*	Fragrant cream-colored spring flowers	Evergreen
Indian Hawthorne	*Rhaphiolepis indica*	Pink or white spring flowers	Evergreen
Rosemary	*Rosmarlnus officinalis*	Blue, winter or spring flowers	Evergreen
Westringia	*Westringia fruticosa*	white flowers in winter or spring	Evergreen
Xylosma	*Xylosma congestum*	Insignificant flowers	Evergreen

Table 2B.2: Palette of Shrubs

COMMON NAME	SCIENTIFIC NAME	SUN NEEDS	FLOWERING CHARACTERISTICS	EVERGREEN/ DECIDUOUS
Manzanita	*Arctostaphylos 'Carmel Sur' & 'John Dourey'*	Sun	Waxy, bell-like, winter flower	Evergreen
Rock Rose	*Cistus salvifolius*	Sun	White spring flower	Evergreen
Lantana	*Lantana montevidensis*	Sun	Purple or white spring and summer flower	Evergreen
Oregon Grape	*Mahonia 'repens'*	Shade	Yellow winter flower, blue berries	Evergreen
Dwarf Rosemary	*Rosmarinus 'prostatus'*	Sun	Blue winter and spring flower	Evergreen
Star Jasmine	*Trachelospermum jasminoides*	Sun/shade	White scented spring flower	Evergreen

Table 2B.3: Palette of Ground Covers

COMMON NAME	SCIENTIFIC NAME	FLOWERING CHARACTERISTICS	EVERGREEN/ DECIDUOUS
Peppermint tree	*Agonis flexuosa*	Small white, early summer flower	Evergreen
Silk Tree	*Albizia julibrissin*	Pink fluffy summer flower	Evergreen
Lemon Bottlebrush	*Callistemon citrinus*	Red brushes, year round	Evergreen
Desert Willow	*Chilopsis linearis*	Pink, white, lavender trumpets	Evergreen
Bronze Loquat	*Eriobotrya deflexa*	Creamy white spring flower	Evergreen
Goldenrain Tree	*Koelreuteria paniculata*	Yellow summer flower	Deciduous
Crape Myrtle	*Lagerstroemia indica*	White, pink, rose, and lavender flowers in summer	Deciduous
Sweet Bay	*Laurus nobilis 'Saratoga'*	Yellow spring flower	Evergreen

Table 2B.4: Palette of Flowering Accent Trees

COMMON NAME	SCIENTIFIC NAME	SUPPORT REQUIREMENTS	FLOWERING CHARACTERISTICS	EVERGREEN/ DECIDUOUS
Evergreen Clematis	*Clematis armandil*	Needs support	White spring flower	Evergreen
Lavender Trumpet Vine	*Clytostoma callisteglodes*	Needs support	Purple spring flower	Evergreen
Creeping Fig	*Ficus repens*	No support	No flower	Evergreen
Carolina Jessamine	*Gelsemium sempervirens*	Needs support	Yellow flower early spring	Evergreen
Hardenbergia	*Hardenbergia violacea*	Needs support	Purple spring flower	Evergreen
Algerian Ivy	*Hedera canariensis*	No support	No flower	Evergreen
Cat's Claw Vine	*Macfadyena unguls-cati*	No support	Yellow spring flower	Deciduous
Boston Ivy	*Parthenocissus tricuspidata*	No support	No flower, red fall color	Deciduous

Table 2B.5: Palette of Vines

Sign Design Guidelines

2C.1 Background

The purpose of the following sign design guidelines is to:

- improve the attractiveness and orderliness of the Downtown Retail District's building signs,
- appropriately identify the business being conducted on the site in a manner that is harmonious with an improving image for the retail district; and
- to prevent the loss of visual prominence resulting from excessive or inappropriate signs on nearby sites.

As in the architectural design guidelines, utilizing the history of the district has been selected as the most practical and marketable visual strategy for the long term improvement of the area.

These Sign Design Guidelines are for exterior signs on existing buildings as well as future new infill structures only. They are solely concerned with aesthetic appearance.

They are specifically not intended to contain any recommendations about the structural integrity or safety of any sign installation. The business owner and their subcontractor must comply with all city building and safety codes, regulations, ordinances, permits and inspections relevant to fabrication and installation of any sign.

Please note that the Development Code contains Sign Standards for all other portions of the Project Area that are not covered in this document. Those areas shall be governed by the standards for the underlying Zoning Districts. Please refer to the Development Code for standards not covered in these Sign Design Guidelines.

2C.2 Glossary of Terms

Awning Valance Sign: a screen printed sign applied to the narrow vertical fabric panel at the lowest and front-most edge of a fabric awning.

Color Palette: a selection of preferred harmonious colors.

Content: the information or message of the sign.

Gold leaf: a sign maker's product, extremely thin sheets of pure gold which are valued for their long lasting ability not to tarnish or discolor.

Letter Area: the space within a rectangle drawn around all the letters in a sign.

Letter Stroke Widths: the width of the individual parts of the letter.

Letter style: the design of the alphabet. Goudy, Bodoni, Cheltenham, Helvetica and Futura are names of commonly used letter styles.

Mid-block pass-through: a public exterior or interior pedestrian corridor connecting the street frontage to the rear parking area.

Mounting: the means of installing or attaching the sign to the building.

Placement Area: the largest flat plane of the facade. In the 1950's styles Subdistrict only, a large area of facade covered by a uniform patterned, textured, embossed or perforated decorative material may be considered as the Placement Area.

Primary Facade Sign: this is the visually dominant wall mounted and lighted required sign on the building's street frontage which identifies only the primary business in the building with street level frontage. The information message of a Primary Facade Sign is limited solely to the name of the business. Businesses elsewhere in the building without street level frontage will not be permitted to have any prominent facade signage. These non-frontage businesses will be identified at a discrete scale on /or adjacent to entry door and with second floor window signs.

Sans serif: letter styles with no serifs. (See figure 2C.1)

Script Letters: the letter style which is visually similar to handwriting.

Secondary Facade Sign: an optional sign on a secondary side elevation of a building. These secondary signs shall replicate as closely as possible the Primary Facade Sign while accommodating any changes in the architecture.

A rear entry sign is not considered a secondary facade sign.

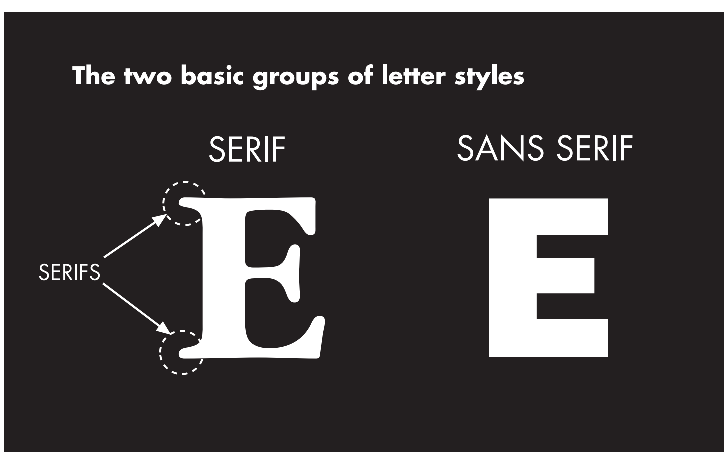
Sans serif : a visual detail that divides letter styles into two major groups: serif letters & sans serif letters. (See figure 2C.1)

Sign Area: the space within a rectangle drawn around the outermost perimeter of a sign, not including mounting devices.

Why letter size is only one of the factors in sign design

The above two names, of equal area, illustrate the role that stroke width plays in the visual impact of a sign and why sign area cannot be the sole criteria for visual harmony among adjacent businesses.

The effect of stroke width on sign design



THIN	Ontario Ontario Ontario ONTARIO Ontario
MEDIUM	Ontario Ontario Ontario Ontario Ontario
BOLD	Ontario Ontario Ontario Ontario ONTARIO

Figure 2C.1: Elements of Letters

Window Sign: the sign(s) applied directly to the interior surface of the major display window(s) at street level. If the facade has two display windows of equal size separated by the main entry there can be a sign in each window. These sign(s) are pedestrian oriented and frequently shaded by awnings. Window signs shall not be lit externally.

2C.3 Permitted Signs

The following signs are permitted on all commercial facades in all three Subdistricts:

Primary Facade Sign
Window Sign
Projecting Pedestrian Sign
Rear Entry Sign
Secondary Facade Signs
Awning Valance Signs
Second Floor Window Signs

Primary Facade Signs, Window Signs, Projecting Pedestrian Signs, and Rear Entry signs should be installed before the installation of the other permitted signs.

To achieve the historic distinctions between the Subdistricts, the guidelines are different in each Subdistrict for Primary Facade Signs and Window Signs.

These "Subdistrict specific" sign guidelines are discussed in the following sections:

2C.6 Turn-of-the Century Subdistrict
2C.7 1920 through 1940 Styles Subdistrict
2C.8 1950's Styles Subdistrict

The guidelines for the Projecting Pedestrian-scaled Signs, Rear Entry Signs and Awning Valance Signs are the same for all three Subdistricts and are contained in the following section.

2C.4 Sign Design Guidelines common to all Subdistricts

2C.4.1 Exempt Signs

One "open / closed" window sign per street frontage which does not exceed 2 square feet.

Temporary window posters which do not exceed 4 square feet for time-specific events.

Real estate "for sale or lease" signs.

Existing historic signs preserved or restored for their esthetic value.

Historic information / plaques on private property no greater than 2 square feet in area.

2C.4.2 Prohibited Signs

Temporary "Sale" or holiday signs painted on windows.

Wall-mounted product billboards, posters and advertisements.

Signs painted directly on building surfaces, walls and fences. (Except windows and awning valances)

Roof mounted signs. (Except, with limitations, in the 1950's Subdistrict)

Rectangular sign cans: sheet metal boxes with 90 degree corners, an acrylic face internally lighted usually with fluorescent tubes. *Note: Exceptions to this prohibition will be allowed in the 1950's Subdistrict.*

Portable sidewalk signs.

Permanent banners, steamers, and bunting.

Balloons larger than 24 inches in diameter with advertising messages.

Printed posters displayed in windows for longer than 90 days.

Repetitious information within a single street frontage.

Signs with flashing lights.

Statues, sculptures, large three dimensional props and parked vehicles used for advertising.

Signs with mechanically moving elements.

Private parking information in letters larger than 2".

Telephone numbers larger than 2" high.

Street names in letters larger than 2" high.

Information about goods and services not available on site.

2C.4.3 Second Floor Window Signs

(no window signs are permitted above the second floor)

Content: The name of the business only.

Maximum Number: The maximum number of window signs shall be limited to two signs per second-floor business per elevation.

Maximum area: 30% of the area of the window glazing on which the sign is applied. For example, if the window is double-hung, the 30% restriction applies to only half of the total double-hung window.

Letter style: Serif letter styles in the Turn-of-the-Century Subdistrict, sans serif letter styles in the 1920 through 1940's Styles Subdistrict and either in the 1950's Style Subdistrict.

Material & color: Must match the required street level display window sign of the same building.

Lighting: Window signs shall not be externally lit.

2C.4.4 Awning Valance Signs

Refer to the Facade Architectural Guidelines for awning materials, structure, colors, patterns and mounting heights.

Content: At the discretion of the business owner, awning valance graphics can contain only one of the following types of information:

1. The address number only (no street names)

2. The name of the business

3. A one-line list of goods and services in letters of a uniform height not to exceed 50% of the vertical height of the awning valance.

Placement: Awning signs can only be placed on the awning valance. Address numbers or the business name graphics can be placed in the center of the valance. Placement at the left or right ends of the valance may be allowed if a street tree or light fixture is blocking the center portion of the awning.

Maximum area: The vertical height of the graphics must not exceed 50% of the vertical height of the awning valance not including a scalloped or decorative edge. If a striped awning fabric is selected a solid color printed panel should be placed behind the letters to increase their readability. If this is done, the height of the color panel should not exceed 60% of the vertical height of the valance (excluding any scalloped edge), and the letter height should not exceed 60% of the vertical height of the color panel.

Letter style: Serif letter styles in the Turn-of-the-Century Subdistrict, sans serif letter styles in the 1920 through 1945 Subdistrict and either in the 1945 through 1960 Subdistrict. The letter style used on the awning valance must match a letter style selected for one of the other facade signs.

Color: The awning graphics color(s) may be selected from the Architectural Color Palette choices for appropriate contrast on the fabric color and pattern selected. Refer to the Facade Guidelines for a list approved awning materials.

Application technique: Due to the porous texture of awning fabric, the awning valance sign should be screen printed. This process will produce clean edges which are very difficult to achieve with hand painting. Screen printing is usually done before the awning is sewn and installed. Vinyl awning fabric and vinyl awning graphics are not permitted in this Subdistrict.

Lighting: The architectural lighting guidelines permit the whole awning to be internally lit. Any additional lighting shall not be permitted for the valance graphics.

2C.4.5 Pedestrian-scaled Projecting Signs

Every business with street level frontage should have a pedestrian-scaled projecting sign on the street facade of their building. (See figure 2C.2.)

Definition: A double-sided sign which hangs from a mounting device and projects out from the building facade over the sidewalk. These signs are of a size appropriate to the visibility of pedestrians, as opposed to persons in vehicles.

Content: The only words shall be the name of the business. Artwork is encouraged. The name of the business should dominate the design. Artwork (illustrations) shall be subordinate.

Form & materials: The main part of the sign shall be a panel. The shape of the panel shall be horizontal: the height of the panel shall not be greater than 70% of the panel width. Irregular shapes and cutout and applied elements are preferred.

Placement: The bottom edge of the sign shall be 7 feet above the sidewalk. The distance between the plane of the building facade and the sign shall be 9 inches.

Maximum area: 3.5 square feet.

Minimum area: 3 square feet.

Letter styles, ornaments & colors: The sign design does not need to be identical to the window or facade signs, but the elements of letter style, ornaments and colors should be the same as those used elsewhere on the building.

Mounting: The sign may be hung from a wall-mounted bracket or hung from the structure of a non-retractable awning or mounted on the underside of an architectural cantilevered canopy. The sign shall be mounted in a manner that would allow it to swing if struck.

Lighting: Optional, if lighted, the source shall be external.

2C.4.6 Rear Entry Signs

Content: Only the name of the business.

Sign type options:

Type 1: A single-sided sign wall mounted parallel to the wall with 2” spacers between the sign and the wall.

Mounting location: Shall be no greater than 24” to the edge of the door. The mounting location may be on the left or right of the rear entry door. The top of the sign should be 4 inches below the top of the door.

Maximum sign area: 12 square feet.

Minimum sign area: 5 square feet.

Type 2: A double-sided sign mounted so as to project at a right angle to the plane of the wall. The bottom of the sign shall be 8 feet above the finished grade.

Maximum sign area: 9 square feet per side.

Minimum sign area: 5 square feet per side.

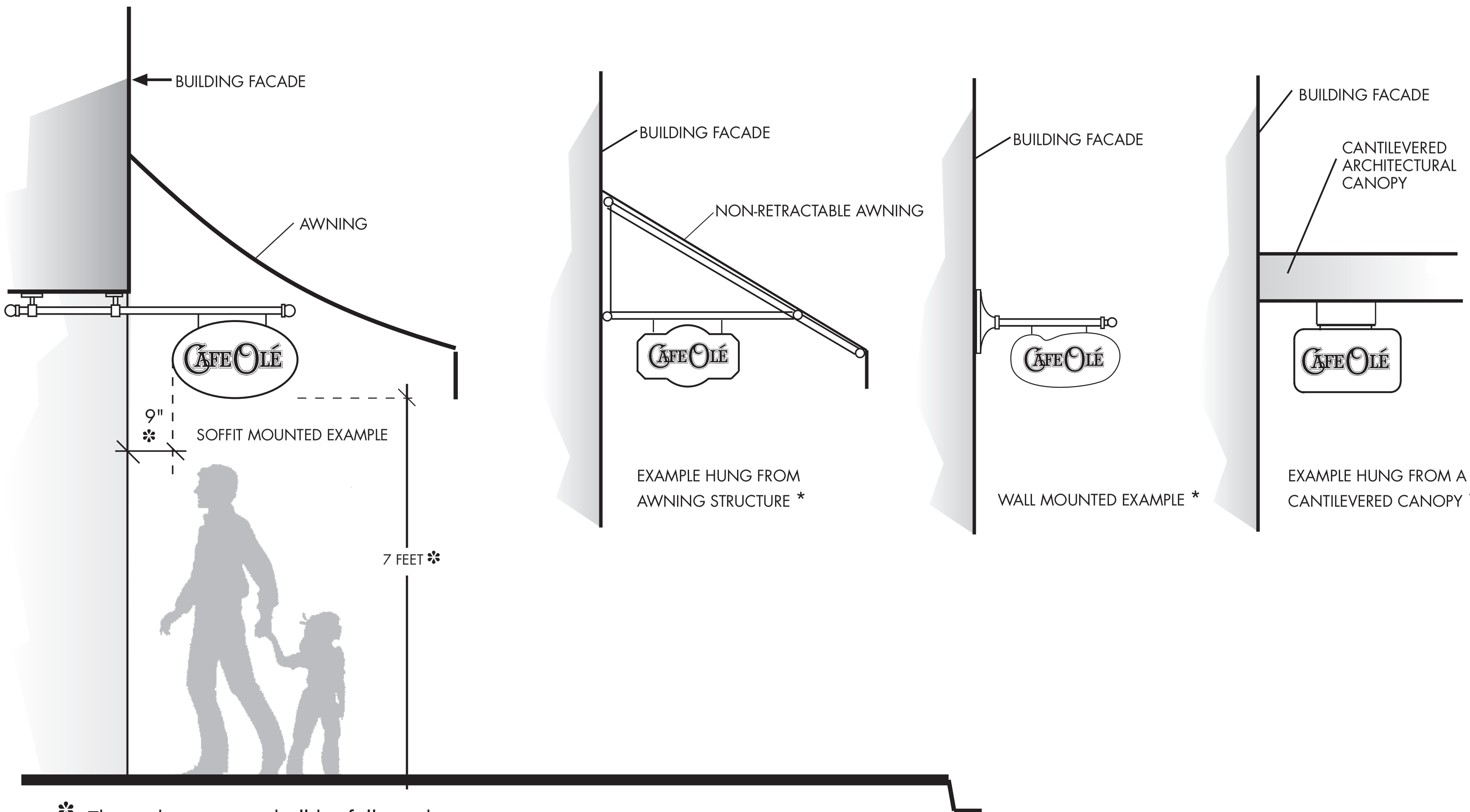
Mounting location: No part of this sign shall be closer than 2 feet to the property line.

Letter styles, ornaments & colors: Rear entry signs do not have to match the materials and fabrication methods of the Primary Facade Sign. But the letter styles and colors on the Rear Entry Sign should match those of the Primary Facade Sign. None of the letters shall be closer than 6 inches to the edge of the sign.

Lighting: External lighting is required on rear entry signs.

2C.4.7 Multi-tenant Signs

A building with multiple tenants shall be restricted to identifying those tenants without street level frontage at a discrete pedestrian scale on, or adjacent to, the entry door. The maximum letter height for this tenant list is 2 inches. Only businesses with street level entries and window frontage are permitted to display large vehicle-oriented Primary Facade Signs as described later in these Guidelines. Second floor business with second floor windows are permitted to have a sign in each of their windows displaying only their business name in an area no larger than 30% of a single pane of glass. No window signs are permitted above the second floor.



✽ These dimensions shall be followed to maintain visual harmony between adjacent facades.

* The minimum dimensions shall be followed regardless of mounting method.

Figure 2C.2: Examples of Mounting Options for Pedestrian-scaled Projecting Signs

2C.4.8 Mid-block Pass-through Signs

See the Facade Guidelines section for a description of and design guidelines for these pedestrian corridors.

No private business signs shall be allowed on the walls or within the landscaping of the mid-block pass-throughs unless there is a public entry that opens onto a mid-block pass-through. If there is a business entry on the mid-block pass-through, the sign guidelines will be the same as the guidelines for sign and sign lighting at a rear entry. Windows on a mid-block pass-through can be used for a business name, goods and services signs subject to the same letter area and placement guidelines as the street-facing windows.

2C.5 General Considerations

2C.5.1 Letter style exemptions and corporate graphic programs

These guidelines provide examples of historically preferred letter styles for each Subdistrict. However the business owner may use a non-historic letter style for the name of the business only for reasons of marketing. This exemption recognizes the evocative power of a letter style to communicate the nature of the goods or services offered. For example, a business in the Turn-of-the-Century Subdistrict might have a particularly contemporary product line, for which a contemporary letter style might be more communicative. This exemption also allows businesses with existing multiple locations and an established graphic style to benefit from the public's familiarity with their visual image. This exemption applies only to the letter style of the business name. All other visual aspects of the business' sign such as scale, placement and content must conform to the Guidelines.

2C.5.2 Relationship between letter style and sign area

The letter stroke width has an important affect on the visual impact of a sign. Please refer to figure 2C.1. Letters that use very thick bold stroke widths do not need to be as large as letters that use thinner stroke widths to achieve the same readability and public awareness. Therefore, when these guidelines refer to maximum letter area some judgment must be exercised depending on large, medium or small stroke widths. Please refer to the stroke width example chart in figure 2C.1. Sign impact is also affected by the use of capital letters and script letters. Words using all capital letters do not have to be as large in rectilinear area as words using capital and lower case or script letters. The effect of these distinctions on sign area will be subject to the design review process.

2C.5.3 Multi-cultural, multilingual marketing

These Sign Design Guidelines primarily specify four types of signs for each commercial facade: Primary Facade Sign, Window Sign, Awning Valance Sign and a Pedestrian-scaled Projecting Sign. For those businesses who appeal to a multilingual clientele, these guidelines suggest using only one language per sign. Other signs on the facade may be in another language. This will avoid the visual clutter of making each sign bilingual. The use of more than one language or alphabet does not alter or expand the content and maximum area restrictions of these Sign Design Guidelines.

2C.5.4 Nonpermanent promotional banners

Temporary fabric banners can be displayed for a maximum of three times per year and shall be removed after 45 days, and shall not be replaced within the following 30 days. Holiday decorations shall be removed no later than 7 days after the holiday. Temporary window painting is not permitted.

2C.5.5 Incidental or minor signs

Incidental signs such as store hours, parking information, telephone numbers, credit cards accepted should be scaled for pedestrian, not vehicular, visibility. The maximum letter height for this type of information is 1.5". Sign location is limited to either on, or adjacent to, entry doors. The total sign area is limited to 2 square feet.

2C.5.6 Address numbers

Every business shall display an address number.

Content: Only the number. Not the street name.

Required letter height: 4 inches.

Placement: Centered, left to right, 12" from the top, on a glass door or centered on a glass transom or on the awning valance.

Letter style: Repeat a letter style used elsewhere on the building facade.

Color and materials: On glass, use a light color or gold or silver leaf that is in use elsewhere on the building, hand paint or screen print to the interior side of the glass. On the awning valance, screen print in a contrasting color selected from the Architectural Color Palette of the relevant Subdistrict.

2C.5.7 Quality of sign materials, fabrication and installation

All signs must be fabricated and installed to the highest standards of quality craftsmanship. All possible attention must be paid to the details of fabrication that result in an attractive and durable sign. Only exterior grade materials shall be used. Sheet metal detailing is a particular area for concern. The electrical power source such as wires or conduit for internal and external sign lighting must not be exposed. All the appropriate manufacturers recommendations shall be followed when fabricating components, applying sealers, primers and finish coats of paint. The City reserves the option of inspecting the finished sign prior to installation.

2C.5.8 Sign maintenance

All exterior signs shall be kept clean and properly maintained. All supports, braces, anchors and electrical components shall be kept safe, presentable and in good structural condition. Defective lighting elements shall be promptly replaced. Weathered and/or faded painted surfaces shall be promptly repainted.

2C.5.9 Encroachment Permits

An encroachment permit is required before the installation of any sign that extends into the right-of-way.

Please contact the City of Ontario Engineering Department for further information.

2C.6 Signs for the Turn-of-the-Century Subdistrict

2C.6.1 Primary Facade Sign

Content: The name of the business only.

Placement: The sign must be centered within the sign band of the building. (See figure 2C.3)

Maximum letter height: The maximum height of the largest letter must not be more than 70% of the flat vertical dimension of the building's sign band. The letters must not be placed closer than two feet from the left or right edge of the sign band. (See figure 2C.4)

Minimum letter height: The minimum height of the largest letter must not be less than 50% of the flat vertical dimension of the building's sign band.

Letter style: Serif and script letter styles similar to those shown on the Turn-of-the-Century letter style, ornaments and borders sample page are preferred. (See figure 2C.5)

Graphic ornaments: Refer to the Turn-of-the-Century Primary Facade Sign Ornament chart shown in figure 2C.5 for examples of acceptable ornaments. Ornaments shall not be painted directly on the wall. The material of the ornament shall be a minimum of half an inch thick. Ornaments shall be discreet in size and used in pairs symmetrically within the sign band. They are not calculated as part of the maximum letter area.

Color: Gold or silver leaf is preferred. For painted letters, select either the major trim color, minor trim color or accent color from the architectural color palettes in the Facade Section of these Guidelines. Painted letters should have a high gloss finish.

Materials / mounting: Individually cut out letters are required. (Script letter styles can be linked). The letters must be a minimum of 1" in depth and mounted on spacers a minimum of 1" off the build surface. (See figure 2C.3) Any exterior grade materials and fabrication techniques are acceptable for the letters. Sculpted letters are preferred over straight cut letters. Refer to figure 2C.4).

Lighting: Refer to figure 2C.6. Visible neon tube light is prohibited in this Subdistrict.

2C.6.2 Window Sign

Content: Window signs must contain the name of the business. They may also contain brief information about the goods and services. The letter size of any supplemental information about goods and services should be no larger than 30% of the letter size of the business name. (See figures 2C.7 & 2C.8)

Placement: If the building facade is symmetrical with a central entry and two major windows, there should be a window sign in each window. If the facade is asymmetrical, a window sign should be applied in only the largest window.

Maximum letter area: 15% of the area of the window glazing on which the sign will applied, not including ornaments or borders. (See figure 2C.7)

Minimum letter area: 10% of the area of the glass, not including ornaments and borders.

Letter style: Serif and script letter styles similar to those shown on the letter style, ornaments and borders sample page are preferred. (See figure 2C.4)

Borders and ornaments: Every window with a sign must have an ornamental border. Borders on all frontage windows are preferred. Borders do not have be placed on all four sides of the window. The inner edge of the border should not be further than 6" from the outer edge of the glass. The outer edge of the border shall be no closer than 3 inches to the outer edge of the glass. Words of a uniform height not to exceed 2" may be used as part of a border. (See figure 2C.8)

Material & color: For letters, ornaments and borders, gold or silver leaf or metallic vinyl are the preferred materials for window signs in this Subdistrict. Very light value colors are also acceptable. A black or very dark "drop shadow" color behind the letters is recommended to increase visibility. The sign(s) and borders shall be applied directly to the interior side of the glass window.

Figure 2C.3: Example of Facade Signs in the Turn-of-the-Century Subdistrict

2C.6.3 Prohibited Signs in the Turn-of-the-Century Subdistrict

Window signs above the second floor.

Pole mounted or freestanding signs.

Signs with neon tube lighting.

Please see section 2C.4.2 for a complete list of prohibited signs in all Subdistricts on Page 84.

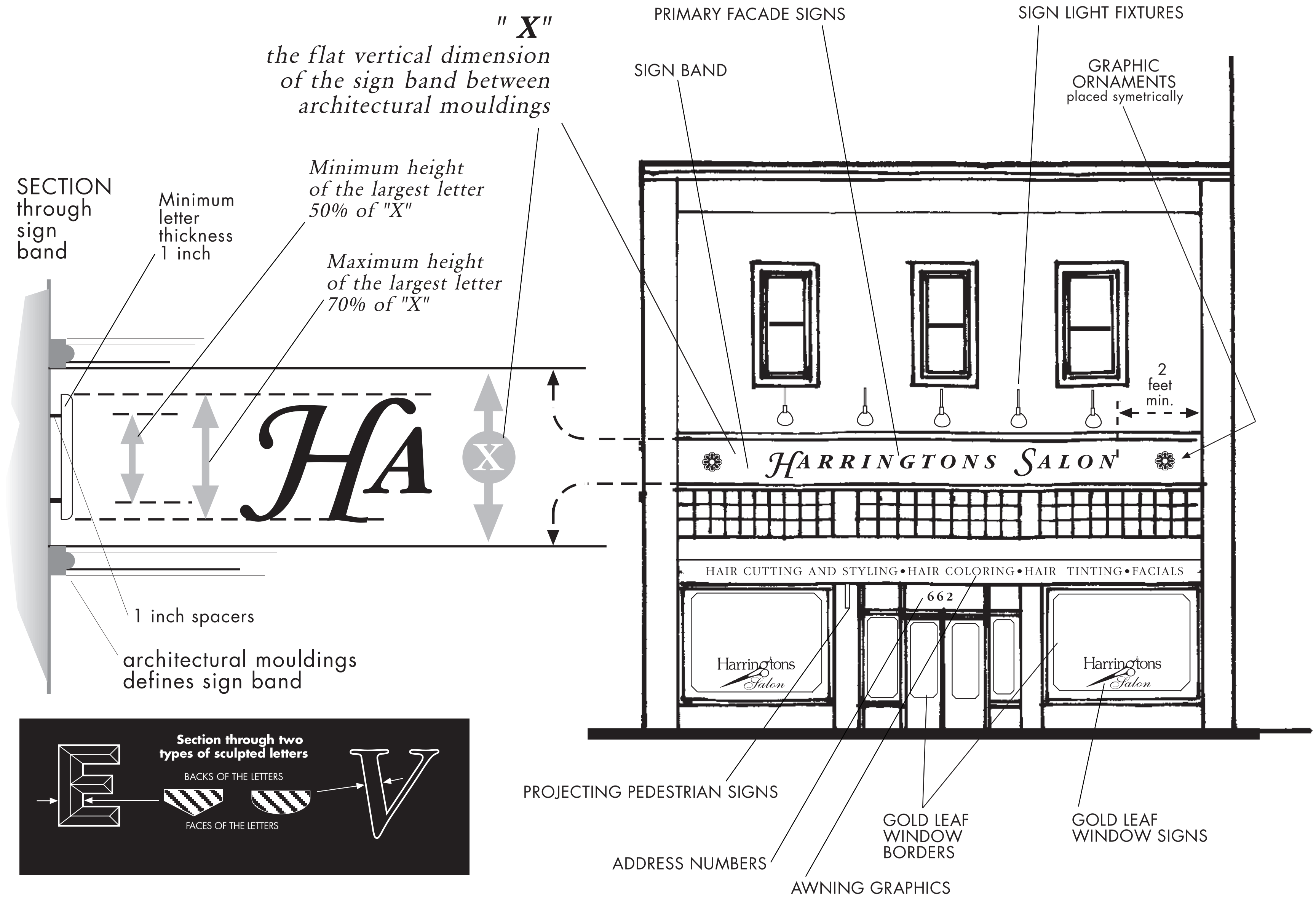


Figure 2.C.4: Detail of Primary Facade Sign in the Turn-of-the-Century Subdistrict

Letters styles with "serifs" are preferred

CENTURY SCHOOLBOOK
Century Schoolbook
BOOKMAN Bookman
COLLEGE BLACK
GARAMOND
Garamond
BODONI Bodoni
PALATINO Palatino
MICHELANGELO
Goudy Bold
Goudy Bold

Script and italic serif letter styles

Shelley Alegro
Monotype Cursive

Custom lettering, ornaments and decorative border examples

Figure 2C.5: Suggested Letter styles and Ornaments in the Turn-of-the-Century Subdistrict

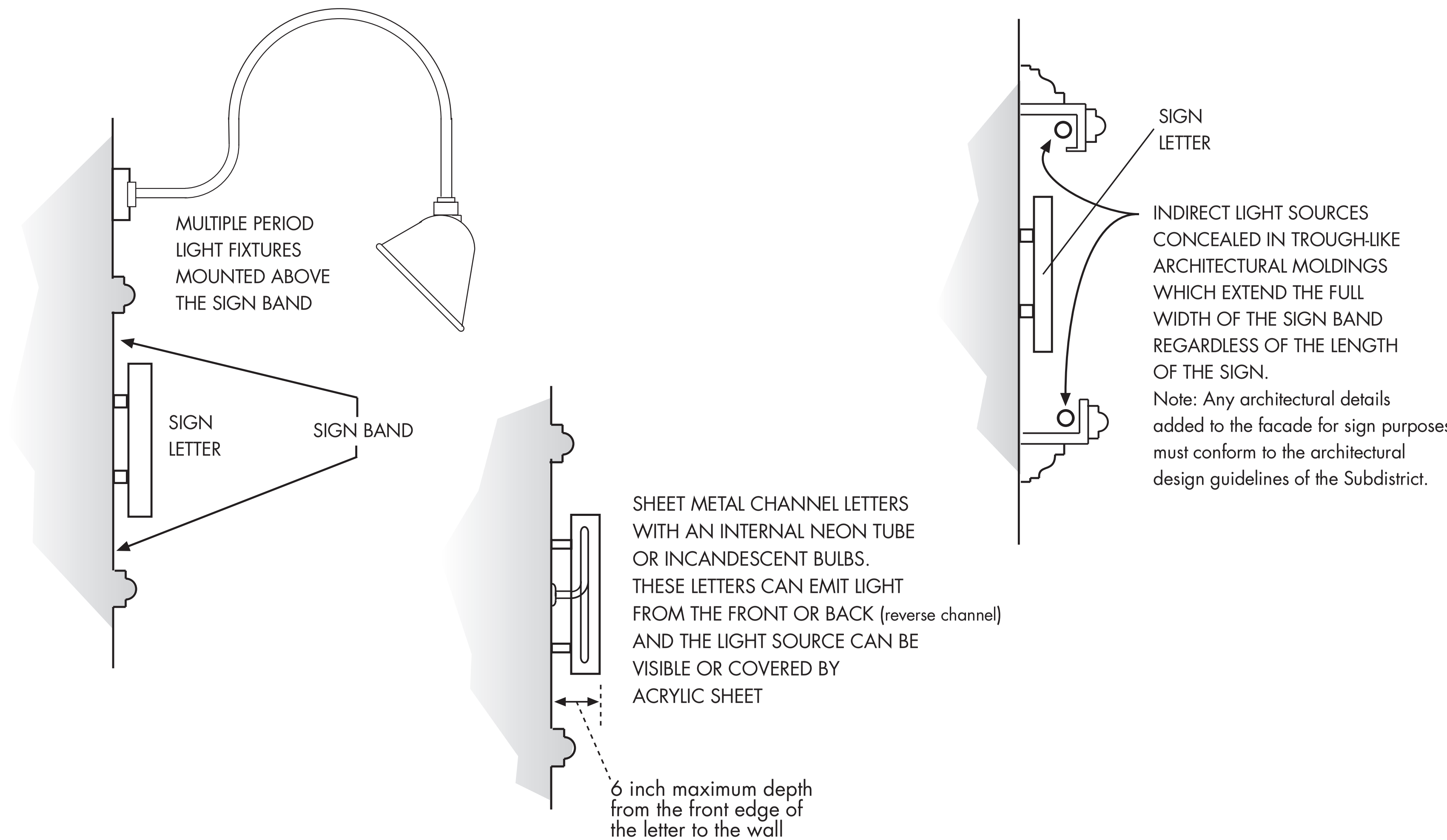


Figure 2C.6: Suggested Methods of Primary Facade Sign Lighting in the Turn-of-the-Century Subdistrict

Street level window sign example with ornamental borders typical of the historic period.
The ornamental border should occur on every street level window.
The border does not have to be on all four edges of the window.

Figure 2C.7: Street level Window Sign Example in the Turn-of-the-Century Subdistrict

Street level window sign example showing services information used as a border.
This information is scaled for pedestrian, not vehicular, visibility.
The height of the services/ merchandise letters must not be larger than 2"

Figure 2C.8: Street level Window Sign Example in the Turn-of-the-Century Subdistrict

2C.7 1920 through 1940's Subdistrict

This Subdistrict is more stylistically diverse than the Turn-of-the-Century Subdistrict and therefore more open to interpretation by the Design Review Process. The most distinct styles within this time span are Art Moderne, Art Deco and the Streamline Style.

2C.7.1 Primary Facade Sign

Content: The name of the business only.

Placement area: Within the largest flat rectangular area on the facade. (See Figure 2C.9)

Maximum letter area: If the placement area as described above is 20% or more of the total rectilinear area of the facade, the maximum letter area is 15% of the placement area. (See Figure 2C.9)

If the placement area is less than 20% and more than 5% of the total rectilinear area of the facade, the maximum letter area is 20% of the placement area.

If the placement area is 5% or less of the total rectilinear area of the facade, the maximum letter area is 30% of the placement area. (See Figure 2C.10)

Ornamental elements are not calculated as part of the maximum letter area.

Minimum letter area: 60% of the allowable maximum letter area.

Letter style: Sans serif preferred, refer to Suggested Letter Styles for the 1920 through 1945 Subdistrict. (See Figure 2C.11)

Color: Select colors which are compatible with the Architectural Color Palette for this Subdistrict. Exterior grade metallic finishes are also appropriate for this Subdistrict.

Materials / mounting: Individual sheet metal letters or sheet metal signs with curvilinear silhouettes faced with painted graphics and visible neon are very appropriate for this Subdistrict. As in all Subdistricts, rectangular sign cans with an acrylic face and an internal light source (usually fluorescent) are specifically prohibited. (See Figure 2C.10)

Lighting: Double-sided projecting blade signs with neon are also appropriate. Blade signs are narrow in width, predominantly vertical with stacked letters. Channel letters mounted on exposed "raceways" are not allowed. (See Figure 2C.12)

2C.7.2 Window Signs

To promote marketability in all the Subdistricts, the preferred use of windows is to provide a view of products (merchandise) or a view into the business interior. Therefore, the greater portion of the window area must remain clear, free from graphics or obstructions. Windows should not be covered 24 hours a day by interior curtains, very dark tinting or non-merchandise equipment that blocks the view into the building.

Content: Window signs must contain the name of the business. They may also contain brief information about the goods and services. The letter size of any supplemental information about goods and services should be no larger than 30% of the letter size of the business name.

Placement: If the building facade is symmetrical with a central entry and two major windows, there should be a window sign in each window. If the facade is asymmetrical, a window sign should be placed in only the largest window.

Maximum letter area: 15% of the area of the window glazing on which the sign will applied, not including ornaments or borders.

Minimum letter area: 10% of the window glazing, not including ornaments and borders.

Letter style: Sans serif letter styles are recommended. (See Figure 2C.14)

Borders and ornaments: Optional; Art Deco, Art Moderne and Streamline styles are encouraged.

Material & color: For letters, ornaments and borders gold or silver leaf or metallic vinyl are the preferred materials for window signs in this Subdistrict. Very light value colors are also acceptable. A black or very dark "drop shadow" color behind the letters is recommended to increase visibility. The graphics should be applied directly to the interior side of the glass window.

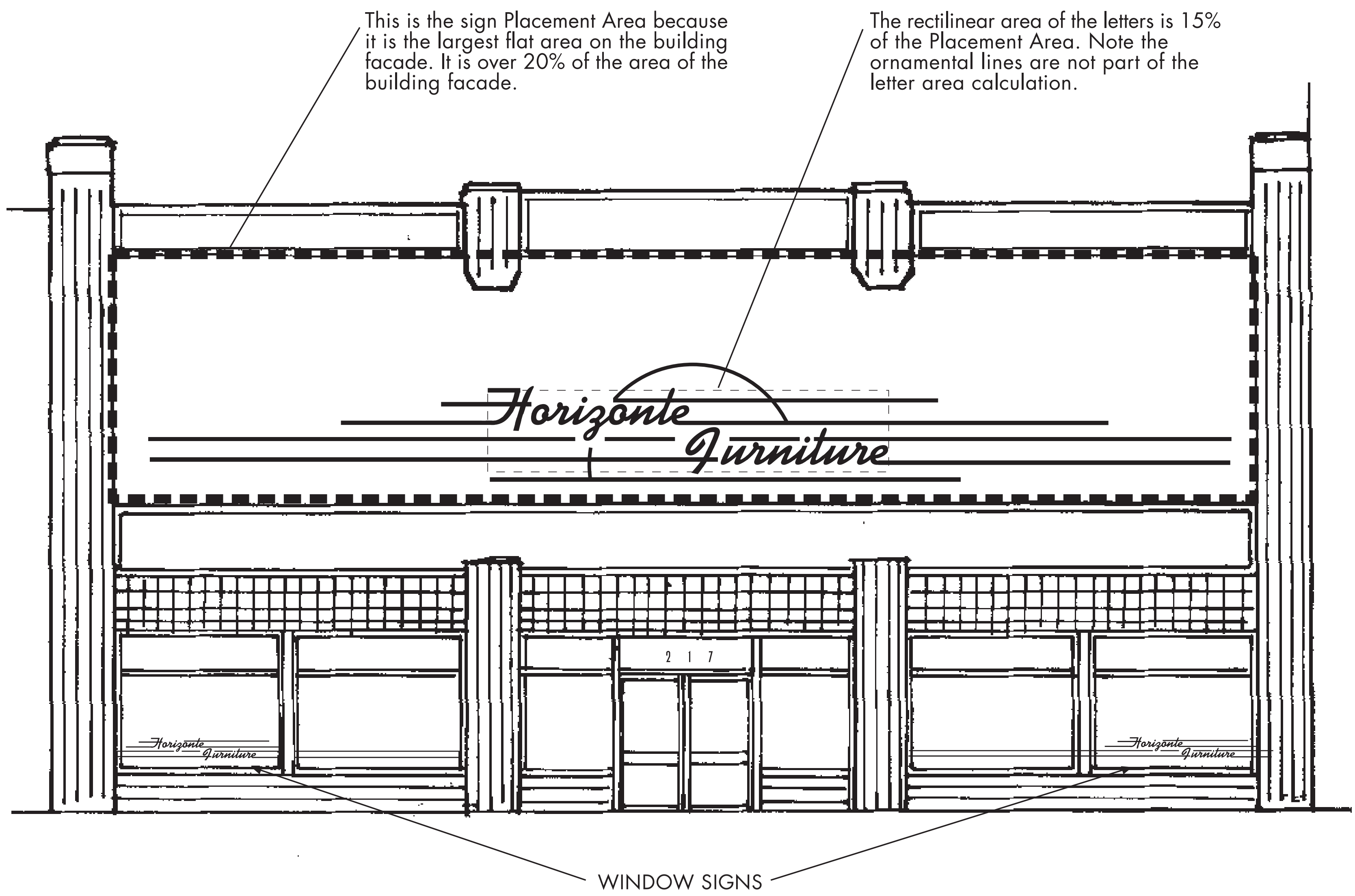


Figure 2C.9: Calculation of Maximum Letter Area for Primary Facade Signs in 1920's-1940's Subdistrict: Method 1

Lighting: Window signs should not receive their own exterior light source.

2C.7.3 Prohibited Signs in the 1920's - 1940's Subdistrict

Window signs above the second floor.

Pole mounted signs.

Freestanding signs.

Please see section 2C.4.2 for a complete list of prohibited signs in all Subdistricts on Page 84.

Sheet metal signs with curvilinear (non-rectangular) silhouettes faced with painted graphics and visible neon are very appropriate in the 1920's through 1940's Subdistrict. These signs are double-sided and projecting. Single-sided signs mounted flat to the facade could also share this method of fabrication.

Figure 2C.10: Examples of Allowed Sheet Metal Signs

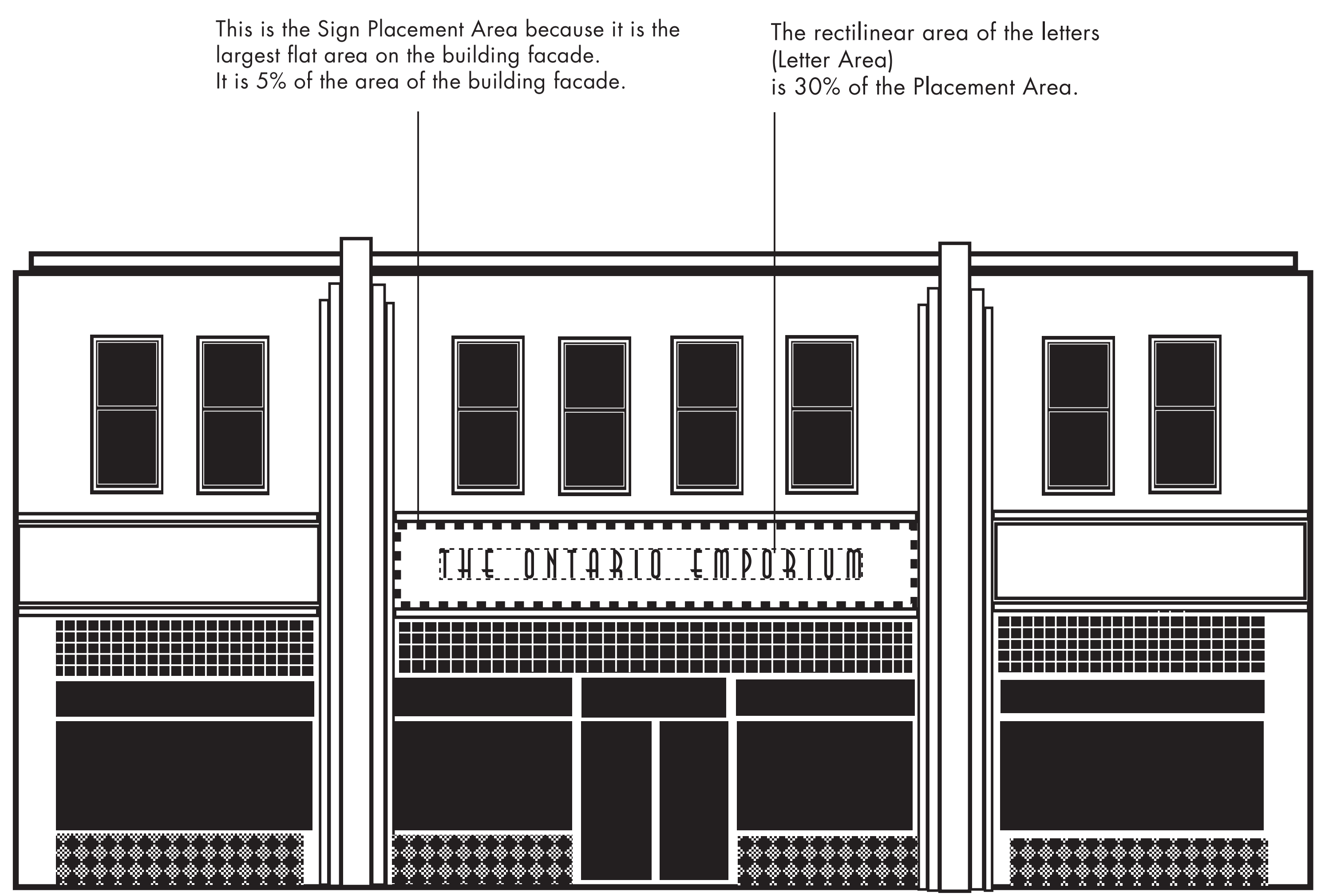


Figure 2C.11: Calculation of Maximum Letter Area for Primary Facade Signs in 1920's-1940's Subdistrict: Method 2

FUTURA LIGHT Futura Light

FUTURA EXTRA BOLD Futura Extra Bold

F U T U R A C O N D E N S E D B O L D I T A L I C

F U T U R A C O N D E N S E D L I G H T I T A L I C

IMPACT Impact

FRANKLIN GOTHIC CONDENSED ***Franklin Gothic Bold Italic***

Franklin Gothic Book Italic

ANNA *Kaufmann Bold*

Custom lettering of the era

Figure 2C.12: Suggested Letter styles and Ornaments in the 1920's - 1940's Subdistrict

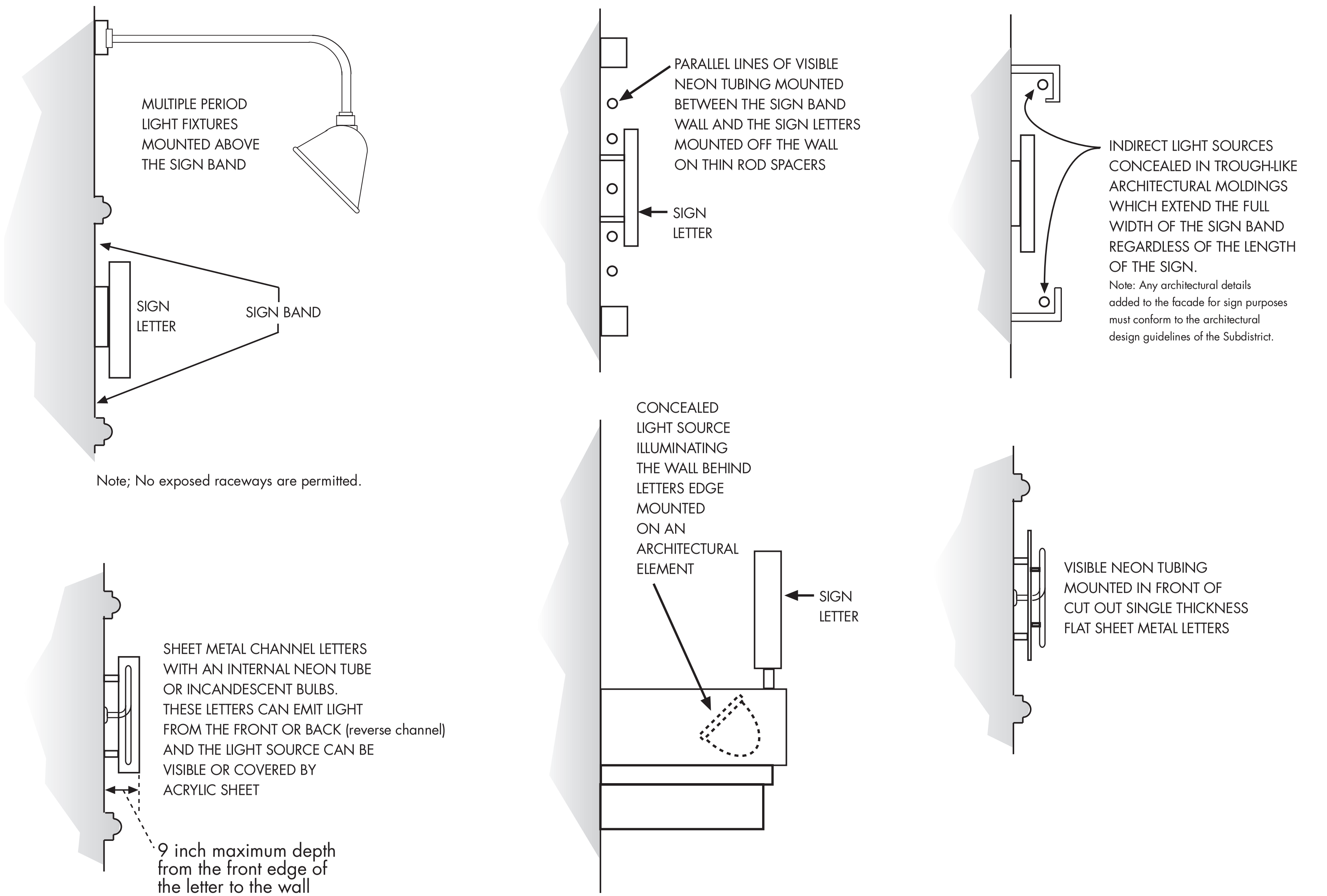


Figure 2C.13: Suggested Methods of Primary Facade Sign Lighting in the 1920's - 1940's Subdistrict

2C.8 1950's Styles Subdistrict

This Subdistrict is most stylistically flamboyant of the three commercial Subdistricts. The distinction between major architectural details and sign elements was frequently indiscernible in this style. Signs of the 1950's era were visually more important in the overall architectural design of the building than in earlier architectural styles. The name "Googie's" is often used for this style of commercial architecture. It was the name of a chain of coffee shops of the era. Double-sided signs that projected out from the facade and above the roof line were typical of the style. This "exuberance" is difficult to codify in design guidelines and therefore will be more dependent on the design review process to maintain harmony within the Subdistrict. Design and context will be very important in the approval process.

2C.8.1 Primary Facade Sign

Content: The words are limited solely to the name of the business.

Placement area: Within the largest flat rectangular area on the facade. In this Subdistrict only, a large area of facade which covered by a uniformed patterned, textured, embossed or perforated decorative material can be considered as the Placement Area. Ornamental portions of a sign, not the letters, may touch the edge of this placement area. (See figure 2C.14) Double-sided signs that project out a maximum of 3 feet from the facade are allowed. Facade-mounted signs that protrude not more than 3 feet above the top of the facade are allowed. (See figure 2C.15)

Maximum letter area: If the placement area as described above is 20% or more of the total rectilinear area of the facade, the maximum letter area is 15% of the placement area. If the placement area is less than 20% and more than 5% of the total rectilinear area of the facade, the maximum letter area is 20% of the placement area. If the placement area is 5% or less of the total rectilinear area of the facade, the maximum letter area is 30% of the placement area. Ornamental elements of the sign design are not calculated as part of the letter area.

Figures 2C.9 and 2C.11 in the 1920's -1940's Subdistrict show the method of calculation of the letter areas for this Subdistrict as well.

Minimum letter area: 60% of the allowable maximum letter area.

Letter style: Custom designs, particularly script letters, are very appropriate. (See figure 2C.16)

Ornaments: Ornaments of the time period are encouraged in this Subdistrict. (See figure 2C.16)

Color: Colors must be compatible with the Architectural Facade Color Schemes.

Materials / mounting: Plastic and painted sheet metal are very appropriate. Textural and perforated sheet metal are also permitted. Multiple elements of varying thickness are typical of this style.

Lighting: Neon, indirect lighting and internal lighting. (See figure 2C.17)

Partially Roof Mounted Primary Facade Sign

The 1950's Style Subdistrict is the only subdistrict that allows any part of a sign to be attached to the building roof. In this subdistrict, projecting, double-sided primary facade signs can be partially roof mounted. The term "partially" means the sign must also be attached to the vertical facade of the building below the roof line.

The dominant thickness of the sign shall not exceed 9", subordinate portions of the sign design can be as much as 18" in thickness.

If the largest portion of the sign is below the roof line, (see Figure 2C.15) the maximum height above the roof line is limited to 4 feet and the maximum projection from the face of the building is limited to 3 feet.

If the largest portion of the sign is above the roof line, the maximum height above the roof line is limited to 8 feet and the maximum projection from the face of the building is limited to 3 feet. In addition, the widest portion of the sign (in side view) can not be higher than 75% of the distance from the roof line to the top of the sign. Irregular, non-rectangular shapes are more desirable in the design of these signs. For example, if the sign is 8 feet high above the roof line, the top of the widest portion of the sign should be no more than 6 feet above the roofline.

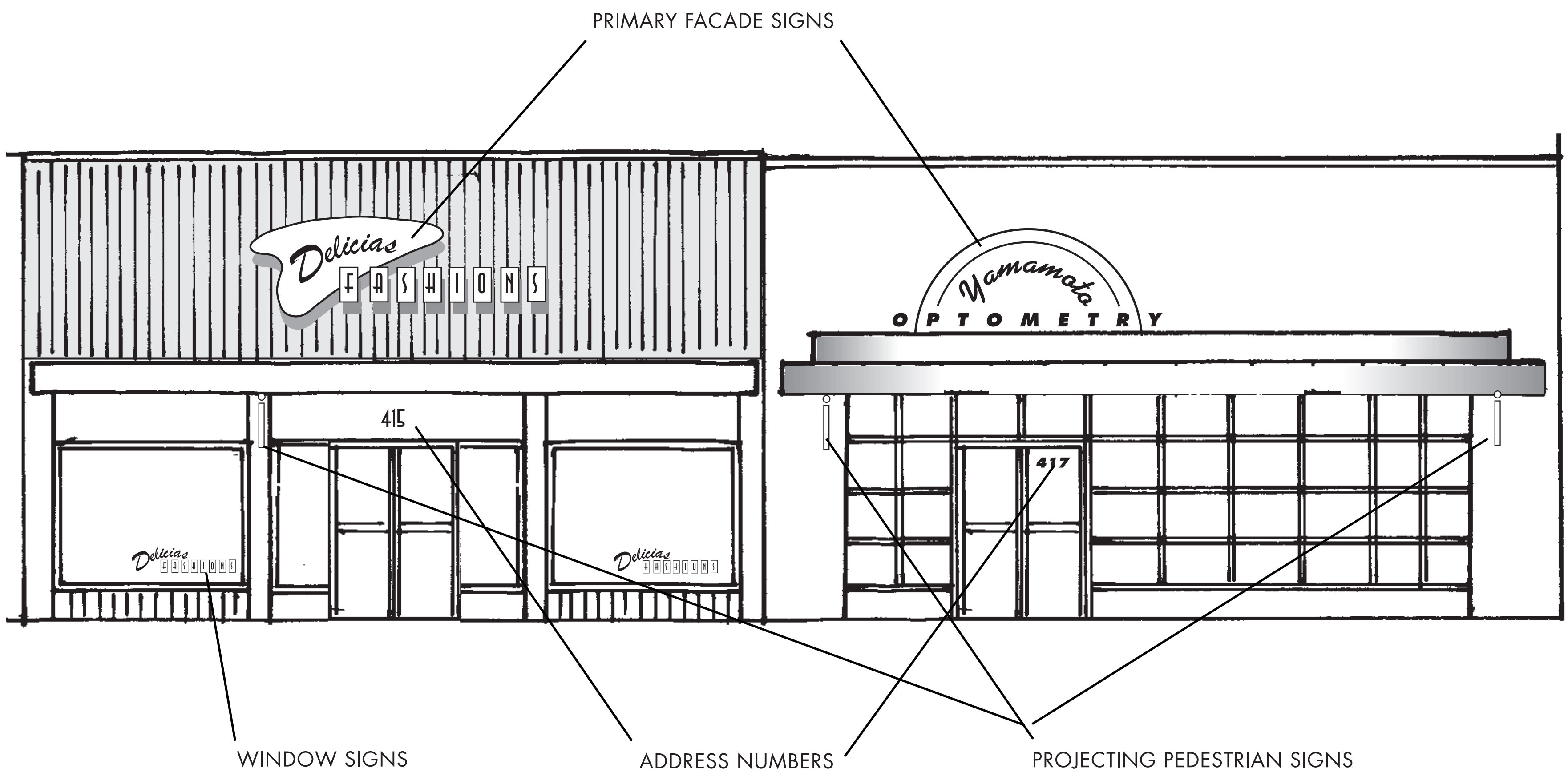


Figure 2C.14: Example of Facade Signs in the 1950's Style Subdistrict

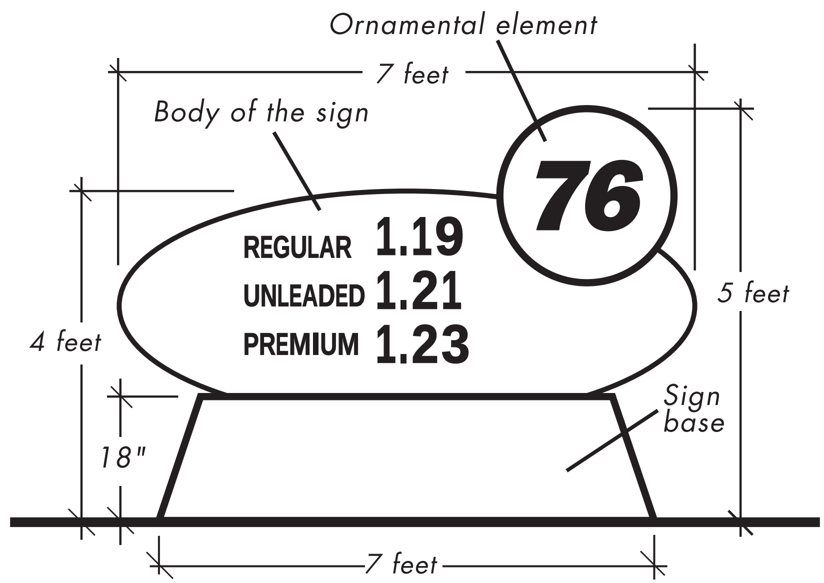
To preserve appropriate sightlines these roof mounted signs can only be utilized on buildings with a minimum linear frontage of 20 feet. Special attention must be given to the position of roof signs on adjacent or adjoining buildings.

An example of a 1950's style partially roof-mounted sign with the largest portion of the design above the roof line.

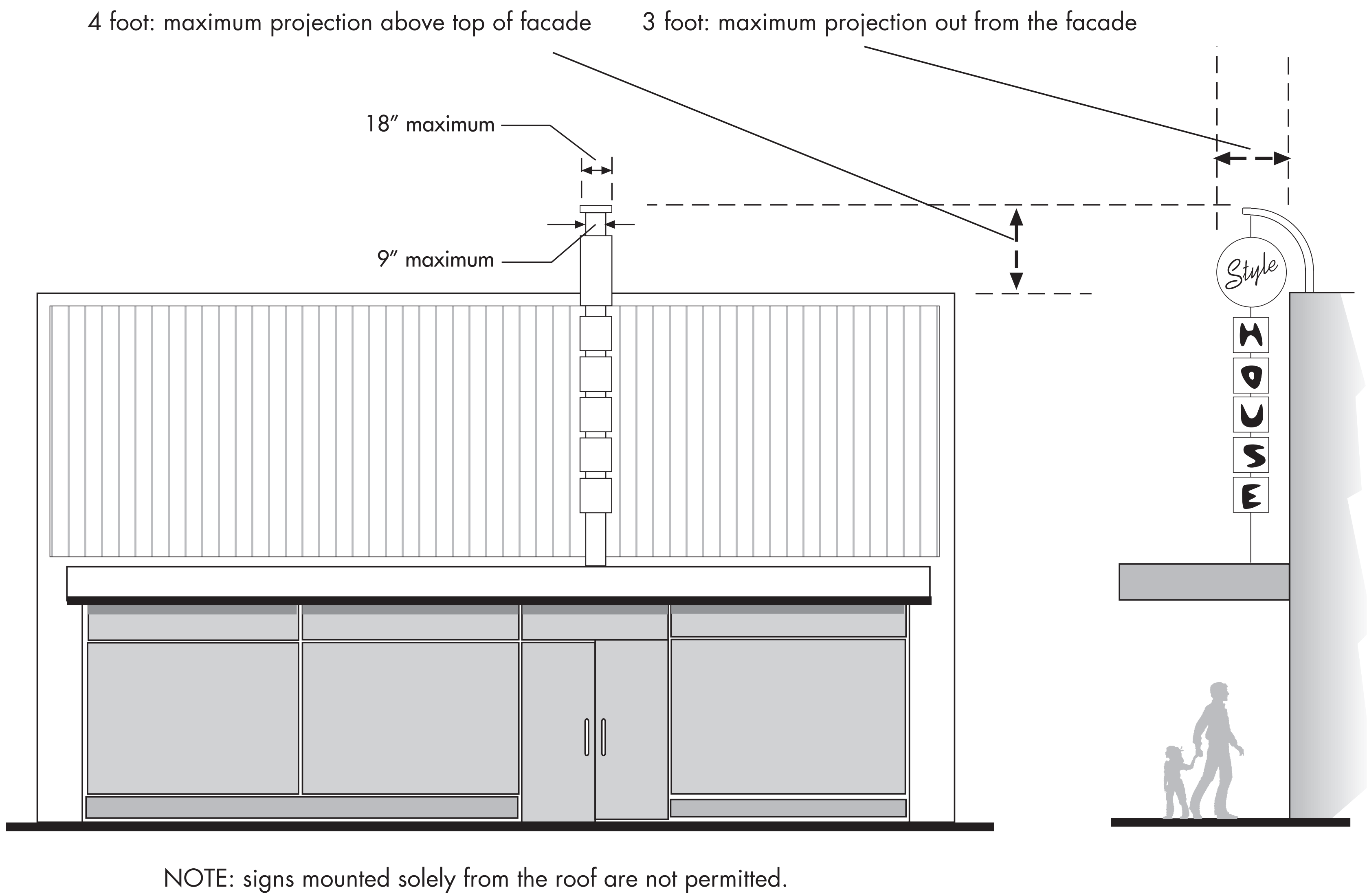
Monument Signs

The 1950's Subdistrict permits freestanding doublesided monument signs under very specific conditions. The property must be a corner location. The building must be set back at least 20 feet from the front (Euclid) property line. The sign must be located at the corner of the property where the streets meet. The sign must be positioned at a 45 degree angle to the front street.

No part of the sign shall be closer than 5 feet to the property line. The sign must be mounted within a landscaped area no smaller than 60 square feet. The sign must be mounted on a base 18 inches high and at least 12 inches thick. The length of the base must be at least 3 feet and not exceed 6 feet. The sign must not be rectangular. The main body of the sign may not be taller than 4 feet. A subordinate portion of the sign may be 5 feet above grade. This subordinate portion of the sign should be primarily ornamental, containing perhaps a symbol,trademark or logo, but no text.The total area of the sign may not exceed 18 square feet, not including the base. The total area of the sign is determined by multipling the greatest width dimension (in feet) by 2.5 feet. (See figure below)



An example of a freestanding monument sign allowed in the 1950's Subdistrict.



An example of a 1950's style partially roof-mounted sign with the largest portion of the design below the roof line

Figure 2C.15: Example of Facade Roof Signs in the 1950's Styles Subdistrict

2C.8.2 Window Sign

In the 1950's styles, the display windows were commonly a larger proportion of the overall area of the facade. Therefore, the glass area to letter area ratio has been changed in this Subdistrict so the window signs are not inappropriately large.

Content: Window signs shall contain the name of the business. They may also contain brief information about the goods and services. The letter size of any supplemental information about goods and services should be no larger than 50% of the letter size of the business name.

Placement: Window signs should be placed asymmetrically on the largest frontage window on the side closest to the entry, within 12" to the edge of the glass.

Maximum area: 10% of the area of the piece of glass on which the sign will applied, including ornaments.

Minimum area: 5% of the area of the glass, including ornaments.

Letter style: Should match the Primary Facade Sign.

Material & color: Gold or silver leaf or metallic vinyl are the preferred materials for window signs in this Subdistrict. Very light value colors from the architectural color palette are also acceptable. A black or very dark "drop shadow" color behind the letters is recommended to increase visibility. The sign should be applied directly to the interior side of the glass window.

Lighting: Window signs should not receive their own external light source.

2C.8.3 Prohibited Signs in the 1950's Subdistrict

Window signs above the first (street) floor

Pole mounted signs

Please see section 2C.4.2 for a complete list of prohibited signs in all Subdistricts on Page 84.

DOM CASUAL Dom Casual

BARNEY BARNEY

McBOING

Coffee Shop

Custom Car

TIKI HUT

CALYPSO

Brush Script

WIDE LATIN

BRITANNIC

FUTURA BOLD Futura Bold

CAMPANILE

Kaufmann Bold

Custom lettering typical of the era

Figure 2C.16: Suggested Letter styles and Ornaments in the 1950's Styles Subdistrict

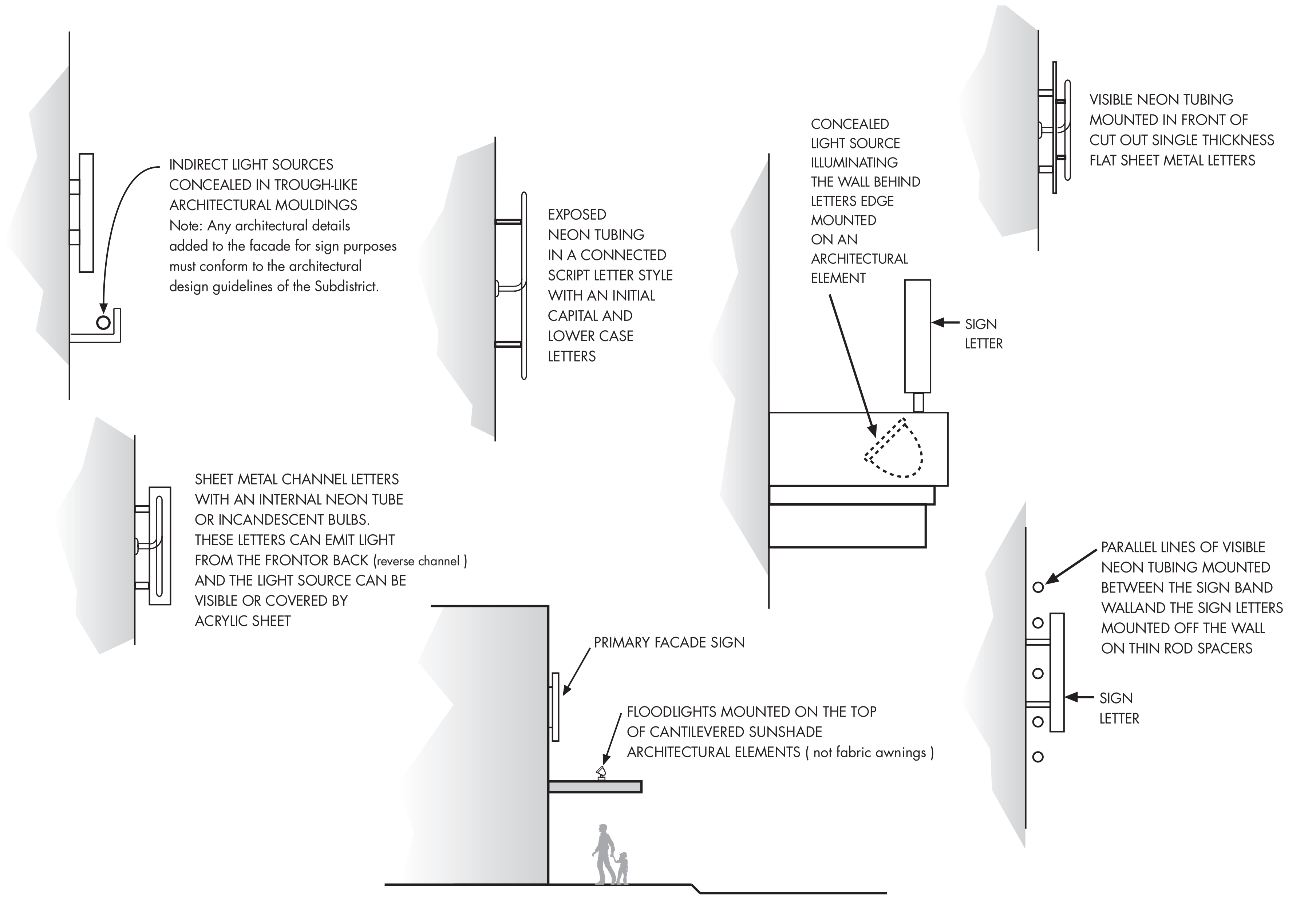
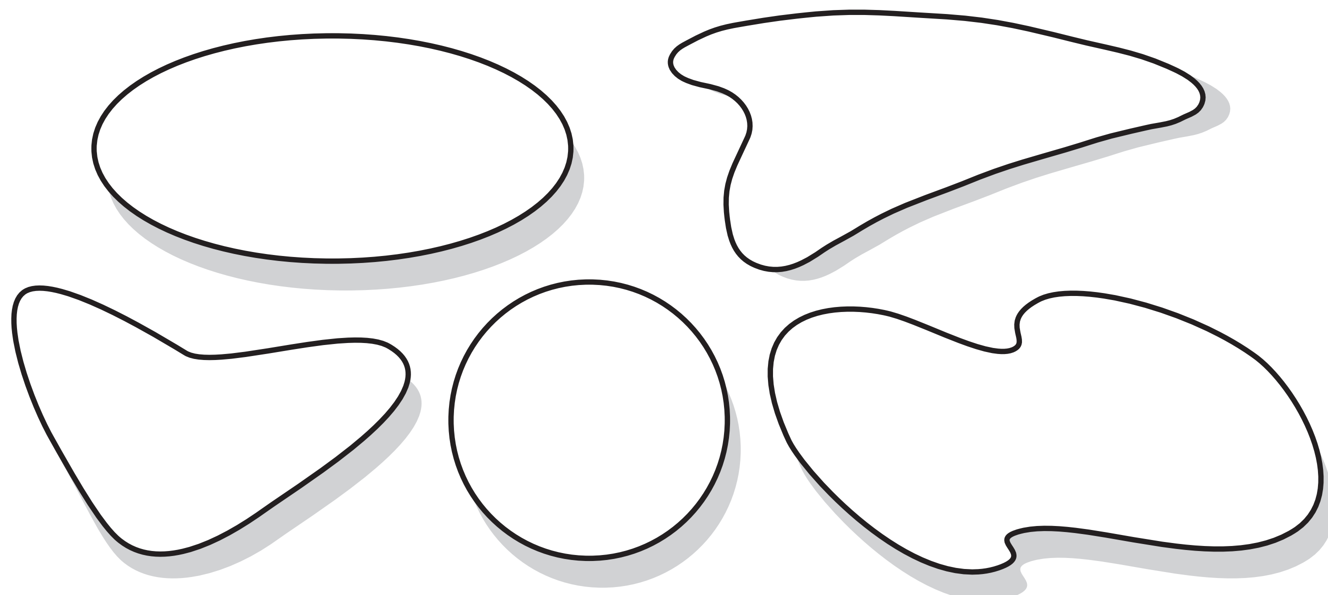


Figure 2C.17: Suggested Methods of Primary Facade Sign Lighting in the 1950's Styles Subdistrict

Sign Cans:

sheet metal sign cabinets with translucent acrylic faces illuminated by internal lights are permitted if they are not rectangular. (*except as noted below)

(ACCEPTABLE SIGN CAN SHAPES ARE NOT LIMITED TO THOSE SHOWN HERE.)



*INDIVIDUAL RECTANGULAR SIGN CANS MAY BE USED FOR INDIVIDUAL LETTERS ONLY.

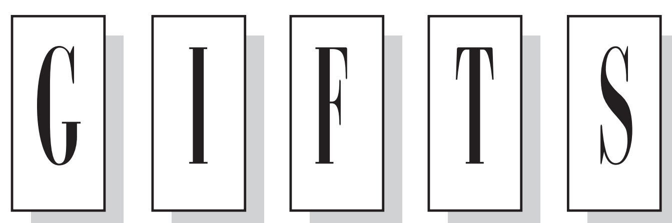


Figure 2C.18: Example of Allowed Sign Cans

2C.9 Freestanding Signs for Businesses in Residential Buildings

Buildings whose architecture and grounds (front yard lawn) are predominantly residential in character must confine their name and information to a single freestanding sign. This one sign per building limitation is not altered by multiple businesses within a single building.

See figure 2C.19.

Note: no signs of any size should be mounted on any part of the structure. This limitation is consistent with the preservation of the historic character of the district. It would not be consistent with the purpose of these design guidelines to permit the same amount of sign area on a residential structure that would be appropriate on a commercial structure of similar size.

Content: Business name, hours and one telephone number per separately owned business.

Form: Freestanding, single-sided if parallel to the street, double-sided if positioned at 90 degrees to the street. The bottom edge of the sign area must be no lower than 18” off the ground. Some physical element of the sign should be a repetition or variation of an element on the building. This could be, for example, a porch bracket, a finial, a molding or window shape.

Materials: The predominant material of the building (residence) should be used as some component of the sign. For example, if the residence wall material is shingle or plaster or brick, those materials may be used as a base on which a sign panel could be mounted.

Placement: To preserve the residential character of the site, the freestanding sign should be mounted in a landscaped area (the lawn) midway between the building (or porch) and the property line. If the distance from the front of the building (or porch) to the front property line is greater than 20 feet, the sign shall not be closer than 10 feet to the property line.

Maximum sign area: 10 square feet for a single business. 12 square feet total for multiple businesses.

Minimum sign area: 8 square feet.

Maximum height: 48 inches from the finished grade to the top of the sign.

Maximum base height: 24 inches from the finished grade to the bottom of the sign.

Minimum base height: 18 inches from the finished grade to the bottom of the sign.

Letter styles: Any serif letter style.

Colors: Colors that are compatible with the colors on the building exterior. Colors used for letters may be darker than the colors used on the building to increase their legibility. The predominant background color of the sign must match the predominant color of the building.

Lighting: Optional, if lit the source shall be external only.

Example of a free standing sign for a commercial business in a structure which is residential in character.

Maximum sign area:
10 square feet per side for one tenant
12 square feet per side for multi tenants

* Examples of elements which relate the sign to the building

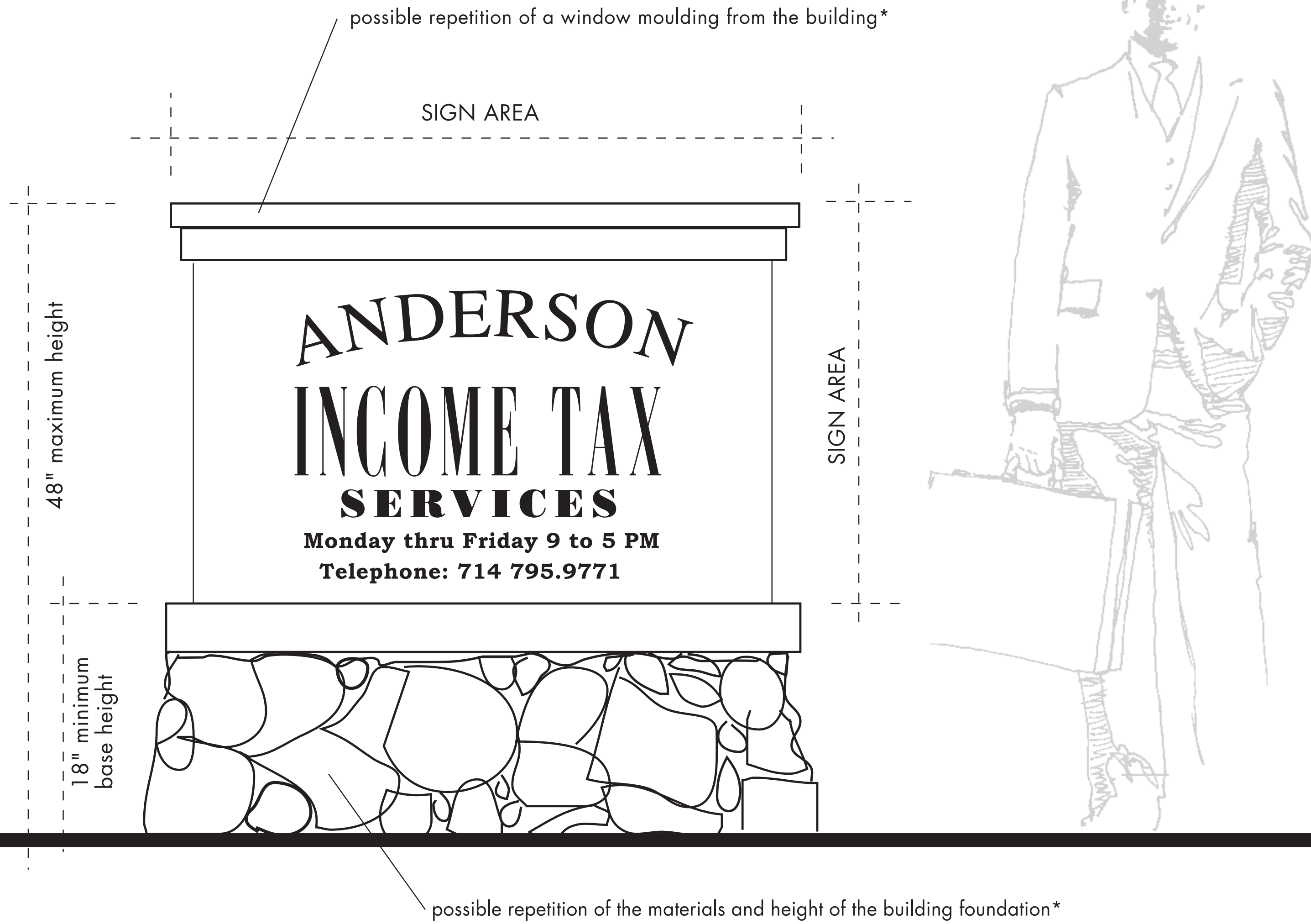


Figure 2C.19: Example of Freestanding Sign

2C.10 Sign Design Review Process and Submittal Items

Sign Plans shall be submitted to the City of Ontario Planning Department for review and approval with final approval by the Building Department for permit issuance.

2C.10.1 Submittal materials required for signs on new buildings

Scale drawings of the entire facade showing the size and location of all signs, including window, rear entry and awning valance signs.

Engineering drawing certifying the structural integrity of the mounting technique for the Primary Facade Sign.

Colors and materials samples for the building facade and the signs.

Fee payment.

2C.10.2 Submittal materials required for signs on existing buildings

For new or modified signs on existing buildings submit the above items and current color photographs of the building.

If the design submittal does not comply with these Sign Design Guidelines and the Development Code, approval will not be granted. An applicant may appeal the Planning Department Staff decision to the Planning Commission.

Table A: Sign Guidelines common to all Sub-Areas (N/A = not applicable)

Sign Type	Content	Placement	Max Number	Min. Sign Area	Max. Sign Area	Min. Letter Height	Max. Letter Height	Illumination
Second Floor Window	Business Name	Second floor windows only; no signs above second floor	Maximum of 2 signs per second floor business per street elevation	N/A	30% of glass area (1/2 the total glass area for double hung windows	N/A	*N/A*	None
Awning Valance	1). address only, or 2). business name only or 3). one line list of goods & services @ 50% of valance height max.	Message layout centered on valance	One	N/A	50% vertical height including scalloped edge; 60% for stripped awning, excluding scalloped edge	N/A	N/A	None
Projecting Pedestrian	Business Name	7' from finished grade; 9" between bldg. & sign	One	3 SF	3.5 SF	N/A	N/A	External
Rear Entry: Type 1 *(single sided wall sign w/2" spacers between sign & wall)*	Business Name	24" from left or right side of door; 4" from top of door	One *(either Type 1 or Type 2 - not both*)	5 SF	12 SF	N/A	N/A	External
Rear Entry: Type 2 *(double sided sign projecting sign)*	Business Name	8' from finished grade	One *(either Type 1 or Type 2 - not both*)	5 SF	9 SF	N/A	N/A	External
Multi-Tenants without street frontage	Business Names suite numbers optional	Wall adjacent to entry or on entry door	One per entry: front, rear or mid-block passthrough	Determined by Max. and Min. letter height	Determined by Max. and Min. letter height	0.25 inch	2 inches	External

Please note:

These tables provide a useful synopsis of the Sign Design Guidelines. ***But these are not a substitute for reading the foregoing text.*** *Important details, variations, options, exceptions and subtleties of design are contained in the text and cannot be simplified into these tables.*

Table 2C.1: Permitted Signs Common to all Subdistricts

Table B: Turn-of-the-Century Subdistrict

Sign Type	Content	Placement	Max. Number	Sign Area	Min. Letter Area	Max. Letter Area	Min. Letter Height	Max. Letter Height	Illumination
Primary Facade	Business Name	Centered within sign band (Fig.2.C.3)	One	N/A	N/A	N/A	50% of flat vertical dimension of sign band (Fig,2.C.4)	70% of flat vertical dimension of sign band (Fig.2C.4)	Refer to FIG.2.C.6 Visible Neon prohibited
Window (ground floor)	Business Name (information on goods & services: optional see Fig.2.C.8	See Fig.2.C.7	1 per window for symmetrical facades w/2 equal windows & central entry; or 1 in largest window for asymmetrical facades	N/A	10% of window area, not including ornaments & borders	15% of glass area, not including ornaments / borders	N/A	info on goods & services: 30% of letter size of business name - max.	Interior display lighting only, no exterior lights for window signs

Table C: 1920's through 1940's Subdistrict

Sign Type	Content	Placement	Max. Number	Sign Area	Min. Letter Area	Max. Letter Area	Min. Letter Height	Max. Letter Height	Illumination
Primary Facade	Business Name	W/in largest flat rectangular area of facade (Figures 2C.9 & 2C.11)	One	N/A	60% of max. area	15% of placement area (see P 98)	N/A	N/A	Refer to lighting chart Fig.2.C.12
Window (ground floor)	Business Name (information on goods & services: optional)	One per major window for symmetrical facades w/central entry; or 1 in largest window for asymmetrical facades	Two	N/A	10% of window area, not including ornaments & borders	15% of glass area, not including ornaments / borders	N/A	info on goods & services: 30% of letter size of business name - max.	Not Permitted

Please note:

These tables provide a useful synopsis of the Sign Design Guidelines. ***But these are not a substitute for reading the foregoing text.*** *Important details, variations, options, exceptions and subtleties of design are contained in the text and cannot be simplified into these tables.*

Table 2C.2: Permitted Signs in Turn-of-the-Century and 1920's through 1940's Subdistricts

Table D: 1950's Style Subdistrict

Sign Type	Content	Placement	Max. Number	Min. Sign Area	Max. Sign Area	Max. Height	Base Limits	Illumination
Primary Facade	Business Name	See page 104	One	60% of Max. Letter Area	See page 104	N/A	N/A	Internal or External see Fig.2.C.16
Partially Mounted Roof Sign (Primary Facade)	Business Name	See page 104	One	See Page 104-105		See Figures 2C.15 and pages 104-105.	N/A	
Freestanding Monument (double sided)	Business Name	Only on a corner lot, within landscape, at a 45° angle, not closer than 5' to the property line.	One	N/A	18 SF	48" from finished grade to top of sign with an additional 12" allowed for subordinate projection.	Required Height:18" Min. base length: 3' Max. base length: 6' Min. base width:12"	External (optional)
Window (ground floor)	Business Name	Asymmetrically (not centered) on the largest frontage window,12" from the edge of the window that is nearest the entry	Two	5% of the area of the piece of glass (not the total glass area of the facade)	10% of the area of the piece of glass (not the total glass area of the facade)	N/A	N/A	

Table E: Sign for businesses in buildings of a residential character

Sign Type	Content	Placement	Max. Number		Min. Sign Area	Max. Sign Area	Max. Height	Min. Base Height	Illumination
Freestanding Monument (single or double sided)	Business name, hours, & 1 phone no. per business	within landscape, 10' from property line or equidistant from the house/porch to the property line if this is less than 10'	One		8 SF	10 SF single business; 12 SF multiple business	48" from finished grade to top of sign	18"	External (optional)

Please note:

These tables provide a useful synopsis of the Sign Design Guidelines. ***But these are not a substitute for reading the foregoing text.*** *Important details, variations, options, exceptions and subtleties of design are contained in the text and cannot be simplified into these tables.*

Table 2C.3: Permitted Signs in 1950's styles Subdistrict

Lighting Design Guidelines

2D.1 Introduction

The purpose of these guidelines is to facilitate the installation of building facade lighting throughout the Downtown Ontario Retail District and to do so in a manner that respects and enhances the characteristics of each individual building as well as contributes to the civic atmosphere of the district as a whole.

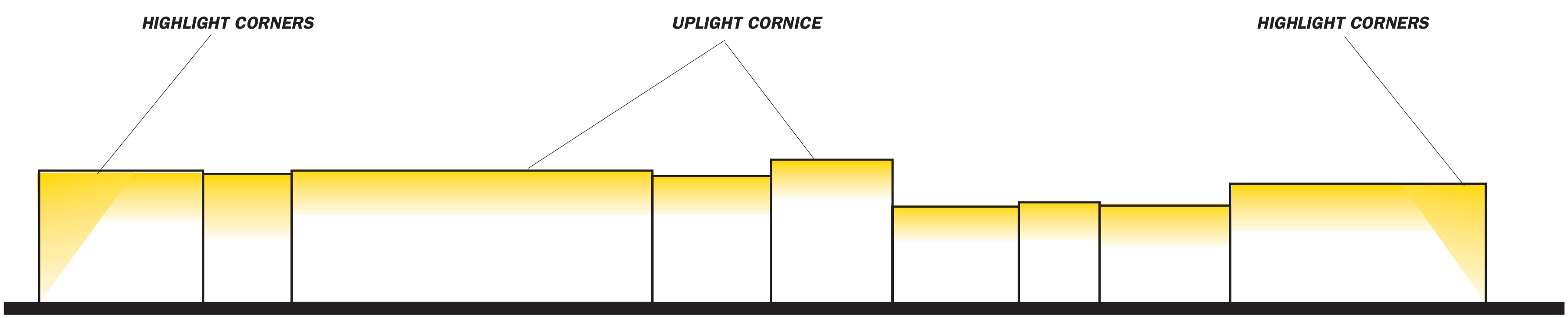
Illuminated facades activate and invigorate the streetscape wherever they occur, and provide an associated marketing boost as well as an added sense of pedestrian security and well being at these locations.

2D.2 District Concept: "Bookends"

Special emphasis shall be given to illuminating the facades of each building occupying a corner lot along Euclid Avenue. These lit corners shall provide "bookends" to each block, giving a sense of cohesion to the district as a whole. Light levels of corner structures shall be allowed to either match the light level of the opposing corner or to exceed by 25% the most brightly lit mid-block facade on their respective block.

The "bookends" concept is of key importance to the district's facade lighting strategy. As such, the city will facilitate the speedy installation of these elements to the best of their ability. (See Figure 2D.1)

This district-wide concept shall be accentuated by highlighting Designated Buildings within the District.



TYPICAL BLOCK ELEVATION: LIGHTING CONCEPT

Figure 2D.1: “Bookends” Block Lighting Concept

2D.3 Facade Lighting

Lighting of facades, particularly historic structures, is encouraged. The following elements on a facade may be lit:

- Interesting details such as the cornice, facade mouldings, among others
- Signs
- Storefront windows (interior lighting only)
- Awnings (except in turn-of-the-century subdistrict)

In addition, pedestrian-scaled facade-mounted decorative fixtures shall be provided. These fixtures shall reflect the building's architectural style and the subdistrict it is located in.

The following section discusses the various techniques and necessary equipment to light a facade.

2D.3.1 Facade Lighting: Techniques

2D.3.1.1 Uplighting

Uplighting is preferred for articulation of interesting cornices, elimination of visible glare experienced by the pedestrians, and for maintenance purposes. However, other lighting techniques such as downlighting will be accepted if shown to be appropriate to the architecture and if they conform to the "light trespass" and "discomfort glare" guidelines. Figure 2D.5 shows

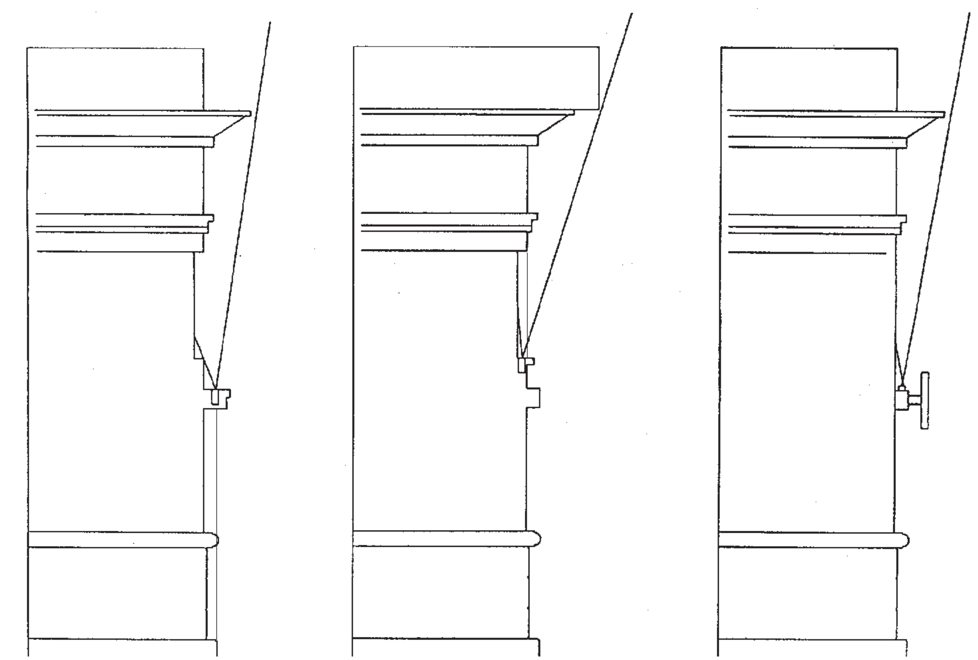


Figure 2D.2: Examples of Concealed Lighting Techniques examples of fixtures suitable for uplighting facades. (See sections 2D.3.6 and 2D.3.7 on "Light Trespass" and "Discomfort Glare.")

2D.3.1.2 Concealed Lighting

In addition to simple visible fixtures for uplighting, concealed lighting techniques are by their nature anonymous and therefore acceptable on all structures. Examples include: fixtures countersunk into sills uplighting window frames, fixtures built into signage to light the facade, and uplight fixtures countersunk into the top of pilasters. See figures 2D.3 and 2D.4.

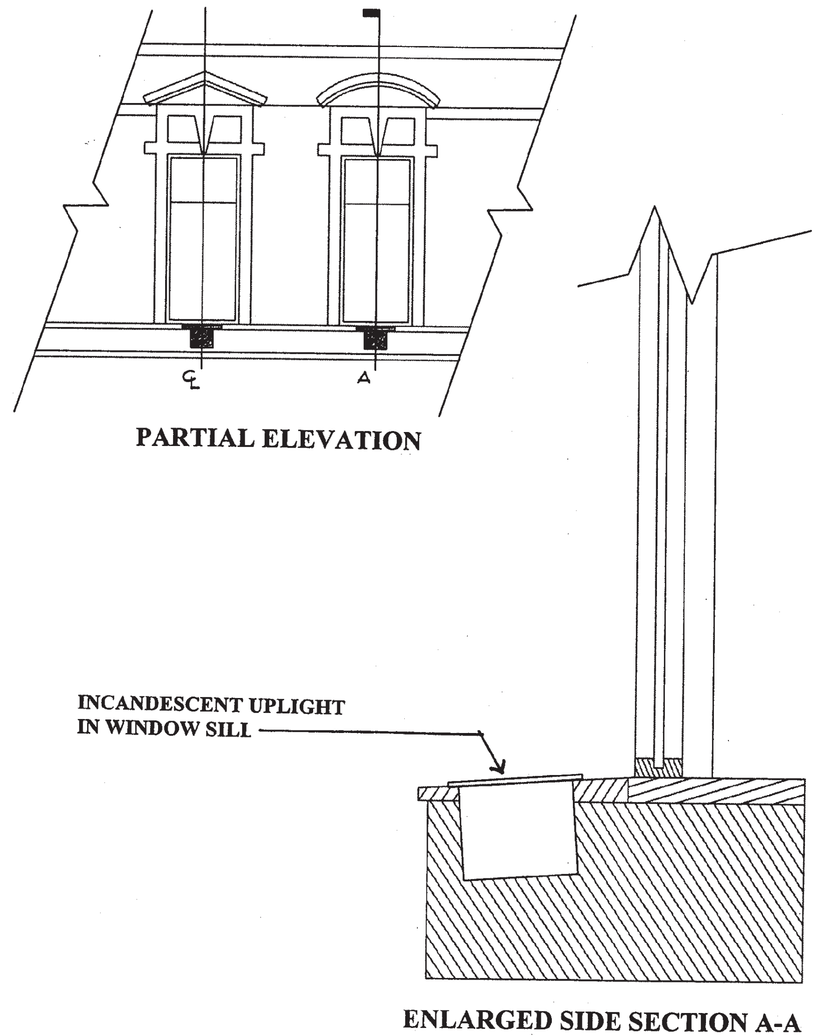


Figure 2D.3: Example of Concealed Lighting Techniques – window uplighting

2D.3.1.3 Neon Lighting

Overtly decorative lighting techniques, such as neon on facades of buildings of the 1920's through the 1950's, will be allowed if these techniques reinforce the architectural character of the building. Buildings in the turn-of-the-century subdistrict shall not have exposed neon lighting. Extent of neon shall be regulated by the Planning Department.

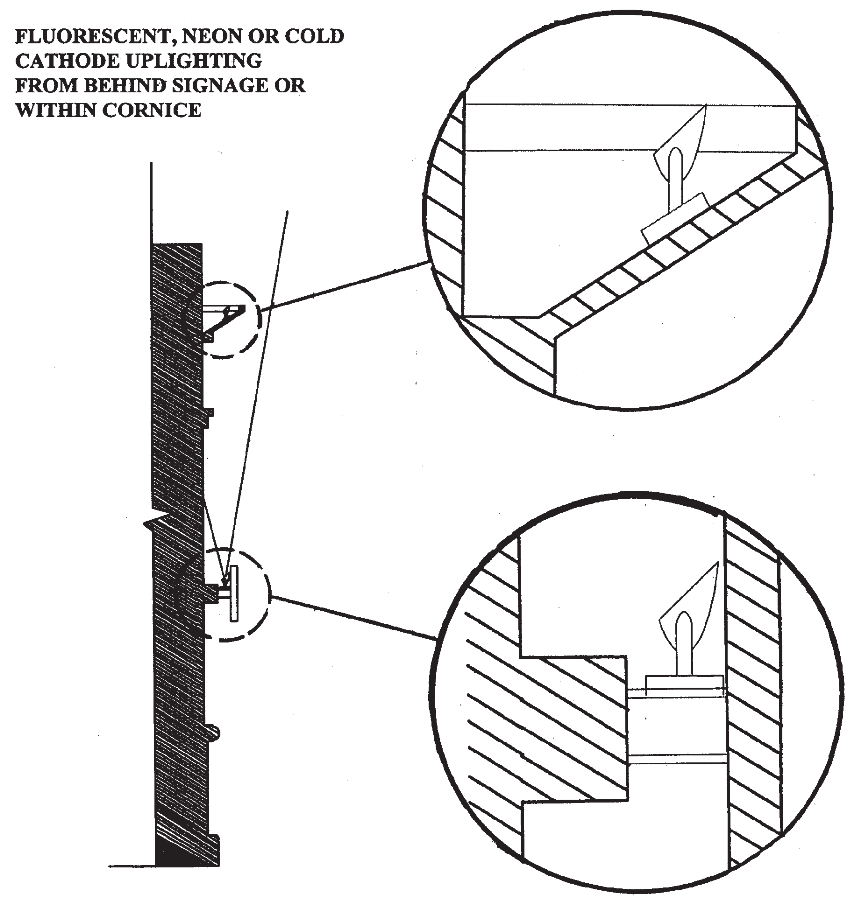


Figure 2D.4: Example of Concealed Lighting Techniques – Cornice uplighting

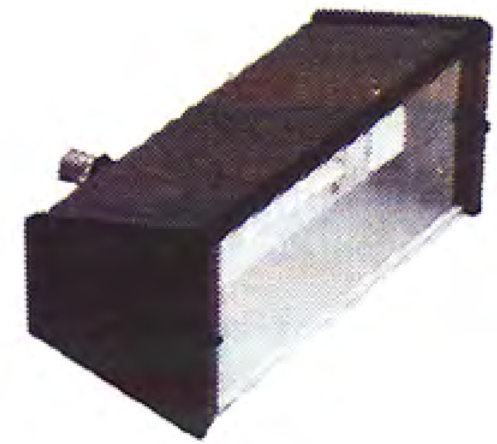
2D.3.2 Facade Lighting: Equipment

1. Simple, adjustable incandescent exterior grade lampholders, mounted to the facade are acceptable in all areas as uplights and downlights. These fixtures should be mounted such that the lamp stands off the wall by 18" - 24". The mounting arm is to be detailed in a manner empathetic to each facade's architecture. (See figure 2D.5 -1)

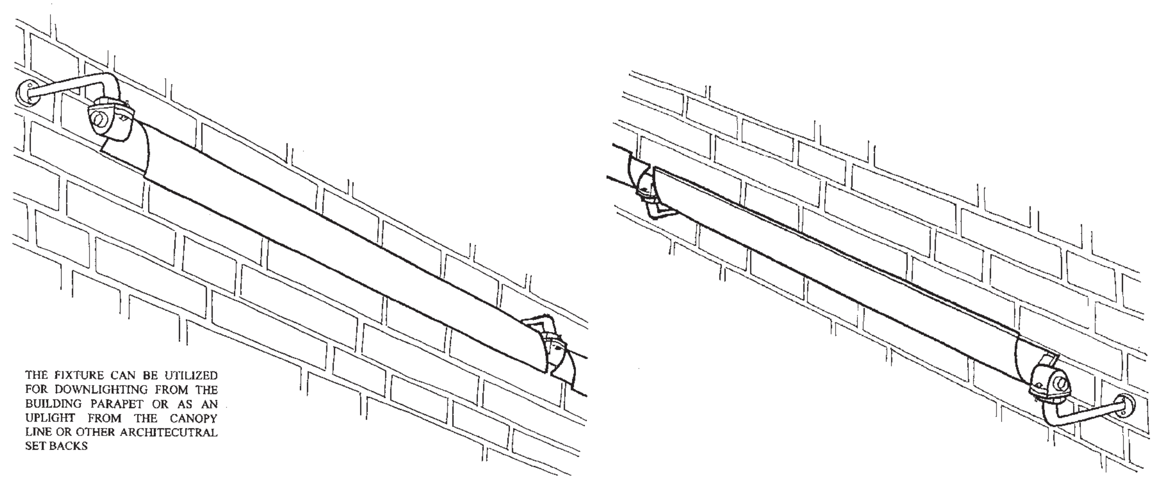
2. Adjustable compact fluorescent floodlights less than or equal to dimensions of 9" x 5" x 4" are acceptable in all areas as =an uplighting technique only. These fixtures should be mounted such that the lamp stands off the wall by 18" - 24". The mounting arm is to be detailed in a manner empathetic to each facade's own architecture. (See figure 2D.5 - 2)

3. Linear fluorescent "billboard" lights may be used to illuminate facades of non-historic structures if detailed and mounted in a manner sympathetic to the architecture. (See figure 2D.5 -3)

1. Incandescent, Adjustable, Water tight, "Par" Lamp Holder Suitable for all Structures



2. Compact, Incandescent, Adjustable Floodlight Suitable for all Structures



3. Fluorescent, Water-tight Wall Wash Fixture for downlighting and uplighting Suitable for Facades of the 1950's through today

Figure 2D.5: Examples of exterior visible fixtures for uplighting and downlighting

2D.3.3 Lamp Types

Lamps can be of any "family" of light sources including incandescent, fluorescent, High Intensity Discharge (HID), or other, but must have a Color Rendering Index (CRI) of 75 or higher. The CRI indicates the ability of a lamp to render an object closest to an incandescent light source. The incandescent source, with a CRI of 100, is the bench mark for other lamps. Other light sources are measured as to how closely they come to rendering an object as a incandescent source would.

All lamps should produce static, consistent light. Blinking, flashing, and strobing lights are inappropriate for all facades.

2D.3.4 Facade Lighting Levels

The lighting levels on the overall vertical surfaces of an applicant's facade shall be no more than two times brighter than the overall vertical surface of a neighboring structure that has a lit facade. Using a luminance meter, the perceived "brightness" of the surface can be measured.

Accent (or highlighting) illumination on a structures special features shall not exceed ten times the light levels of a neighboring structure that has accent illumination (as measured at the center of target).

If an applicant can adequately show that exceeding these ratios will not harm the marketability of a previously lit and adjacent property, a conditional exception may be granted.

2D.3.5 Mounting & Location

Lighting equipment and mounting locations shall be selected for optimum aesthetic impact and minimum glare and light trespass. Equipment shall be sympathetic to the building's character and be unobjectionable as a part of the daytime scene.

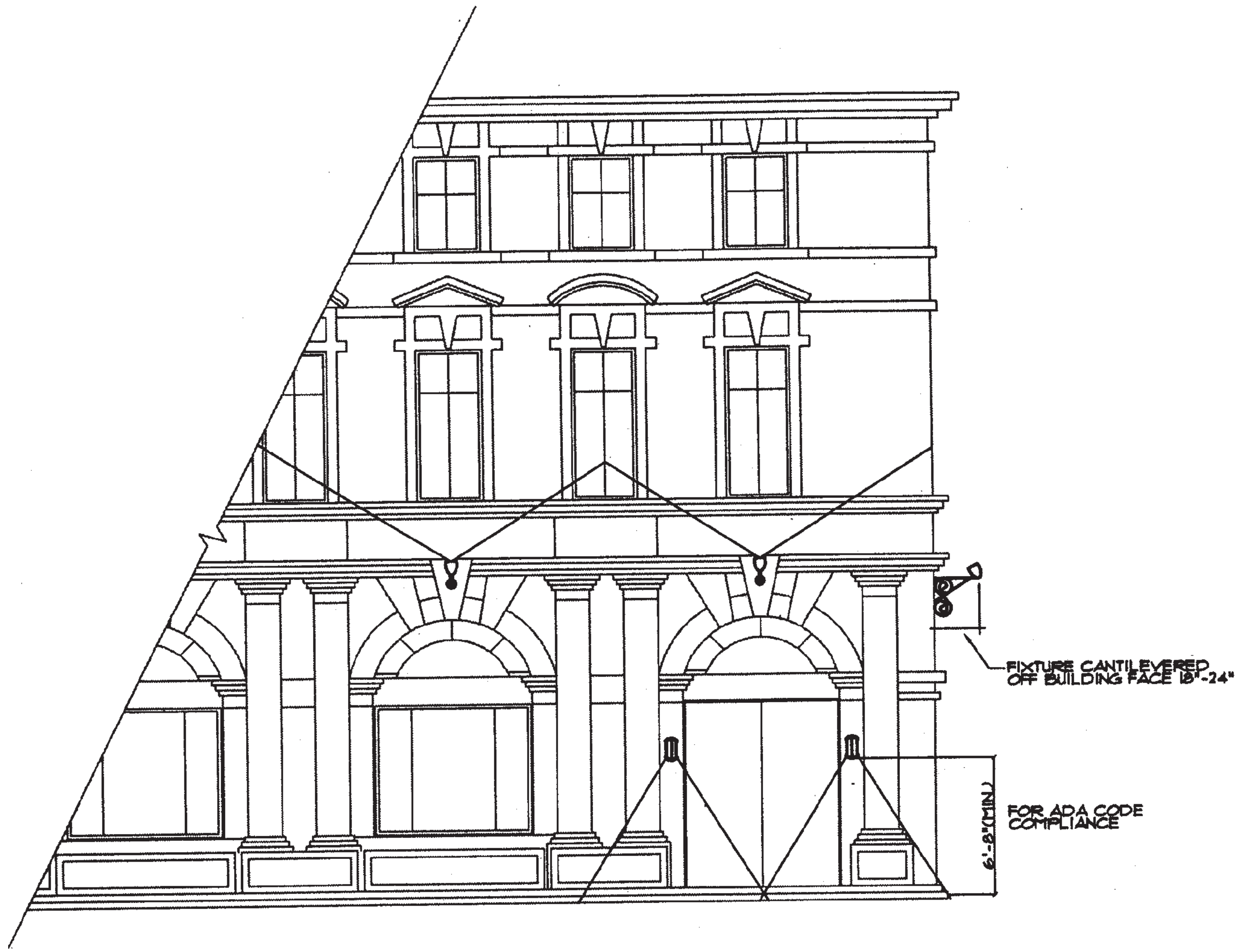


Figure 2D.6: Example of Facade Lighting with Decorative Fixtures

2D.3.6 Light Trespass

Light trespass shall be minimized through proper choice of lighting equipment, mounting methods, and lighting techniques. Light trespass is unwanted lighting that spills onto adjacent properties or into windows of tenants. The applicant will indicate in the Site Survey and Lighting Design Proposal report (see Design Review Section) if such conditions exist and how the proposed design mitigates the problem.

Figure 2D.7: Diagram explaining Light Trespass

2D.3.7 Direct Glare Prevention

Direct glare from light sources (lamps) or indirect glare (flashing) from light fixtures, as seen from expected viewing angles including the roadways and sidewalks will not be allowed. The proposed design shall show how objectionable glare or indirect glare has been eliminated through lighting techniques, mounting and/or shielding of equipment.

In all the facades, A 45° optical cut-off angle between the viewer and the fixture shall not be exceeded. The optical cut-off angle is defined here as the point at which a pedestrian or driver is first able to see the direct glare of a lamp or its reflected image.

Exception: exposed lamps such as neon, colored incandescent, or clear multi-filament lamps that are used in an overtly decorative manner to give presence to a facade will be conditionally allowed. The lighting design proposal must show sensitivity of such a lighting scheme's impact on adjacent facades and adherence to overall goals of its respective block.

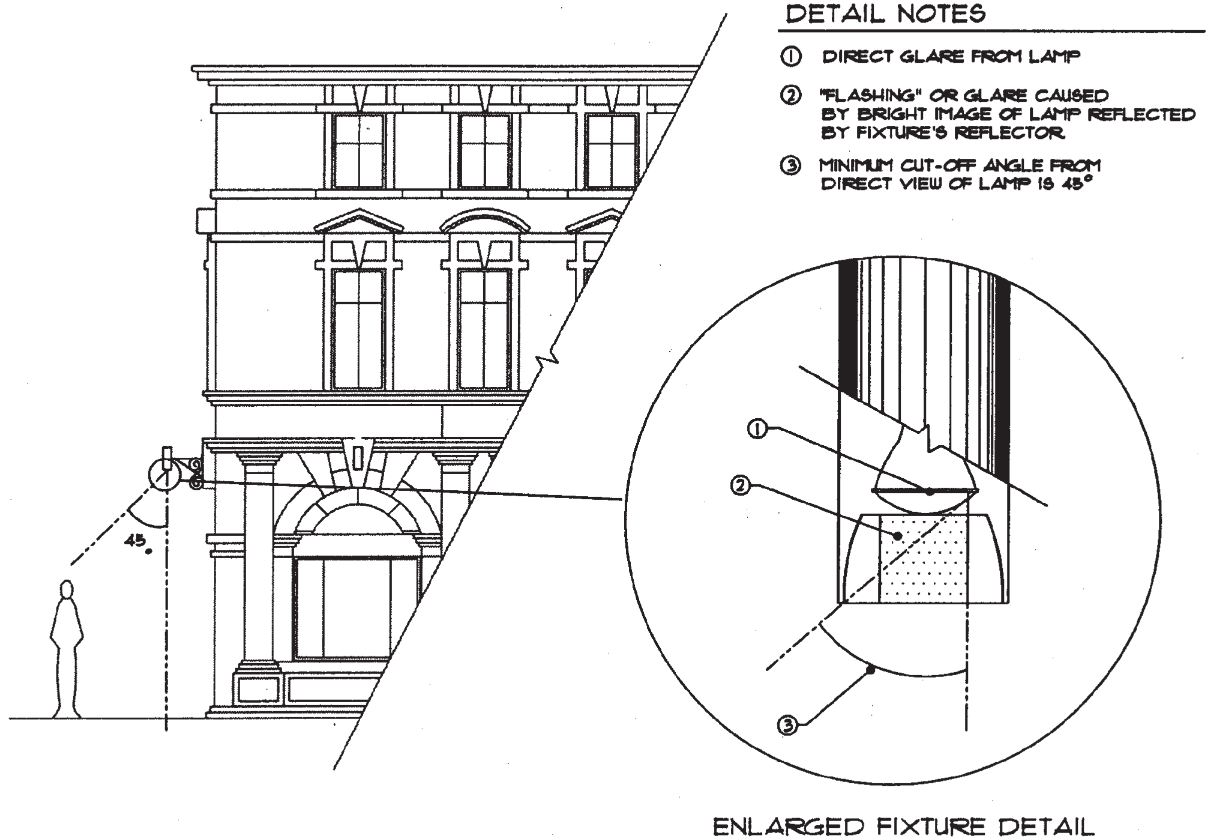


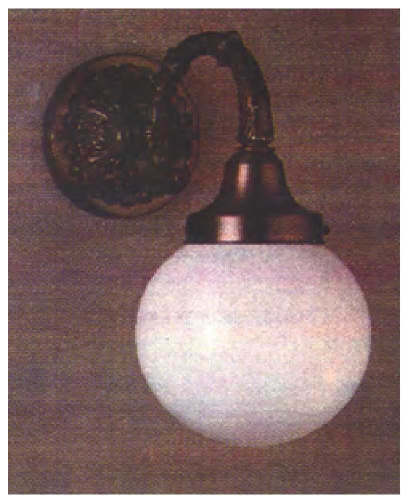
Figure 2D.8: Diagram explaining Direct Glare

2D.4 Decorative Fixtures

Decorative fixtures may be used to mark entries, to uplight or downlight canopies, or to light facades. These decorative fixtures must be empathetic to the historical context of the associated facade.

The examples shown on the following pages are suitable for the styles in the three sub-areas, namely turn-of-the-century, 1920's through 1940's, and 1950's styles.

Historic Decorative Fixture with Incandescent or Compact Fluorescent Light Source



Historic Decorative Fixture with Incandescent or Compact Fluorescent Light Source

Figure 2D.9: Examples of Decorative Fixtures suitable for the Turn-of-the-Century Subdistrict

Example of a lit building from the turn-of-the-century period. Note the uplit cornice, the concealed lighting at the top of the pilasters, and the decorative fixture at the street level.

Figure 2D.10: Example of Lit Building from the Turn-of-the-Century Subdistrict

Historic Decorative Fixture with Incandescent "Silver Bowl" Style Lamp and Porcelain Enamel Finish

Historic Wall or Signlight Fixture with Incandescent "Silver Bowl" Style Lamp and Porcelain Enamel Finish

Figure 2D.11: Examples of Decorative Fixtures suitable for the 1920's through 1940's Subdistrict

Example of a lit building from the 1920's - 40's time-period. Note the concealed lighting along the facade moldings, neon and internally lit signs.

Figure 2D.12: Example of Lit Building from the 1920's through 1940's Subdistrict

Suitable for Facades of the 1950's through today

Historic Wall or Sign-light Fixture with Incandescent "Silver Bowl" Style Lamp and Porcelain Enamel Finish

Can be used decoratively with low wattage, multifilament Incandescent Lamp, or as a wall wash when equipped with a hood.

This Incandescent or Fluorescent Decorative Fixture is typical of contemporary fixtures that retain visual historic references.

Figure 2D.13: Examples of Decorative Fixtures suitable for the 1950's Styles Subdistrict

Example of a lit building from the 1950's time-period. Note the neon primary facade sign.

Figure 2D.14: Example of Lit Building from the 1950's styles Subdistrict

2D.5 Store Window Interior Lighting

Store window lighting should be used at every available display window. These lit windows will contribute to the light level along the streets, enhance the presence of the building facade, and create a safer environment. Window lighting techniques should produce no glare outside of the window. Fluorescent and incandescent source track fixtures with a CRI of 80 or higher are acceptable.

The track should be mounted close to the window, hidden behind the window header. These fixtures should be concealed from the outside view. All necessary accessories to conceal the fixture and lamp should be used (louvers, glare shields, barn doors).

The window lights should be on the "late night" circuit and left on or dimmed up to 40% after the stores have closed.

Neon lighting is prohibited in store windows in all the subdistricts.

2D.6 Lighting of Awnings

Awnings shall be lit to help activate the district's storefronts and facades. Typically the awnings should be uplit by light fixtures mounted to the awnings structure below, creating a pleasant glow to translucent fabrics. Overbright internally lit awnings shall not be permitted.

Internally lit awnings in the turn-of-the-century subdistrict are not permitted.

2D.7 Lighting of Alleyways and Mid-block Pass-throughs

The Guidelines, as articulated, will also apply to the alleyway facades and to the passageways. Passageways represent a special opportunity for use of decorative wall mounted fixtures to create safe gateways to the retail areas beyond. Creation of new shop windows opening onto the passageways along with their associated lighting should be encouraged.

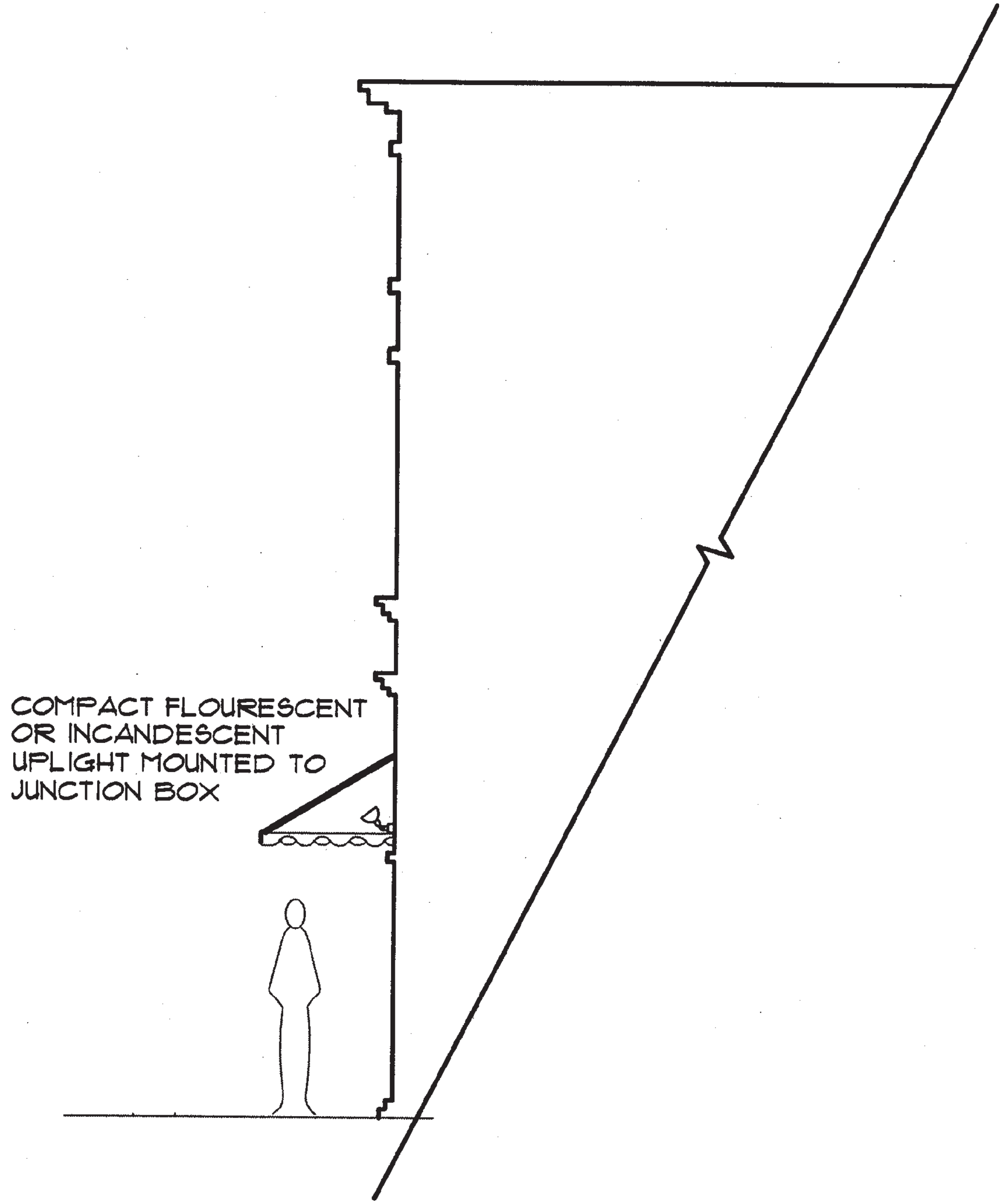


Figure 2D.15: Examples of Awning Lighting

2D.8 Signage Lighting

Signage lighting, if external to the sign, shall be provided typically by downlights. The over spill lighting from these fixtures will contribute to illumination of the facade. Other external lighting techniques including uplighting and sign-attached fixtures will be allowed if sensitive to the respective architecture. See the signage section of these guidelines for information regarding signs with integral lighting.

2D.9 Exceptions to Design Guidelines

Exceptions should be considered by the city for some of the specific reasons noted previously and to allow for maximum creativity and artistic freedom. In each case, granting an exception will be predicated on the proposed design having no significant negative impact on the marketability of adjacent businesses or the district as a whole.

2D.10 Review and Approval Process

A building owner or tenant (with the building owner's written approval) shall demonstrate their compliance to the Lighting Design Guidelines to Ontario's City Planning Department.

A. The applicant will commission a **Site Survey and Lighting Design Proposal** (may be performed by a lighting designer or other qualified design professional) resulting in a report that contains the following information:

1. Description of the subject building's architecture and outstanding physical characteristics.
2. Written narrative along with drawings, renderings, or sketches as required to adequately convey the design intent of the facade lighting.
3. Description of both the positive and negative impact of the proposed lighting on neighboring facades.
4. If the city of Ontario deems it necessary, the applicant will seek a written approval to proceed from an adjacent building owner whose property is significantly impacted by the proposed design due to Light Trespass.
5. Compliance to the light levels requirements.

B. Applicants submittals shall be reviewed by the city of Ontario for compliance, rejection, or for compliance through exceptions.

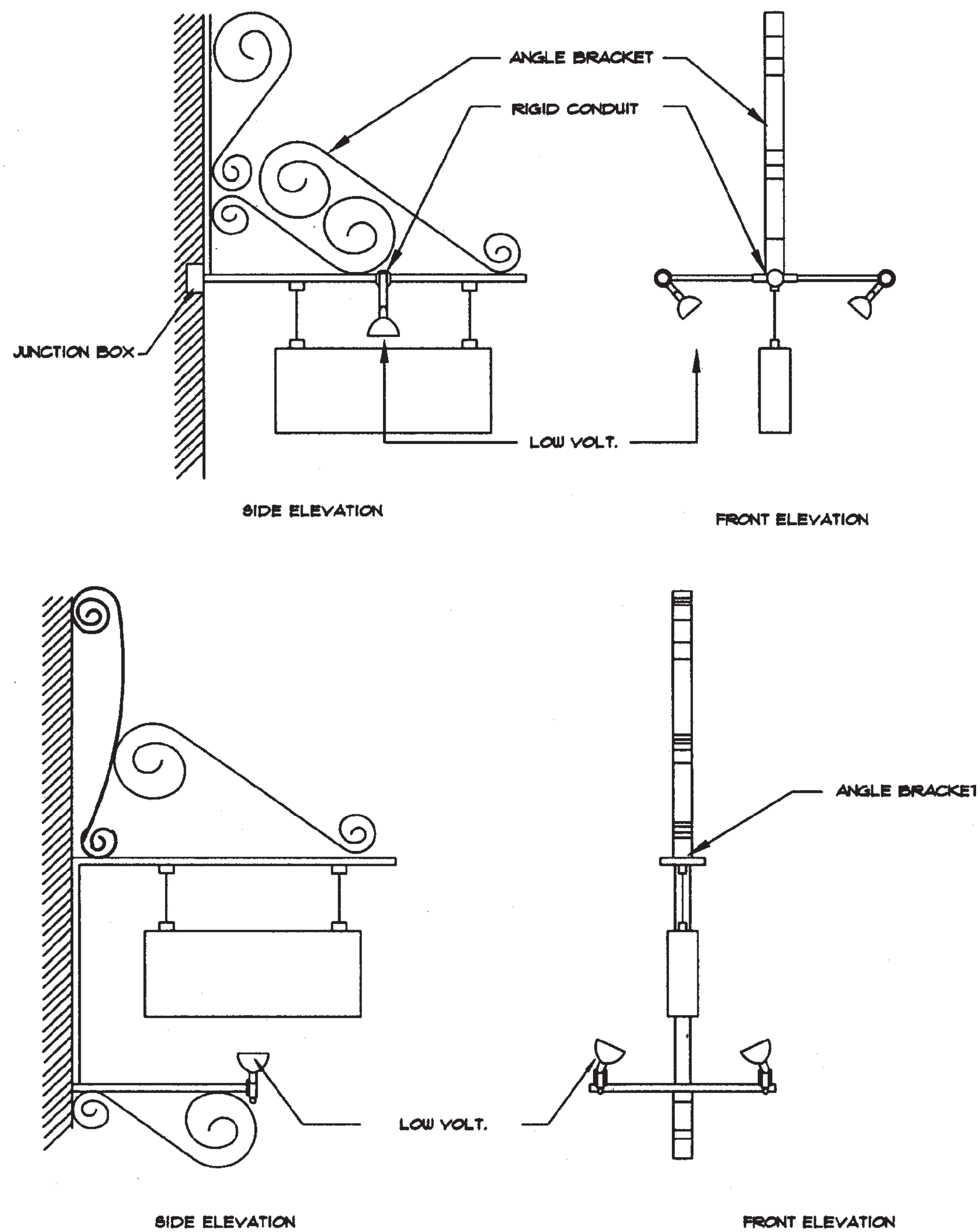


Figure 2D.16: Examples of Lighting Pedestrian-scaled Projecting Signs

Mixed Use Design Guidelines

3.1 Background

Holt Boulevard has several historical buildings that contribute to the character of Downtown. Each of these buildings is a record of not only the architectural history of the building itself but its construction date is also a record of the city's urban growth over the past century.

3.2 General Concepts: Architectural

Buildings in each of the three subdistricts will fall into one of the following three categories:

- **Designated Buildings** (on the City of Ontario Historic Building List.)

  The original architectural character of these buildings currently exists to a substantial extent and is visible. Buildings in this category will be restored as close as possible to the original structure.

- **Significant Buildings** (Buildings built before 1950 for which historical information is available – either referenced in these Design Guidelines or available in the Model Colony Room.)

  The original architectural character of these buildings is currently intact to a major extent, though not necessarily visible. Buildings in this category shall draw upon the photographic resources available to rehabilitate the facades. The facades shall be renovated to incorporate the distinctive architectural features of the relevant historic type.

- **Context Buildings** (Buildings built before the 1950's for which **no** historical information is available or for which no historic fabric remains or Buildings built after the 1950's).

  The original character of these buildings no longer survives to any extent. These buildings should follow the basic massing, storefront modulations, building treatments, detailing, signage, etc. as detailed in the following Design Guidelines. These guidelines will also be followed for any new infill structures.

3.3 General Concepts: Lighting

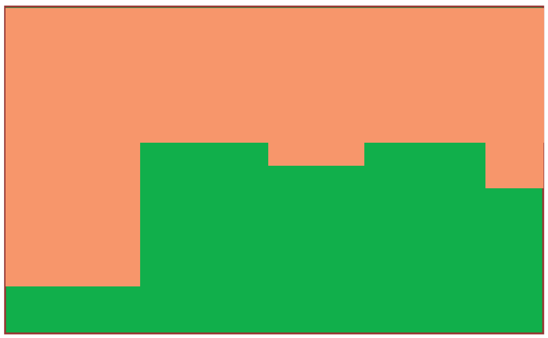
Lighting guidelines for the retail district are aimed at using light to enhance the characteristics of each individual building as well as the atmosphere of the entire retail district. Illuminated facades should unite the various disparate elements within each block. The facades of the more prominent buildings at the end of the blocks should be lit creating a "bookend" effect. This district wide concept should be accentuated by highlighting individual historic structures within the district.

(Please refer to Chapter 2D – Lighting Design Guidelines for further details.)

3.4 General Concepts: Signage

Signage shall follow principles of traditional storefront signage with the primary signage restricted to the space between the transom and the storefront cornice. Secondary signage shall include elements such as blade signs, gold lettering on storefront windows, and other lettering on canopies.

(Please refer to the Chapter 2C – Sign Guidelines: Turn-of-the-Century Subdistrict section for further details.)



LARGE PROTOTYPE: (40,000 – 100,000 SF)

Parcel Size: 280 feet by 175 feet
47,600 square feet

Floors: Two

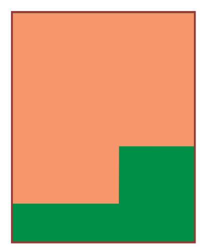
Building Size: 52,450 square feet

MEDIUM PROTOTYPE: (20,000 – 40,000 SF)

Parcel Size: 170 feet by 185 feet
31,450 square feet

Floors: Two

Building Size: 37,100 square feet



SMALL PROTOTYPE: (10,000 – 20,000 SF)

Parcel Size: 120 feet by 95 feet
11,400 square feet

Floors: Two

Building Size: 16,600 square feet

Figure 3.1: Infill Development Scenarios

3.5 Design Guidelines for Buildings in the Mixed Use District

3.5.1 Designated Buildings

Please refer to page 22 in Chapter 2A – Retail Design Guidelines for treatment of Designated Buildings.

3.5.2 Significant Buildings

Please refer to page 28 in Chapter 2A – Retail Design Guidelines for treatment of Significant Buildings.

3.5.3 Context Buildings & New Infill Structures

Context Buildings are those buildings built before the 1950's for which no historical information is available at this time or for which no historic fabric remains and those buildings built after the 1950's. These buildings by the nature of their location contribute to the character of Downtown Ontario. For that purpose, these buildings shall follow the basic massing, storefront modulation, building treatments, detailing, signage, etc. as detailed in the following Design Guidelines. The design guidelines for these buildings allow for a consistency in character to be developed without imposing a false sense of history on these buildings.

A Context Building may be placed on the Significant Building List if information or material during actual rehabilitation is uncovered. At that time, the guidelines governing the Significant Buildings shall apply to the building.

Any new infill structures shall also follow the same guidelines as those for the Context Buildings.

The following guidelines will be followed for the rehabilitation of Context Buildings and the design of New Infill Structures:

1. Building Usage.

All buildings along Euclid Avenue should have retail at the street level and residential or commercial on the upper level(s).

2. Massing.

Six story structures are allowed in the C2 District by the Development Code. The allowable FAR (Floor Area Ratio) is 2.0. A FAR of 2.5 is allowed for projects that include residential uses.

A new structure in a mid-block location shall be built at the property line along the sidewalk to maintain street level retail continuity and shall have no vertical setbacks for the first three stories. A setback of 15 feet shall be required for the fourth floor and an additional 15 feet setback for the level after that.

Corner buildings may be six stories with no vertical setback at all. The building footprint at the corner shall be limited to 50 feet by 50 feet. The rest of the building shall follow the massing guidelines for a mid-block building. (See figure 3.1)

False Front Structures. Single story gabled buildings shall have false fronts extending the facade vertically and horizontally so as to match the roof-line of adjacent buildings and add to the dense urban feel of the area.

3. Setbacks.

The zero setback line shall be maintained.

4. Storefront Modulation.

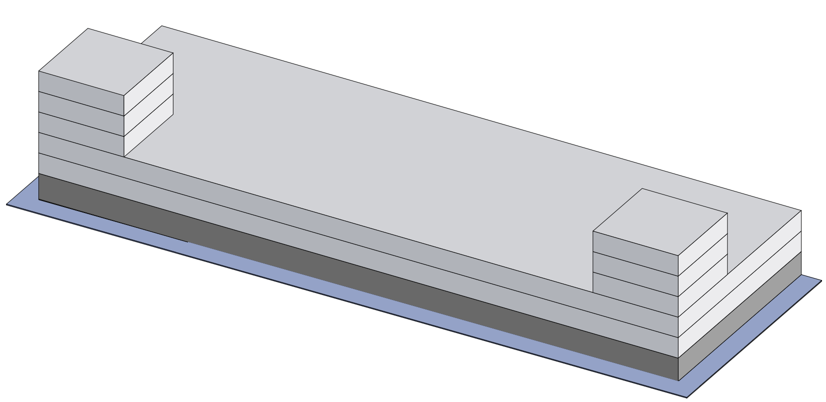
A typical storefront module shall range from 25 to 30 feet and has a three bay modulation with a centered entrance.

Buildings wider than two modules (50-60 feet) shall have a different modulation. These buildings shall either repeat the basic three-bay module of 25 to 30 feet or increase the number of bays while keeping the individual bay width to 8 to 10 feet.

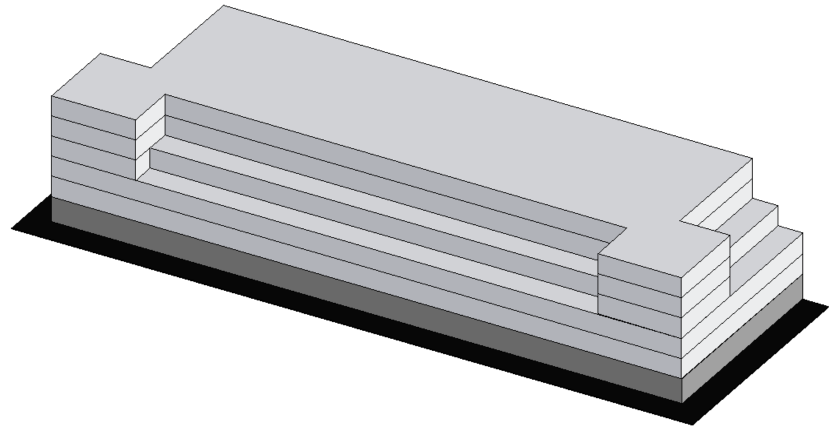
Buildings wider than 120 feet shall be visually broken into two buildings in terms of the facade treatments to prevent a building from overpowering the block in terms of scale.

5. Entrances.

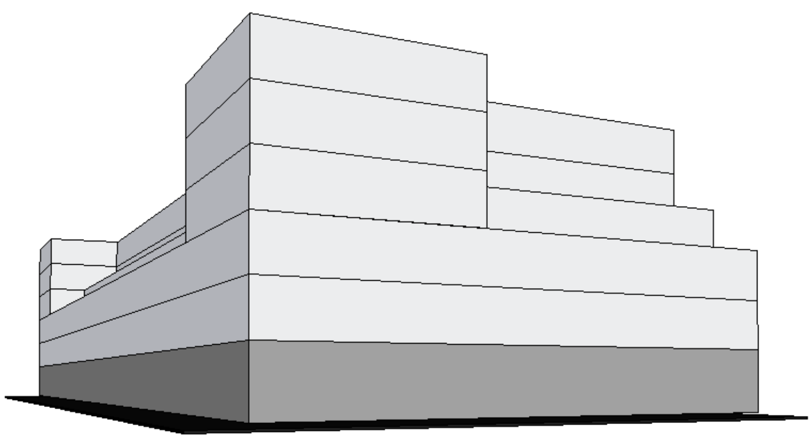
Corner entrances are encouraged in corner buildings. Rear entrances for both the retail and upper levels are encouraged. If street side entrances are provided for the upper levels, the width of the entry shall be limited to 15 feet at the street level to maintain retail continuity.



Stage 1: Block massing diagram that depicts the mid-block minimum 3 story with no setback requirement and the allowed 6 story, 50 feet by 50 feet corner tower.



Stage 2: Block massing diagram that depicts the mid-block minimum 3 story with no setback requirement; required 15 foot setback for the next floor; the required additional 15 foot setback for the next floor; and the allowed 6 story, 50 feet by 50 feet corner tower.



View of Stage 2 from eye level. Note that the top three levels are barely visible; the lower three levels dominate the pedestrian's view.

Note: The purpose of these massing diagrams is to depict appropriate massing techniques and setback requirements; they are not intended to describe storefront modulation or other architectural design treatment.

Figure 3.2: Block Massing Diagrams

6. Roof Design.

Visible sloped roofs are permitted in this subdistrict. The Planning Department shall review the designs for all visible sloping roofs prior to approval .

7. Mechanical Equipment.

Mechanical equipment mounted on the roof as well as electrical and plumbing equipment should be screened from the view of pedestrians and users of nearby buildings. Roof equipment should be screened by the building parapet. If building parapets do not provide adequate screening of mechanical equipment from upper floors of adjacent buildings, screening shall be installed as an integral part of the overall architectural design, and painted such a color as to allow its blending with its visual background.

Please refer to the City of Ontario Development Code for further information on screening of mechanical equipment.

8. Building Elements.

Context buildings in the mixed use district shall follow the same guidelines as those in the turn-of-the-century subdistrict. (Please refer to Chapter 2A for illustrations) Each building should have the following typical elements:

Cornice
Pilasters
Upper level windows
Mid-floor panel
Transom windows
Display windows
Entrance door
Bulkhead

Cornice

Each structure shall have a simple cornice.

A brick-front building may have a corbelled cornice. A plaster front building may have a stone sill at the parapet line.

Storefront Frame (Pilasters)

The pilasters on the buildings should be emphasized on the facade so as to frame it visually.

Upper Level Windows

The upper level windows should be tall and narrow, symmetrically arranged. The number of windows should be based on the storefront modulation at the lower level. The number of windows may range from three to eight on a typical storefront based on the storefront width.

The upper level window should have a distinguishable sill and lintel. The windows may be combined into pairs, triples or bands. The sill, lintel or surround may be made of stone or plaster.

Mid-floor Panel

A mid-floor panel between the floors shall be provided. The height of the mid-floor panel shall be at least 2 feet and not more than 3 feet. Proportionally, the mid-floor panel is 15-20% of the height of the street level storefront.

Transom Windows

Transom windows above the display windows should be provided. The transom window height depends on the overall floor height and ranges from 2 to 3 feet. The awning, if provided, may be mounted so as to cover the transom window.

Display Windows

To promote a retail environment, all display windows shall provide a clear view of the store merchandise or a view into the business interior. To achieve this purpose, the greater portion of the window should remain clear, free from obstructions.

The display windows may either be composed of a single pane of glass or be divided into smaller lights by glazing bars or muntins.

Entrance Door

The entrance door should be kept simple. A wood and glass door of traditional design is encouraged. Special touches like a brass door pull or brass kick-plate are also encouraged. Fake historical or highly decorated contemporary doors are not permitted.

Bulkhead

A bulkhead shall be provided at the base of the storefront display window. The height of the bulkhead shall be at least 15” and no more than 24”.

Note: Please refer to accompanying text for typical dimensions.

Figure 3.3: Elements of Context Building Rehabilitation

9. Awnings.

If awnings are provided, they should be sympathetic to the storefront frame. The awning shall not cover the storefront piers or pilasters on either end of the structure. The awning shall be mounted between the transom and display windows or covering the transom window.

The awning should be mounted such that its valance is at least seven feet but not more than eight feet above the sidewalk. It should project between four and eight feet from the building face, but no closer to the street curb than three feet.

The awning shape shall be limited to the traditional shape (see figure 2A.9 on page 37). Retractable awnings are encouraged.

10. Materials.

Materials for the Context Buildings facades shall be derived from the palette of materials used traditionally in the turn-of-the-century areas.

The facade shall use the following materials:

Storefront Frame

The storefront shall be either brick or wood framed. The storefront columns or pilasters shall be brick or smooth-finish plaster. Cast iron cladding shall be encouraged.

Facade

The facade may be brick or smooth-finish plaster.

Display Windows

The display windows shall be made of clear glass. The window shall be kept free of all visual obstructions into the store itself. Reflective tinting, or mirrored glass is not allowed. Even if the business is a non-retail business, the windows shall be kept unobstructed to maintain appearance of facade and retail continuity along the sidewalk.

Transom Window

The transom window shall be made of clear, tinted, etched or stained glass.

Bulkheads

The bulkhead shall be made of one of the following materials: wood panels, stone, brick, or tile.

Entrance Doors

The entrance door shall be as transparent as possible. The use of large glass panels is recommended. However, an all-glass door is not permitted. Wood doors with clear glass panels were used traditionally and are encouraged. If an aluminum door is used, it should be of a simple design with a dark anodized finish or primed and painted with an accent color.

Awnings

In keeping with the character of the turn-of-the-century period, the awnings, if used, shall be made of canvas. Vinyl or other shiny materials shall not be allowed.

Restricted Materials

Materials that have no relationship with the architectural themes for the style shall not be used. Restricted materials in the turn-of-the-century subdistrict include: fake brick, fake river rock, cultured rock, imitation wood siding, antiqued or imitation old brick, oversized brick and white brick mortar, among others.

11. Colors.

Colors chosen should accentuate the architectural details of the building. The levels of coloration on the building and the corresponding usage are as follows:

Base Color

The base color is used on the majority of the building surface. It is generally the lightest of the four. The base color is used on the wall surfaces, storefront piers and the cornice when the material is the same as the walls.

Major Trim Color

The major trim color has secondary importance in the color hierarchy of the facade. It is used to accentuate certain elements of the facade such as the cornice, window hoods, window frames, storefront cornice, storefront and bulkhead.

Minor Trim Color

The minor trim color is used to highlight elements such as window sashes and doors. This color category could be combined with the major trim color.

Accent Color

The accent color is used to highlight small details on window hoods, cornices, columns and bulkheads. The accent color should contrast with the base and trim colors and is used sparingly.

Signage Colors

The colors for the graphics should be derived from the family of colors used on the building itself. The color used for the accent color, major or minor trim color on the buildings, may be used as the color of the signs.

Awning Colors

The awning colors selected shall be compatible with the building colors. Garish colors are not encouraged. Darker saturated colors that pick up the highlights of the building colors are preferred. Simple stripes or tweeds are allowed. As mentioned in the Materials section, vinyl awnings shall not be allowed.

Residential Design Guidelines

4.1 Background

The Residential Districts extend to 'I' Street between Vine and Sultana Avenues. The southerly boundary start at Vine Avenue at Holt Boulevard, Palm Avenue, D Street, Laurel Avenue, 'G' Street, Lemon Avenue, and 'D' Street till Sultana Avenue. The Guidelines apply to both sides of Vine Avenue, 'I' Street and Sultana Avenue.

The residential neighborhoods in Downtown Ontario are a rich and diverse mix of several architectural styles. These are evidence of the City's birth as a Model Colony at the end of the nineteenth century and growth as an agricultural community through the early part of this century. A large number of these homes were originally built in the early decades of this century and contribute to downtown Ontario's historical character.

Several of these homes are on the City of Ontario's Planning Department's List of "Potentially Historic Structures". (See figure 4.1) Any additions or alterations to these structures need to be reviewed through the historic preservation process and by the Planning Commission.

A cursory survey of the area reveals structures that can be classified into roughly one of seventeen styles. With no particular style dominant in the downtown neighborhoods, the aim of the Residential Design Guidelines is to preserve the historic homes as examples of the style they were built in. These guidelines will also identify the distinguishing characteristics of each style and clarify the distinctions between the different styles.

These guidelines are to be used in conjunction with the City of Ontario's Development Code and are not intended to replace the Code.

4.2 Design Process

The first step in planning an addition is to review the City's Development Code regulations and determine what can be built. The next step is to review the guidelines in this document for design objectives.

If the home is listed as a potentially historic structure, the guidelines will help guide the homeowner in identifying the architectural style of the home and planning a remodeling project that respects the stylistic integrity of the home. (See Figure 4.1) In addition, a "Certificate of Appropriateness" needs to be obtained. Please refer to the Design Review Process section in this document for further details on the permit process.

If the home is not historic, these guidelines will guide the homeowner in planning a remodeling project that contributes to the neighborhood character.

Hiring an architect to help with the design process is recommended. A professional's knowledge of the design and construction process can save time and money while realizing aesthetic goals.

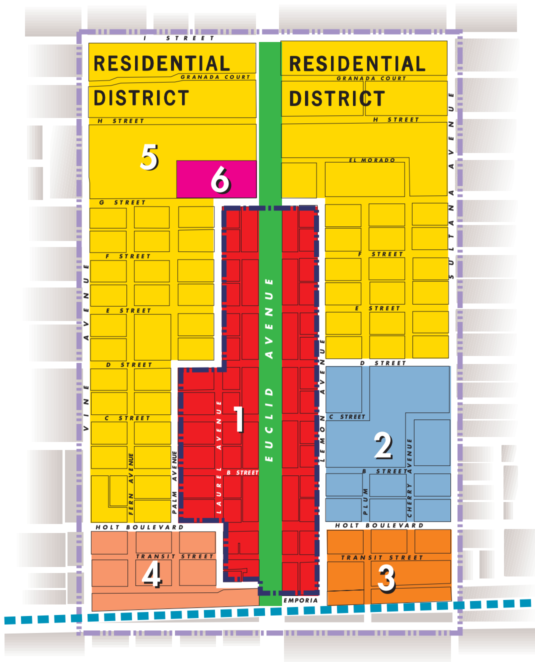
4.2.1 Permit Process for Historic Structures

Any planned exterior alterations or additions to a historic home or any home within a historic district must be reviewed by the Planning Commission. If the Planning Commission deems that the alteration or addition is consistent with the character of the home and/or the neighborhood, a "Certificate of Appropriateness" will be issued. After the Certificate of Appropriateness is issued, building permits can be obtained from the Building Department.

4.2.2 Design and Financial Assistance

The City of Ontario and Redevelopment Agency offer design and financial assistance in the form of low interest loans and Redevelopment Agency Project Area funds to help with the refurbishment of historic homes. Property tax deductions are possible through the Mills Act. (See below). In addition, the State of California has adopted a special building code for historic buildings.

The Mills Act provides incentives for rehabilitating and maintaining historic homes. The property owner and the City enter into a minimum ten year contract. The contract gives the property owner a reduction in their property taxes, in return the owner promises to maintain the home. The money saved through the reduction in property taxes can be used to maintain the home. For further information on the Mills Act, please contact the City of Ontario Planning Department at (909) 391 2506.



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DESIGNATED OR IN PROCESS

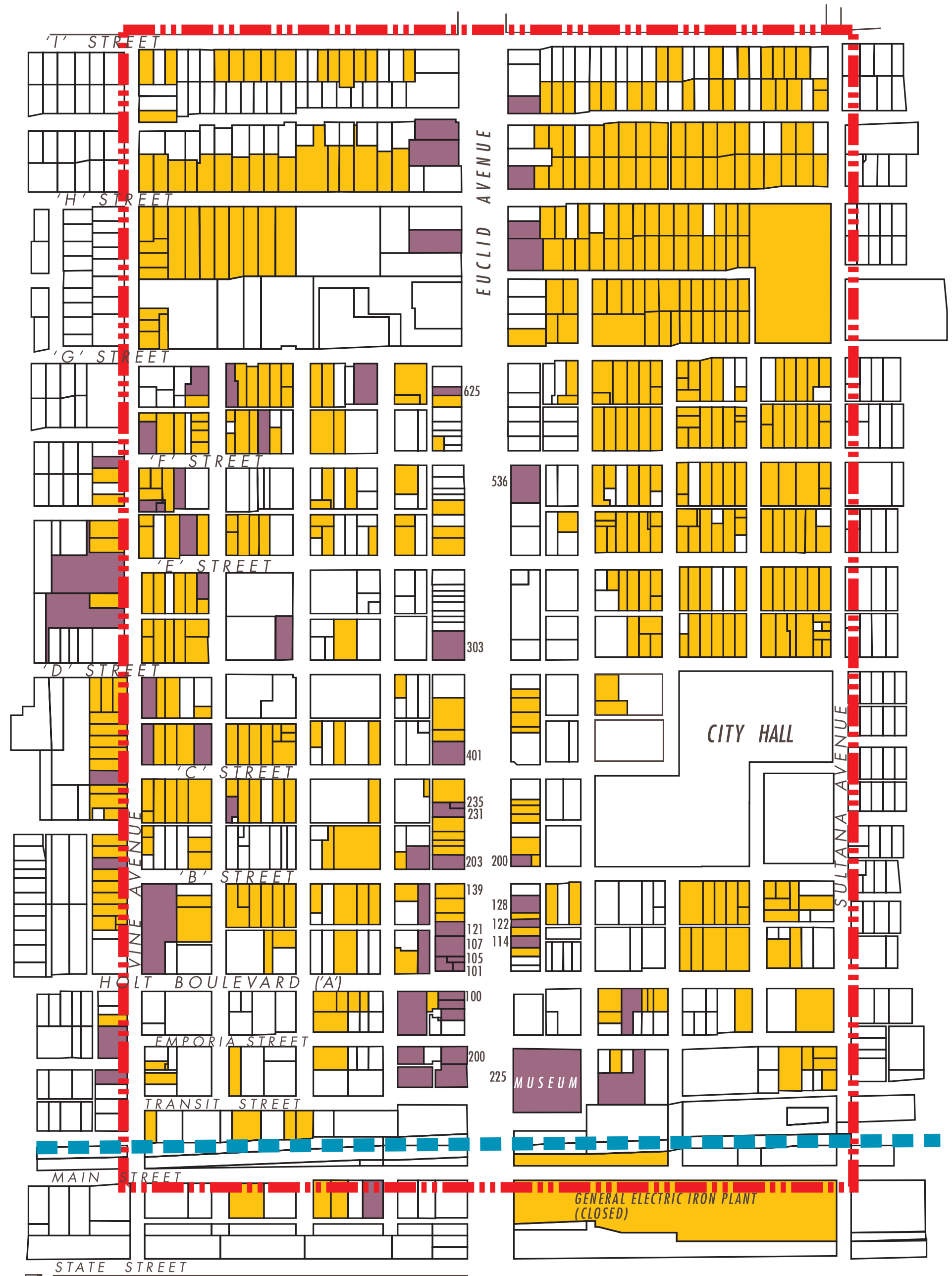

Figure 4.1: Historic Resources and District Location Map

4.3 General Design Guidelines for Historic Structures

The following general design guidelines shall be applicable for additions, renovations or restorations of all existing historic homes. These guidelines also take into account the Secretary of the Interior's Standards for Rehabilitation quoted previously:

1. All additions to historic homes shall respect the scale and massing of the existing building. The new addition shall not overpower the existing structure but shall attempt to harmoniously blend into the existing structure's architectural scale and massing.
2. New roof forms shall be simple and of the same slope and material as the existing house.
3. The pattern of doors and windows in the addition shall be similar to those on the original house.
4. Exterior building materials shall be harmonious with the existing building.
5. The colors of the new addition shall be in a palette appropriate to the style of the house.

The following guidelines shall be applicable to renovations or restorations of all existing historic homes:

1. All renovations or restorations of existing historic homes shall retain the existing exterior materials.
2. Roof forms shall be maintained. New roofing materials, if needed, shall be the same as the existing roof material, or documented original material.
3. Existing doors and windows shall be restored or if needed, replaced with doors and windows with a similar pattern, form and material.

The following style-sheets help in identifying the architectural and stylistic elements for the various styles found in Downtown Ontario's residential districts. More detailed guidelines for each style are included with the style-sheets that follow this section.

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4.4 Craftsman Bungalow

4.4.1 Background

The Craftsman style was the dominant style for smaller houses built throughout the country during the two decades at the turn-of-the-century. The Craftsman style was based on the Arts and Crafts movement in Europe lead by English architect William Morris (1834-1896). The Arts and Crafts movement took a stand against the machine aesthetic of the German and English Functionalists as well as the decorative bent of the French Art Nouveau designers. Natural materials, such as redwood, tile, and stone and earth colors, were commonly used.

In Southern California, the Arts and Crafts ideal deeply influenced the work of two Californian architects – Greene and Greene – brothers who practiced together in Pasadena from 1893 to 1914. Their interest in the Arts and Crafts movement, oriental wooden architecture and their training in the handmade arts influenced the highly detailed designs and well-crafted finishes.

Identifying features and details are highlighted in the accompanying illustrations.

4.4.2 Design Guidelines

The following guidelines shall be applicable to all additions to historic craftsman bungalows:

1. All additions to historic craftsman bungalows shall respect the scale and massing of the existing building. The new addition shall not overpower the existing structure but shall attempt to harmoniously blend into the existing structure's architectural scale and massing.
2. New roof forms shall be simple and of the same slope and material as the existing house.
3. Exterior building materials shall be harmonious with the existing building. If the existing house has wood or shingle siding on the exterior, the addition shall have the same material.
4. The general pattern, form and operation of existing windows and doors will be continued in new windows and doors. Preferably, the new windows shall be of the same material as the existing windows.
5. Exterior appendages common to the craftsman style such as open porches and wooden overhead trellis structures are encouraged.
6. Fake stonework (synthetic rock) shall not be allowed.

The following guidelines shall be applicable to renovations or restorations of existing historic craftsman bungalows:

1. All renovations or restorations of existing historic craftsman bungalows shall retain the existing exterior materials. Wood siding and /or shingles shall not be replaced by plaster. Deteriorated shingles/wood siding shall be replaced by new siding that matches existing siding. Vinyl or aluminum siding shall not be allowed. Rough plaster shall be replaced by plaster of a similar texture.
2. Existing doors and windows shall be restored or replaced with doors and windows with a similar pattern, form and material. Replacement of wooden doors or windows with aluminum doors or windows shall not be allowed.
3. Exterior trellises or porches shall not be removed, nor shall the porches be filled in to provide for more interior space.
4. Exterior stonework shall not be removed or covered with another material such as plaster. If repair is required, the original stonework shall be reused, if possible, or replaced with similar stonework. Fake stonework (synthetic rock) shall not be allowed.
5. Existing doors and windows shall not be filled in without an obvious recognition on the exterior of its previous existence.
6. Building details such as open eaves, decorative rafter tails and decorative trim over gable vents shall not be removed or covered up.

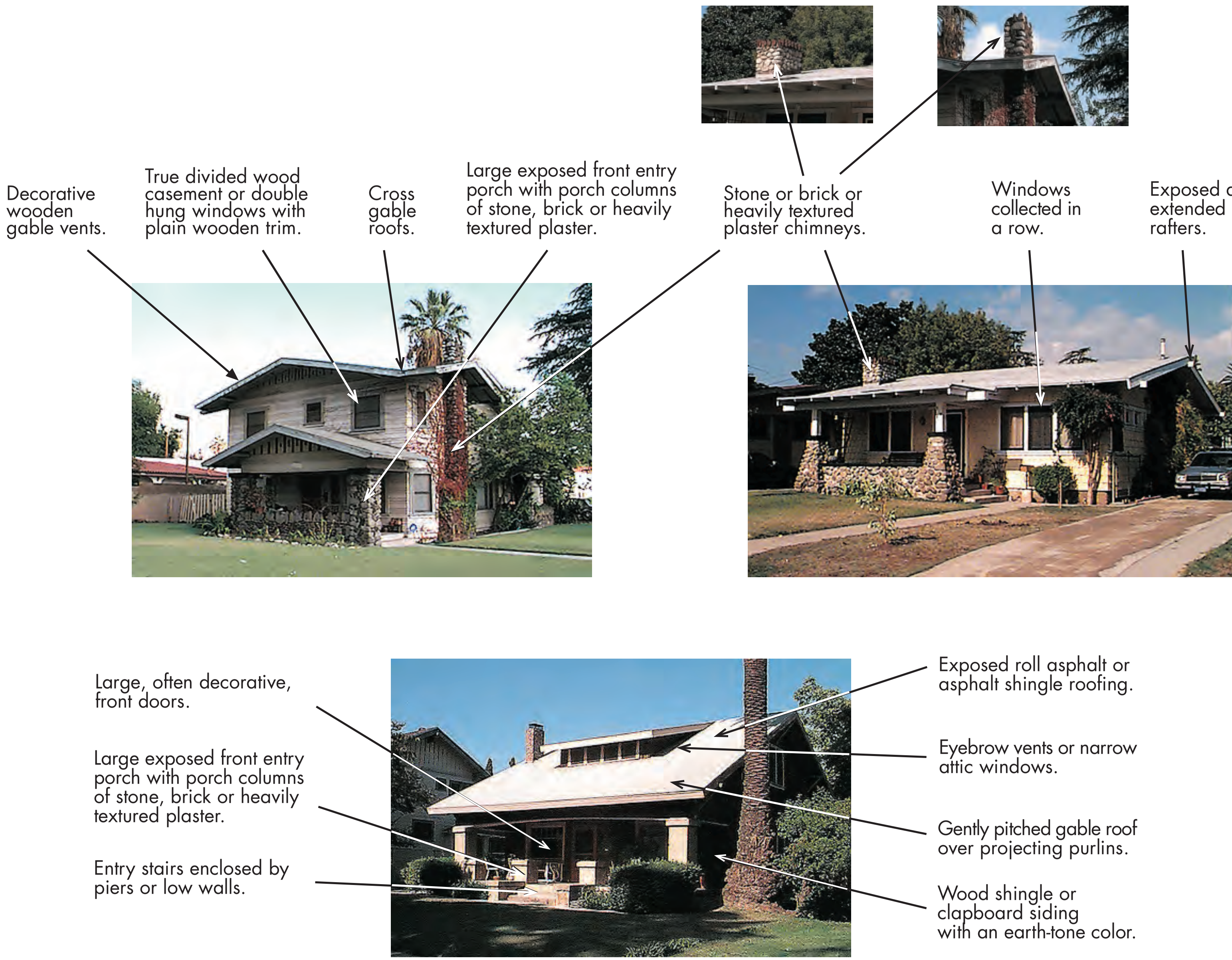

Figure 4.2: Craftsman Bungalow – Style Characteristics

7. Low sloping roofs shall be reroofed in an appropriate flat shingle or asphalt roofing. Clay or metal roof tiles shall not be allowed.

8. Roof overhangs shall not be removed or cut-back.

4.4.3 Color Palette

The colors of the new addition shall be in a earth tone palette appropriate to craftsman style bungalows. Browns and greens are preferred.

Accent colors usually vary from white to other light colors. Brown-stained shingles on the roofs and/or exterior walls may also be used.

Figure 4.3: Special Craftsman Bungalow Style Derivations: Shingle Style

Hovering second floor mass with low overhanging roof similar to the ground floor.

Very low sloping gable roofs.

SPECIAL CRAFTSMAN STYLE DERIVATIONS: Stylized Craftsman Style

Decorative brackets.

Stylized entry porch.

Very low sloping gable roofs.

Stylized entryways, often decoratively derived from other styles.

Banks of vertical wood casement or double hung windows with wood trim.

Figure 4.4: Special Craftsman Style Derivations: Airplane Style

4.5 Victorian Styles: Second Empire and Queen Anne

4.5.1 Background

The Victorian era encompasses most of the nineteenth century - Queen Victoria's reign in England from 1837 to 1901. The building industry in England was influenced by rapid changes in construction techniques owing to the Industrial Revolution. Mass production of complex house components including doors, windows and decorative detailing led to the extravagant use of complex shapes and elaborate detailing in a large number of houses.

4.5.2 Variations

The **Second Empire** style, an earlier Victorian style, was inspired largely from the style prevalent during Napoleon III 's reign – France's Second Empire – in France. The most distinctive feature of this style is the mansard roof named for the French architect Francois Mansart who first used this style. This roof style was extremely popular because it allowed almost a full story of usable space to be included in what was normally attic space, and at the same time it provided a stylish top to a building.

The **Queen Anne** style, misnamed by its proponents, was largely inspired from late Medieval models of the Elizabethan and Jacobean periods. The asymmetrical massing of the form with porches, gables, and towers protruding in all directions, colorful and patterned wall and roof surfaces, delicate porch supports and spindlework ornamentation are hallmarks of this style.

The **Folk Victorian** style is defined by the presence of Victorian decorative detailing on simple folk house forms, which are generally much less elaborate that the Victorian styles that they attempt to mimic. The ornamentation was applied to the porch and the cornice line. Lace-like spandrels and Queen Anne spindlework detailing are commonly present. However, this style is differentiated from the Queen Anne by the lack of wall surface texturing and the presence of symmetrical facades.

Identifying features and details are highlighted in the accompanying illustrations.

4.5.3 Design Guidelines

The following guidelines shall be applicable to all additions to historic Second Empire and Victorian / Queen Anne homes:

1. All additions shall respect the scale and massing of the existing building. The new addition shall not overpower the existing structure but shall attempt to harmoniously blend into the existing structure's architectural scale and massing.
2. New roof forms shall complement and not overpower the existing roof forms. The new roofs shall be of similar slope and material as the existing roofs.
3. Exterior building materials shall be harmonious with the existing building. If the existing house has wood or shingle siding on the exterior, the addition shall have the same material.
4. The general pattern, form and operation of existing windows and doors will be continued in new windows and doors. Preferably, the new doors and windows shall be of the same material as the existing doors and windows.
5. Exterior appendages common to the Second Empire and Victorian style such as open porches and covered balconies are encouraged.
6. Fake stonework (synthetic rock) shall not be allowed.

The following guidelines shall be applicable to renovations or restorations of existing historic Second Empire and Victorian / Queen Anne homes:

1. All renovations or restorations shall retain the existing exterior materials. Wood siding and /or shingles shall not be replaced by plaster. Deteriorated shingles/wood siding shall be replaced by new siding that matches existing siding. Vinyl or aluminum siding shall not be allowed.
2. Existing doors and windows shall be restored or replaced with doors and windows with a similar pattern, form and material. Replacement of wooden doors or windows with aluminum doors or windows shall not be allowed.

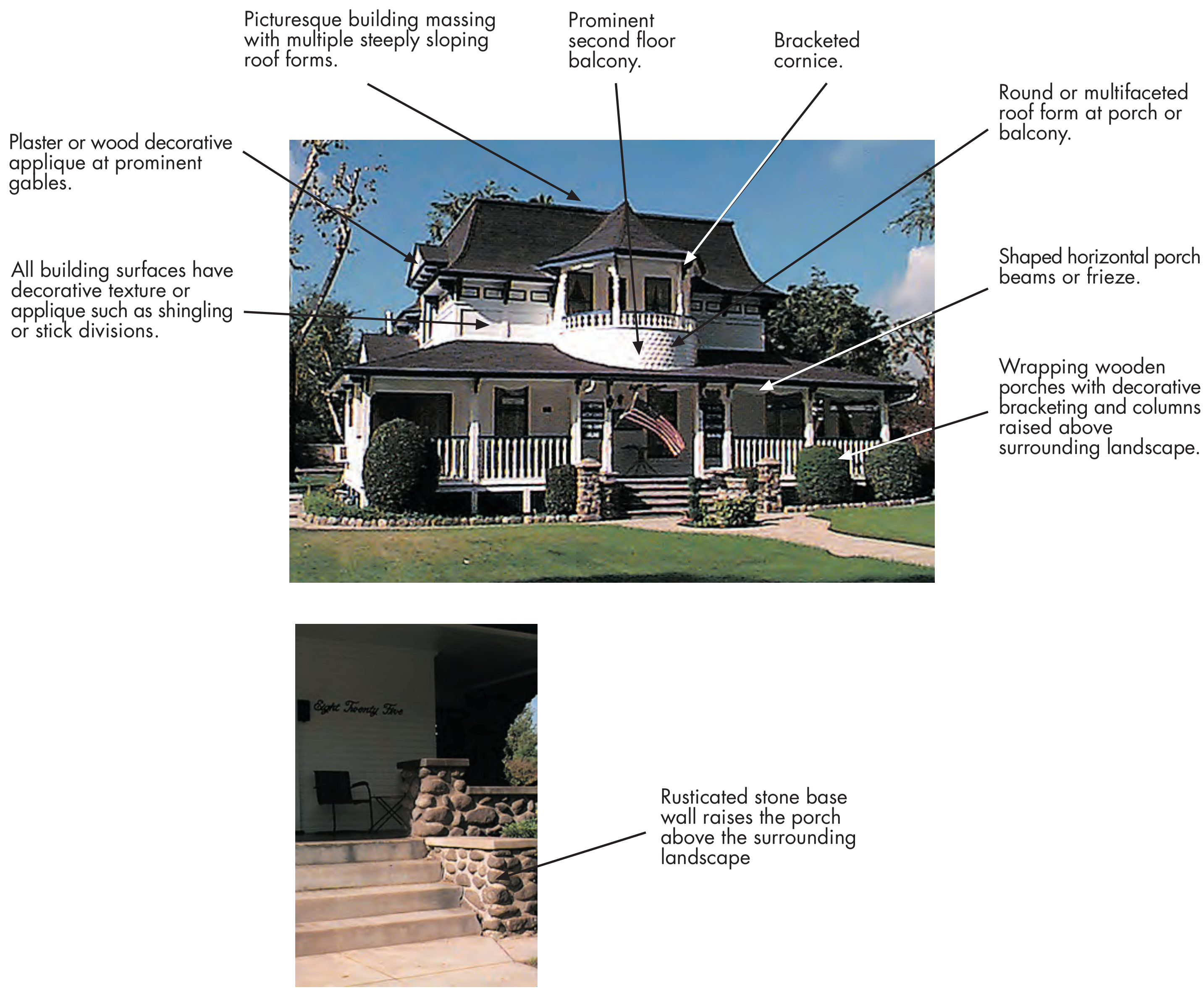

Figure 4.5: Victorian Styles Variation: Queen Anne Style

3. Exterior trellises or porches shall not be removed, nor shall the porches be filled in to provide for more interior space.

4. Exterior stonework shall not be removed or covered with another material such as plaster. If repair is required, the original stonework shall be reused, if possible, or replaced with similar stonework. Fake stonework (synthetic rock) shall not be allowed.

5. Existing doors and windows shall not be filled in without an obvious recognition on the exterior of its previous existence.

6. Building details such as bracketed eaves, decorative rafter tails and other decorative trim shall not be removed or covered.

7. Roofs shall be reroofed with the same materials as the original materials.

4.5.4 Color Palette

The colors of the new addition shall be in a historic palette appropriate to Second Empire or Victorian homes. Accent color at the trim is encouraged.

The main body color can range from grays to whites and pale buff colors. The roof may be painted dark green or dark red or a natural slate gray. The trims can widely range from whites to black as well as dark greens or reds.

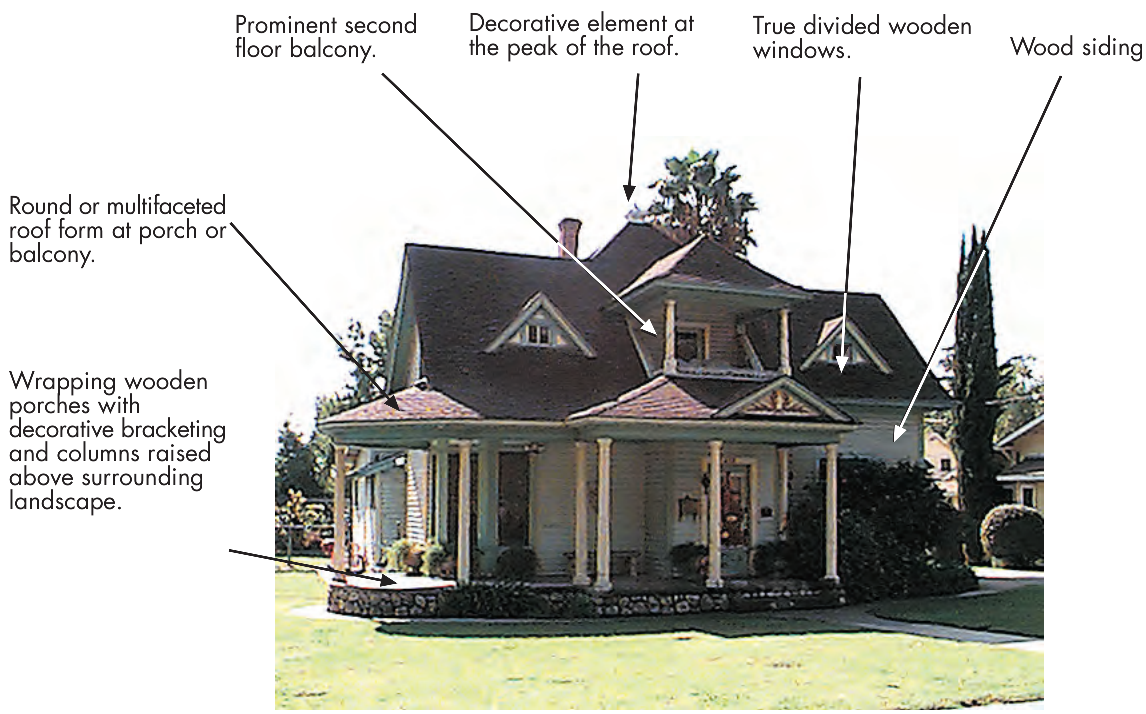

Figure 4.6: Victorian Styles Variation: Folk Victorian Style

Figure 4.7: Victorian Styles Variations: Second Empire Style

4.6 Colonial Revival and Tudor / English Revival Styles

4.6.1 Background

The Colonial Revival Style was a dominant building type in the first half of this century. The style included the entire spectrum of early English and Dutch styles and was mainly defined by Georgian and Adamesque Styles.

The Tudor style rivaled Colonial Revival as a dominant style for suburban homes in the early part of this century. The style is largely inspired by medieval English homes and is dominated by gabled roofs and conspicuous entrances.

Identifying features and details are highlighted in the accompanying illustrations.

4.6.2 Design Guidelines

The following guidelines shall be applicable to all additions to existing historic Colonial or Tudor Revival homes:

1. All additions shall respect the scale and massing of the existing building. The new addition shall not overpower the existing structure but shall attempt to harmoniously blend into the existing structure's architectural scale and massing.
2. New roof forms shall complement and not overpower the existing roof forms. The new roofs shall be of similar slope and material as the existing roofs.
3. Exterior building materials shall be harmonious with the existing building. If the existing house has wood or shingle siding, stonework, brick or plaster on the exterior, the addition shall have the same material.
4. The general pattern, form and operation of existing windows and doors will be continued in new windows and doors. Preferably, the new windows shall be of the same material as the existing windows.
5. Exterior appendages common to the styles such as enclosed porches and covered entryways are encouraged.
6. Fake stonework (synthetic rock) shall not be allowed.

The following guidelines shall be applicable to renovations or restorations of existing historic Colonial or Tudor Revival homes:

1. All renovations or restorations shall retain the existing exterior materials. Wood siding, stonework, brick or plaster shall not be replaced by another material. Deteriorated siding shall be replaced by matching new siding. Vinyl or aluminum siding shall not be allowed. Plaster shall be replaced by plaster of a similar texture.
2. Existing doors and windows shall be restored or replaced with doors and windows with a similar pattern, form and material. Replacement of wooden doors or windows with aluminum doors or windows shall not be allowed.
3. Exterior overhangs or porches shall not be removed.
4. Exterior stonework shall not be removed or covered with another material such as plaster. If repair is required, the original stonework shall be reused, if possible, or replaced with similar stonework. Fake stonework (synthetic rock) shall not be allowed.
5. Existing doors and windows shall not be filled in without an obvious recognition on the exterior of its previous existence.
6. Building details such as open eaves, decorative half-timbering, columns or trim shall not be removed or covered up.
7. Roofs shall be reroofed in an appropriate flat shingle or asphalt roofing. Clay or metal roof tiles shall not be allowed unless the existing historic house was originally roofed in such a material.
8. Roof overhangs shall not be removed or cutback.

4.6.3 Color Palette

The colors of the new addition shall be in a palette appropriate to the style. White is preferred for the Colonial Revival style. Browns and grays are preferred for the Tudor or English Revival styles.

COLONIAL REVIVAL: STYLE CHARACTERISTICS

Simple roof form, often side-gabled.

Accentuated front door with covered entry porch.

Reference to classical styles through classical columns or Palladian windows.

Slightly raised floor level, often with exposed brick entry floor and foundation.

Paired or grouped windows.

Shuttered windows.

White exterior wood siding or plaster.

Glass enclosed "Winter Porch" as visual addition to the main massing of the house.

Multi-paned true divided windows and doors.

Symmetrically balanced front facade.

ENGLISH REVIVAL (TUDOR): STYLE CHARACTERISTICS

Dominate chimneys with decorative tops.

Facade dominated by major cross gable roof.

Decorative brick work in facade or chimneys.

Diamond pattern window leading.

Tall, narrow windows, commonly in multiple groups with multi-pane glazing.

Gambrel or steeply pitched roofs.

Plaster or brick exterior wall cladding.

Decorative half-timbering.

Figure 4.8: Colonial Revival and English Revival (Tudor) – Style Characteristics

4.7 Wood Framed Farm or Grove House

4.7.1 Background

The wood frame house or the grove house style is a Californian style that has its origin in the simple homes of orange growers.

Identifying features and details are highlighted in the accompanying illustrations.

4.7.2 Design Guidelines

The following guidelines shall be applicable to all additions to existing historic wood framed farm or grove houses:

1. All additions shall respect the scale and massing of the existing building. The new addition shall not overpower the existing structure but shall attempt to harmoniously blend into the existing structure's architectural scale and massing.
2. New roof forms shall be simple and of the same slope and material as the existing house.
3. Exterior building materials shall be harmonious with the existing building. If the existing house has wood siding on the exterior, the addition shall have the same material.
4. The general pattern, form and operation of existing windows and doors will be continued in new windows and doors. Preferably, the new windows shall be of the same material as the existing windows.
5. Exterior appendages common to this style such as open porches are encouraged.
6. Fake stonework (synthetic rock) shall not be allowed.

The following guidelines shall be applicable to renovations or restorations of existing wood framed farm or grove houses:

1. All renovations or restorations shall retain the existing exterior materials. Wood siding shall not be replaced by plaster. Deteriorated siding shall be replaced by matching new siding. Vinyl or aluminum siding shall not be allowed. Plaster shall be replaced by plaster of a similar texture.
2. Existing doors and windows shall be restored or placed with doors and windows with a similar pattern, form and material. Replacement of wooden doors or windows with aluminum doors or windows shall not be allowed.
3. Exterior entry overhangs or porches shall not be removed, nor shall the porches be filled in to provide for more interior space.
4. Exterior stonework shall not be removed or covered with another material such as plaster.
5. Existing doors and windows shall not be filled in without an obvious recognition on the exterior of its previous existence.
6. Building details such as open eaves, decorative rafter tails and decorative trim over gable vents shall not be removed or covered up.
7. Roof overhangs shall not be removed or cutback.
8. Exterior wood trim at eaves, doors and windows shall be retained.

4.7.3 Color Palette

The colors of the new addition shall be in a palette of subdued natural colors. The main body colors may be picked from a natural, white and buff colors palette. Secondary and accent colors may be picked from a wide range of colors including browns, greens and bright colors. Shingled roofs may be stained brown or grays.

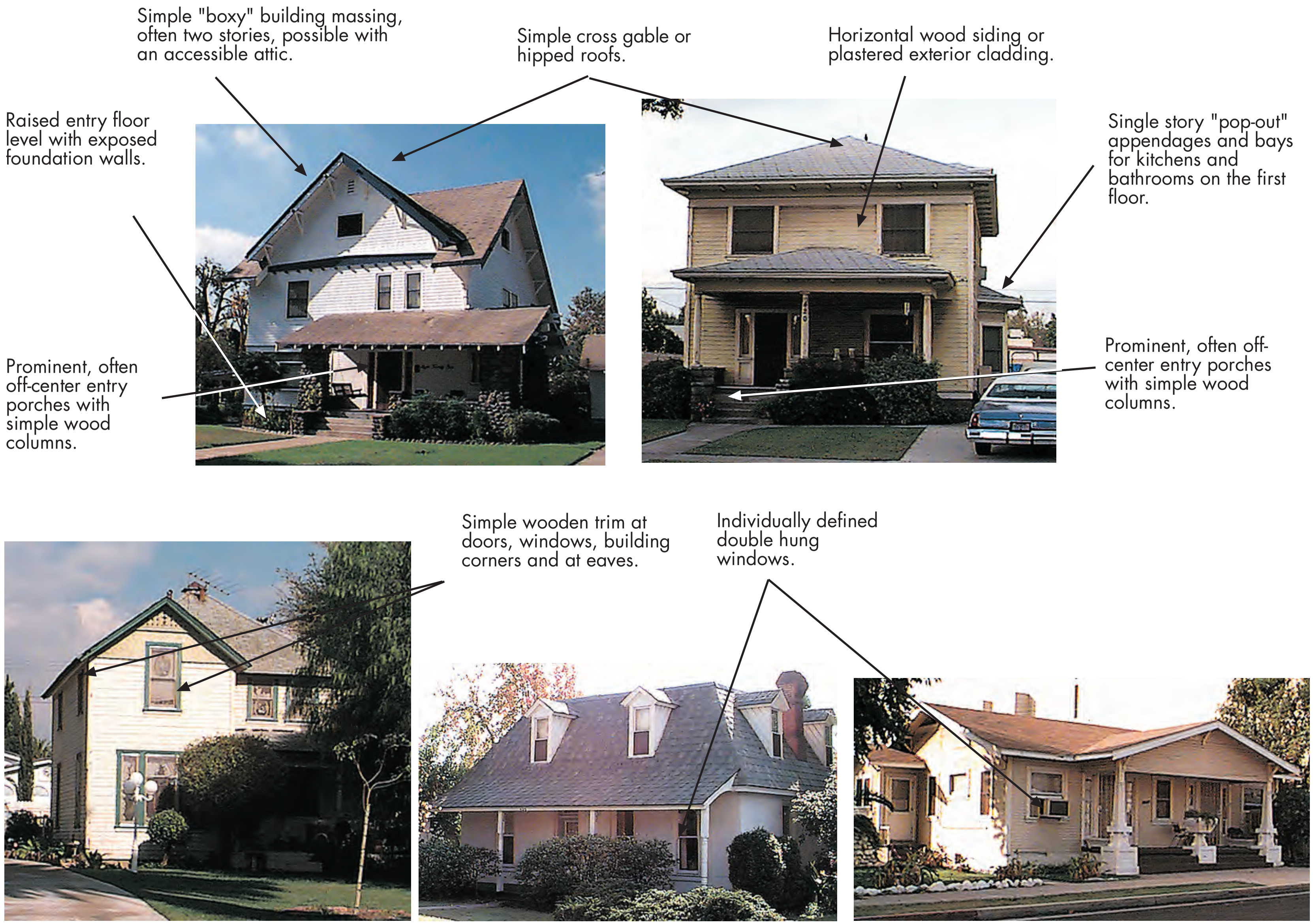

Figure 4.9: Wood-framed or Grove House – Style Characteristics

4.8 Spanish Colonial/Mediterranean Style

4.8.1 Background

Spanish Colonial style was a popular style in the first half of this century, especially in California and the other southwestern states. This style is loosely based on the Mission style and borrows decorative details from the entire history of Spanish architecture including Moorish, Byzantine and Renaissance architecture.

Identifying features and details are highlighted in the accompanying illustrations.

4.8.2 Design Guidelines

The following guidelines shall be applicable to all additions to Spanish Colonial or Mediterranean style homes:

1. All additions shall respect the scale and massing of the existing building. The new addition shall not overpower the existing structure but shall attempt to harmoniously blend into the existing structure's architectural scale and massing.
2. New roof forms shall be simple and of the same slope and material as the existing house.
3. Exterior building materials shall be harmonious with the existing building. If the existing house has plaster on the exterior, the addition shall have the same material.
4. The general pattern, form and operation of existing windows and doors shall be continued in new windows and doors. Preferably, the new doors and windows shall be of the same material as the existing doors and windows.
5. Exterior appendages common to the Spanish Colonial style such as arches, entry porches and tile-roofed entry shelters are encouraged.
6. Decorative elements such as light fixtures and mailboxes shall match the ornamental style of the home.

The following guidelines shall be applicable to all renovations or restorations of existing Spanish Colonial or Mediterranean style homes:

1. All renovations or restorations shall retain the existing exterior materials. Plaster shall be replaced by plaster of a similar texture.
2. Existing doors and windows shall be restored or replaced with doors and windows with a similar pattern, form and material. Replacement of wooden doors or windows with aluminum doors or windows shall not be allowed.
3. Exterior porches, arches, and tile-roofed entry shelters shall not be removed, nor shall the porches or entry shelters be filled in to provide for more interior space.
4. Existing doors and windows shall not be filled in without an obvious recognition on the exterior of its previous existence.
5. Building details such as decorative plaster trim, ceramic tile, vents, roof scuppers and ornamental light fixtures shall not be removed or covered up.

4.8.3 Color Palette

The colors of the new addition shall be in a palette appropriate to Spanish Colonial style. Whites and light pastel tones such as a warm cream are preferred. Dull red or brown may be used as an accent color. Roofs, if visible, shall generally be red tiled.

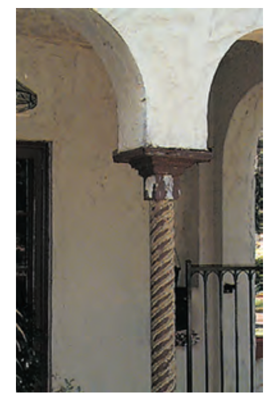

Figure 4.10: Spanish Colonial/ Mediterranean Style – Style Characteristics

4.9 Design Guidelines for Non-Historic and Infill Structures

4.9.1 Background

These guidelines detail the approach to renovating non-historic existing structures as well as infill structures in the residential neighborhoods in Downtown Ontario.

4.9.2 Site Design

1. Identify and respect the pattern of front and rear setbacks for the block.
2. Save all mature trees on the lot.
3. Maintain on-street parking by providing a minimum of 26 feet between curb-cuts.
4. Minimize the width of the driveway to avoid extensive paved surfaces. The maximum driveway width shall be 12 feet. The use of Hollywood drives is recommended. (A middle planting strip between two adjacent driveways.)
5. Follow guidelines for landscaping the front yard.
6. Garages should not be visible from the street. Avoid placing garages on the front of the property. Rear detached garages are recommended.

4.9.3 Massing

1. Keep the overall shape of the structure simple.
2. Respect the overall massing scale of the neighborhood.
3. Match pattern of front porches or entry porches in the neighborhood.
4. Respect the pattern of roofs of the adjoining properties.

4.9.4 Building

1. Place windows to promote privacy between properties.
2. Maintain privacy between houses when locating a new balcony that may overlook an existing patio or balcony.
3. Avoid long blank walls.
4. Use two single doors instead of one larger double-door for the garage entry.

4.9.5 Materials

1. Use high-quality materials that are well-crafted.
2. Keep the materials palette simple and appropriate to the house style.

4.9.6 Colors

1. Use a simple color palette that corresponds to the architectural style of the house.
2. Light, natural body colors with contrasting accent colors ate recommended.

4.9.7 Lighting

1. Position outdoor lighting so that no direct light extends on neighboring properties.

4.9.8 Signage

1. Avoid any kind of commercial signage on the structure itself. Refer to the sign guidelines section for further details.

EXISTING HISTORIC STRUCTURE

EXISTING HISTORIC STRUCTURE

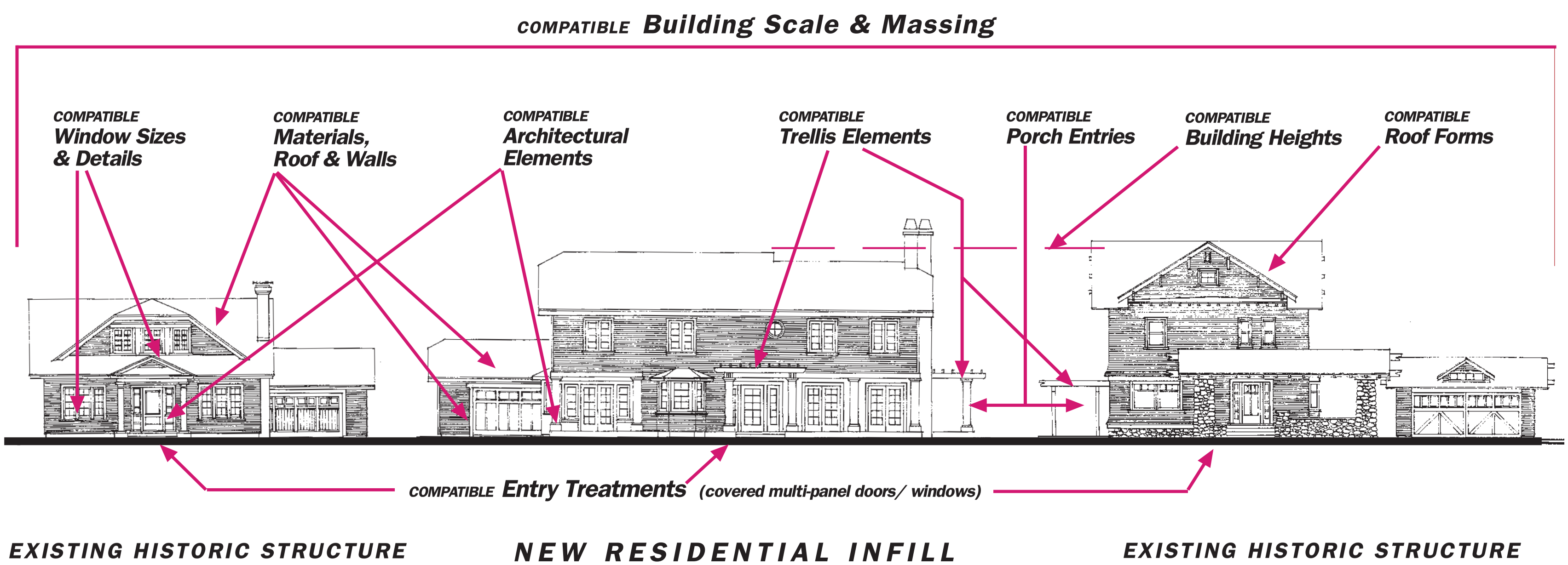

Figure 4.11: New Infill Structure: Compatibility with existing historic homes

4.10 Landscape Design Guidelines

4.10.1 Background

The front yard space can be perceived of as a "garden room" that adds a semiprivate space in the front of the house. This "garden room" contributes to the streetscape by adding visual interest to the neighborhood and the passerby. More importantly, it provides usable space that complements the home and adds character and value to the home.

4.10.2 Design Guidelines

The following landscape design guidelines shall be followed in the Residential District:

1. Design the front yard in keeping in with the architectural character of the house.
2. Encourage planting of shrubs and flowering plants to add variety to the front garden. Flat gardens with vast expanses of grass are not as interesting as a garden with planting that add color as well as shadows and planar modulations.
3. Limit the amount of nonporous paved areas, including driveways to 12 feet. Use planting strips and other planting to soften entry walkways and driveways.
4. Encourage shade trees that are not susceptible to wind damage and have low water needs.
5. Encourage the use of low water-needy planting.
6. Grow clinging vines to cover large expanses of walls that are blank.
7. If low garden structures (for example, a water fountain or sign base) are being installed, select and use materials that reflect the material palette of the house.
8. Encourage pathways, pergolas and trellises that are in character with the architectural style of house to add interest.
9. Regularly maintain the landscaped areas to prevent deterioration and unkempt appearance of the property.

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Design Review Process

5.1 Current Design Review Process

The following section describes the current review process as it might relate to development/ redevelopment of the downtown area.

5.1.1 Planning Department Review

5.1.1.1 Projects subject to review

The projects listed below are subject to review and approval by Planning Department staff and generally do not need to be reviewed by the Development Advisory Board or Planning Commission:

a. Minor exterior alterations, including installation, change, replacement or removal of the following:

1. Doors, windows, columns, piers, siding and architectural trim;
2. Roofing;
3. Tenant improvement plans for interior modifications;
4. Installation and placement of air conditioning units and new electrical service meters;
5. Decks;
6. Modifications to accommodate access for the disabled;
7. Accessory structures less than 120 square feet, such as trash enclosures, storage sheds, etc.;
8. Arbors and fences;
9. Routine maintenance and similar improvements;

b. Installation of new signs and sign programs;

c. Building expansion less than 25% of the existing floor area provided such addition is not visible from the public street.

5.1.1.2 Submittal Requirements

a. For minor exterior alterations:

- application fee (plan check);
- detailed architectural plans;
- detailed elevations showing where changes or new construction is proposed;
- detailed site plan (if applicable);
- pictures of site and surrounding area;
- materials/color palette.

b. For new signs:

- plot plan describing sign location;
- detailed elevations describing sign location/ appearance on building;
- detailed drawing of sign describing letter style, maximum sign length, width, depth, • letter height, materials and colors, etc.;
- detailed drawing describing selected lighting fixtures, and lamp types;
- cross-section drawing describing sign depth, materials, components, etc.
- for wall signs, include diagram describing method of attachment;
- for freestanding monument signs: include plot plan describing sign placement/setbacks, and elevation drawings describing sign height, materials, colors, etc.

Submit three (3) copies of the sign plan to the Planning Department for review and then to the Building Department, for final approval and issuance of permits.

(Contact the Planning Department for complete list of requirements)

5.1.1.3 Review Process

- Improvement plans are submitted to the Planning Department for review;
- If the project meets standards, approval is granted and the applicant applies for a building permit (when necessary);
- If staff determines that a project does not comply with the standards contained in this document, approval will not be granted unless plans are modified to meet standards.

An applicant may appeal staff's determination of noncompliance to the Planning Commission. Staff determination of noncompliance may be also appealed to the Zoning Administrator for hearing.

Appeals from Zoning Administrator decisions may be made to the Planning Commission or any decision made by the Zoning Administrator may be called up to the Planning Commission for review by the Planning Commission or City Council. (Refer to Article 5. (Appeals) of the Development Code).

5.1.2 Development Advisory Board

5.1.2.1 Projects subject to review

The following projects shall be subject to Development Advisory Board review through the City's Development Plan Review process pursuant to Article 8 of the Development Code:

a. Commercial projects in the Retail District;

b. Additions to existing commercial buildings in excess of twenty five (25%) of the existing structure;

c. All residential dwellings which exceed two (2) dwellings per lot for a single development not part of a larger project;

d. All residential development plans consisting of five (5) or more dwelling units;

e. All nonresidential development uses in the Residential District;

f. Relocated buildings in any District;

g. Other projects which, in the opinion of the City Planner, require such level of review prior to issuance of a building permit.

An application for Development Plan Review shall be filed with the Planning Department. Refer to Article 8 of the Development Code for Development Plan Review procedures.

5.1.2.2 Submittal Requirements

- filing fees
- Development Plan Review Application;
- Notice of Intent Application;
- site plan, floor plans, exterior elevations and all other pertinent information required by the Development Plan Review Application;
- photographs of project context including photo composite illustrating a minimum of three structures on either side of proposed project;
- materials & color palette;

(Contact the Planning Department for complete list of requirements)

5.1.2.3 Review Process

- Applicant submits applications, filing fees, required plans, etc. to the Planning Department for review. The application will be reviewed for completeness by the project planner. Consequently, the applicant will be notified in writing if the application has been deemed complete or incomplete. Upon determining that an application is complete, the project planner will route the project to the various departments for review.
- Departmental review of the project takes approximately ten (10) working days. At the end of the review period, the project planner will mail all department reports to the applicant. Revised plans, if necessary, are then submitted. Once plans are acceptable to all departments, the project will be scheduled for the next available Development Advisory Board (DAB) meeting.
- At the DAB meeting, Board members will act on the recommended conditions of approval. The DAB will take action to approve (or recommend approval to the Planning Commission if Planning Commission action is required) the application, to continue the review, or to disapprove the application. Any approval granted by the DAB becomes null and void two (2) years following the date on which the approval became effective unless prior to the expiration of two (2) years, a building permit is issued and construction has commenced. DAB meetings are held the first and third Monday of each month.

5.1.3 Planning Commission

5.1.3.1 Projects subject to review

The following projects are subject to Planning Commission review and approval, unless otherwise noted:

a. Applications for Conditional Use Permits for new structures or those referred by the Zoning Administrator or Development Advisory Board;

b. Applications for variances, except for those made by the Zoning Administrator;

c. A "Certificate of Appropriateness" application is required for any alteration, restoration, rehabilitation, addition, demolition or relocation to a designated building on the historic building list;

d. Any combination of alterations occurring within a 24 month period which result in a structure being enlarged by more than 25% of the original floor area;

e. External changes and facade renovations on unreinforced masonry (URM) buildings undergoing seismic retrofitting.

5.1.3.2 Submittal Requirements

- filing fees;
- appropriate application(s) (i.e. Development Plan Review, Environmental Assessment, Conditional Use Permit, Certificate of Appropriateness, etc.);
- required plans, including site plan, floor plans, building elevations, etc.;
- photographs of project context including photo composite illustrating a minimum of three structures on either side of proposed project;
- materials & color palette;
- other pertinent information required by applicable application.

(Contact the Planning Department for complete list of requirements)

5.1.3.3 Review Process

- Applicant submits applications, filing fees, required plans, mailing lists (if necessary), etc. to the Planning Department for review. The request is first reviewed by the Planning Department. A written report is then sent to the Planning Commission. If a development plan accompanies the request, it will be reviewed by the DAB prior to Planning Commission consideration (see review process for DAB). If not, the Planning Department may confer with other City departments concerning the application.
- The item is scheduled for Planning Commission consideration. Planning Commission meetings are held on the fourth Tuesday of each month. For public hearing items such as a Conditional Use Permit, Variance, etc., property owners within 300 feet of the subject property are notified by mail of the time and place of the public hearing and are invited to attend.
- The Planning Commission will take action to approve the application, to continue the review, or to disapprove the application. Projects denied by the Planning Commission may be appealed to the City Council. Refer to Article 5 of the Development Code regarding the appeal procedure.

5.1.4 Permit Process for Historic Structures: "Certificate of Appropriateness"

5.1.4.1 Projects subject to review

Any planned exterior alterations or additions to a historic structure must be reviewed by the Planning Commission. If the Planning Commission deems that the alteration or addition is consistent with the character of the structure and/or the neighborhood, a "Certificate of Appropriateness" will be issued. After the Certificate of Appropriateness is issued, building permits can be obtained from the Building Department.

5.1.4.2 Submittal Requirements

1. Completed application
2. 15 copies of site plan (for alteration)
3. 15 copies of building elevations (for alterations)
4. Photos of property
5. Letter of authorization from property owners
6. Filing Fees
7. Other, as needed.

(Contact the Planning Department for complete list of requirements)

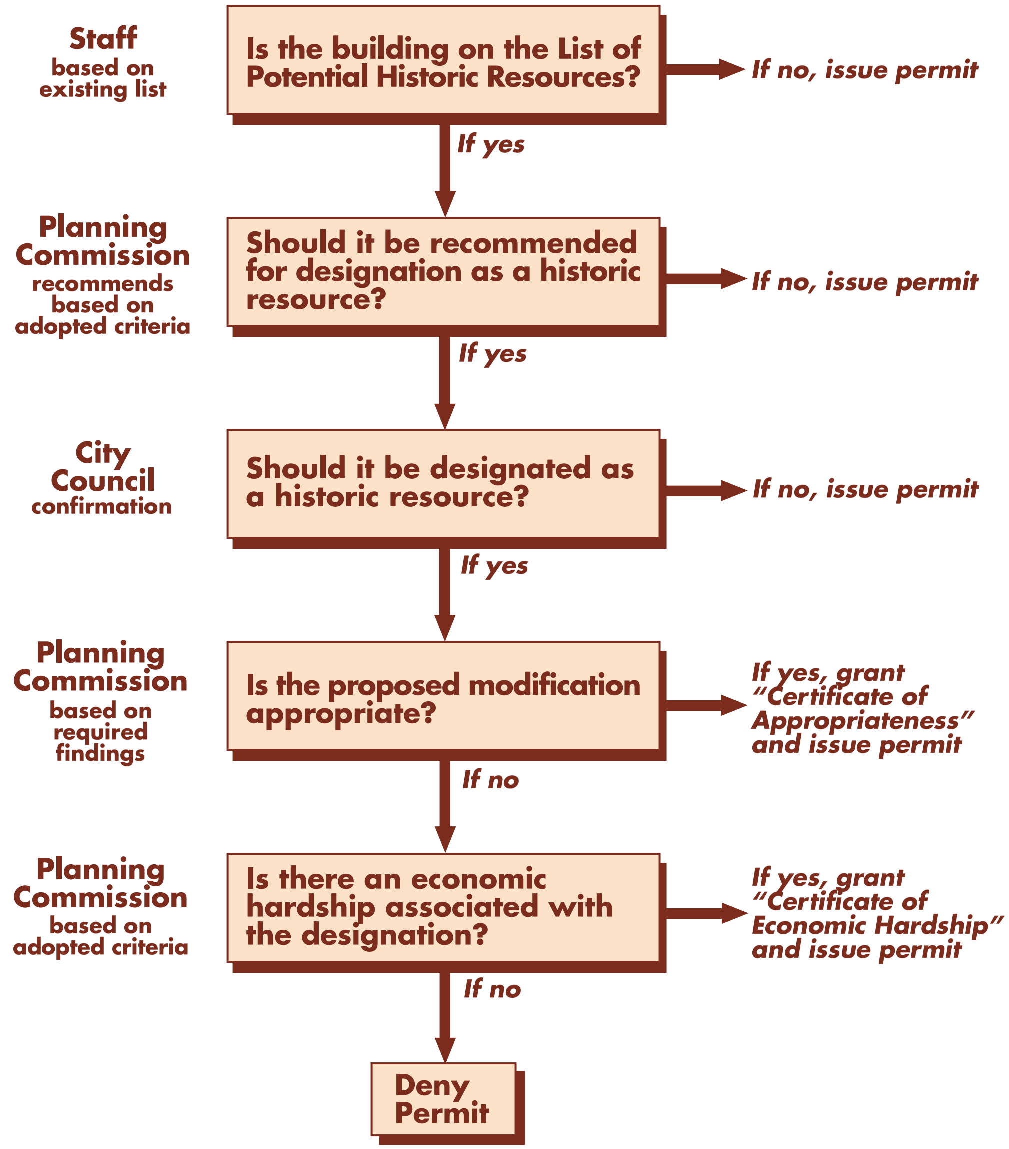


Figure 5.1: Permit Process for 'Certificate of Appropriateness'

5.2 Recommended Design Review Process

5.2.1 Background

There are a variety of ways in which Design Review processes can be implemented. However, the processes generally share these common characteristics:

1. Legal Establishment by means of a Resolution or Ordinance adopted by the City Council
2. Reference to aesthetic considerations as a valid part of community health, safety and welfare in the Resolution or Ordinance
3. Creation of a Procedure for Review that involves City Staff and often a Design Review Commission or Board
4. Composition and Role of the Design Review Commission/Board
5. Criteria for defining which Projects are subject to Design Review
6. Criteria for defining what Measures of Design a Project must meet for approval
7. An appropriate set of Submittal Requirements
8. An Appeals Process – to ensure fairness and legality
9. Enforcement
10. Professional Staffing

5.2.2 Creation of a Procedure for Review

It is recommended that a Commission/Board be established as a vehicle to ensure that projects in the Downtown Ontario Design Guidelines Area are of high quality and sensitive to their context. A Commission/Board raises the levels of expectation, commitment and results. They are frequently instituted in "communities that care" about their heritage and environmental/design qualities.

5.2.3 Composition and Role

City Council appointed Design Review Commissions/Boards

- almost always are composed of design professionals
- may or may not include lay persons
- may or may not have representatives from other Committees or Commissions.

For example, the Pasadena Design Review Commission has design professionals and representatives from the Planning Commission and Cultural Heritage Commission as members. Appeals are made to the City Council. South Pasadena has all design professionals and no Commission representatives. Appeals are to the Planning Commission.

Most Commission/Boards are made up of registered architects and landscape architects and other design professionals such as graphic designers. Members are usually required to be residents of the City.

Based on current understanding of Ontario procedures, it is recommended that the Downtown Ontario Design Review Commission/Committee be composed of five to seven members who are design professionals and who live in the City of Ontario. Appeals should be made to the Planning Commission rather than to the City Council. This would allow utilization of the Planning Commission's perspective on historic preservation, having recently absorbed the functions of the Historic/Cultural Heritage Commission. It would also prevent the City Council from being burdened with design decision appeals.

5.2.4 Criteria for Design Review

Cities use varied criteria for requiring design review. Criteria can vary with location in the City or size of project or value of project.

In order to make Downtown Ontario a unique environment by virtue of its success in historic preservation and sensitive, compatible new construction, the following is recommended:

All projects that alter any building facade that is visible from any public street, or from the alley walkways paralleling Euclid Avenue on the east and west, should be subject to design review. This includes signage and facade lighting.

5.2.5 Criteria for Measures of Design Approval

This measure should be addressed by using the Downtown Ontario Design Guidelines as referenced in and/or partially incorporated in the Ontario Development Code.

5.2.6 Recommended Submittal Requirements

Recommended submittal requirements for Exterior Modifications to Existing Structures or New Construction:

- an application form with basic data such as owner name, project address, etc.
- fee payment for processing (if any).
- public notification submittals (150 or 300' radius) with appropriate labels, map etc.
- photographs of the project context – including a photo composite illustrating a minimum of three structures on either side of the proposed project as well as overall photographs of the entire block in which the project is located.
- detailed architectural plans.
- detailed elevations showing where changes or new construction is proposed – including scale drawings of signs, awnings and paint colors, section details showing sign attachment, and letter samples of the exact type face to be used, selected lighting fixtures, lamp types, and effect on adjacent structures.
- color and material board.
- The requirements for new signage, lighting or awnings should also include the same items noted above regarding elevations.

5.2.7 Appeals Process

As noted above, appeals should be directed to the Planning Commission.

5.2.8 Enforcement

Enforcement is critical to the long-term success of a Design Review program.

Enforcement should be done by scheduled visits to Approved Projects by City Design Review Staff and by ongoing windshield surveys of the Downtown Ontario Design Guidelines area.

Deeds of record can be filed so that subsequent owners of a property are aware of conditions of design approvals on their properties.

5.2.9 Professional Staffing

The Downtown Ontario Design Guidelines will certainly make the process of design review more objective. However, successful design review processes require a positive, cooperative dialogue between well educated, experienced design professionals. There is a need for informed professional judgment to consider that there is always more than one way to meet Design Guidelines requirements.

Put in another way, design review involves more than easily quantifiable considerations such as the typical zoning issues of setback, heights, etc. The design review process needs to involve collaboration between a project's architect and the City Staff and Design Review Board. The lack of adequately educated and experienced staff will lead to frustration on the part of project architects, the Design Review Board and can lead to projects of poor quality and/or the loss of respect for the whole design review process. City Staff are sometimes supplemented by consultants serving as an extension of staff while qualified staff is being sought or to deal with special issues related to a particular project.

Appendix: Designated Buildings

Address:	100 South Euclid Avenue
Historic Name:	First National Bank Building
Best Known As:	**Holt Bank Building**
Construction Date:	1928 (estimated)
Architectural Style:	Art Deco

Description: The structure is rectangular in plan with a flat composition roof. The Art Deco bank building has poured concrete walls that appear as large concrete blocks, square fluted columns between large plate glass windows with side lights, fluted pilasters of each corner section, front and side entrances, and ceramic tiles around the base wall. Fluted windows lintels with decorative emblems are set atop each window segment. Projecting buttresses flank the side entrance on Holt Avenue. Plate glass doors and windows are found between each segment.

Significance: The building represents on of the best examples of Art Deco architecture in the City of Ontario. This site and later this building was the site of First National Bank of Ontario from 1903 to 1965. In 1966, the bank moved to 437 North Euclid Avenue. Later occupants of the building included Inland Bank of California (1972-1977), and Wells Fargo Bank (1978-1984). The current check cashing firm opened in 1984.

 Information and photographs provided by the City of Ontario Planning Department and the Model Colony Room in the Ontario Public Library.

Address:	108 South Euclid Avenue
Historic Name:	McCann Block
Best Known As:	**McCann Block**
Construction Date:	1919
Architectural Style:	Commercial

Address:	110/112 South Euclid Avenue
Historic Name:	Envoy Hotel
Best Known As:	**Beverly Hotel**
Construction Date:	1920/1921
Architectural Style:	Commercial

Description: The Envoy Hotel building is L-shaped in plan with an exterior stairway at the rear. The three-story, flat roofed structure has an ornate brickwork facade on the second and third floors, which features quoins at the building's corners and a continuous lintel and sill to accent double hung windows. The first floor was built in 1920 by the Frankish Company. The second and third floors, built in 1921, were originally the Envoy Hotel.

Significance: This building is an example of Ontario's growth and development during the first quarter of the century. Built in 1920 as a commercial facility, the structure grew with the addition of a second and third floor hotel to serve an expanding urban population. The ornate brickwork of the facade demonstrates the attention to detail seldom expressed in modern buildings. Its association with the Frankish Company adds to its historic interest.

 Information and photographs provided by the City of Ontario Planning Department and the Model Colony Room in the Ontario Public Library.

Address:	200 South Euclid Avenue
Historic Name:	Frankish Building
Best Known As:	**Frankish Building**
Construction Date:	1913
Architectural Style:	Italianate

Description: The Frankish Building is three-story commercial building with a basement and a flat roof. The Frankish Building ha characteristics of the Second Renaissance Revival Style which includes a straightforward facade without any considerable projections or recessions, symmetrical elevations, rusticated quoins, and plain upper story wall surfaces with recessed windows.

Significance: The Frankish Building was designed and constructed by Charles Frankish and his son Hugh in 1913. Charles Frankish played a key role in the development of Euclid Avenue, and all of the City south of the Southern Pacific Railroads tracks. He is also responsible for the stone curbs along Euclid Avenue, organization of the San Antonio Heights Railroad along Euclid in 1887, the installation of the first electric lights in Ontario in 1895, and establishing the first bank in Ontario.

Address:	225 South Euclid Avenue
Historic Name:	Ontario City Hall
Best Known As:	**Museum of History & Art**
Construction Date:	1937
Architectural Style:	Mediterranean Revival

Description: The 1937 Works Project Administration (WPA) City Hall is U-shaped in plan with a Spanish hip roof. The building features a full basement, arched doorways, and decorative wrought iron gates. Two spacious porticos supported by double Corinthian columns face each other across an informal garden. Inside, the 1930's style Council chambers remain still intact with wooden auditorium seats, a court rail to separate the public area from the Council dais, and a hand-turned oak Council table.

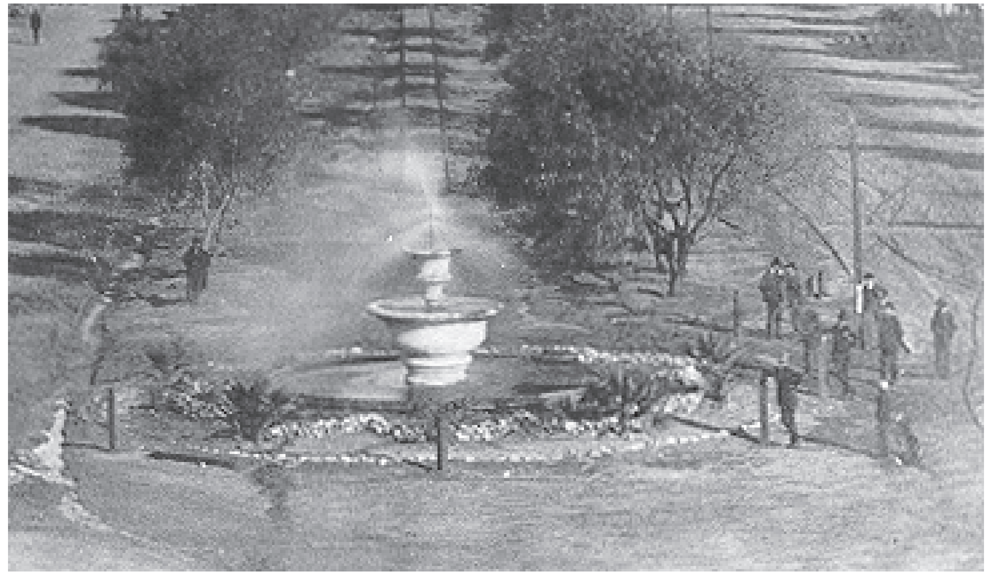
Significance: The WPA City Hall served as the center of City Government from 1937 until 1979, and is presently the home of the City's Museum of History and Art. The Mediterranean Revival style building was designed by Dewitt Mitcham, an architect from San Bernardino. In addition to City Hall functions, the building served as a court (Council Chambers) and a jail (second floor). To the rear of the structure is a park site dedicated to the City by Thomas Nugent in 1895 to be used as a horseshoe court and rose garden.

 Information and photographs provided by the City of Ontario Planning Department and the Model Colony Room in the Ontario Public Library.

Address:	225 South Euclid Avenue
Historic Name:	Frankish Fountain
Best Known As:	**Frankish Fountain**
Construction Date:	1886
Architectural Style:	Other

Description: Built of bricks and concrete, the Frankish Fountain at 225 South Euclid Avenue has a 24 foot diameter basin with a circular, nine-inch-thick, ground level wall, with a second level basin about four feet above the first and eight feet in diameter, and a third level basin about eight feet above the first and three feet in diameter. The top two basins have an urn shape and a pipe protrudes from the center of the top one. The fountain is now located on the grounds of the Museum (former City Hall) at the Southeast corner of Euclid Avenue and Transit Street. It was moved from the center median parkway when the Euclid Avenue underpass was constructed in 1983-84.

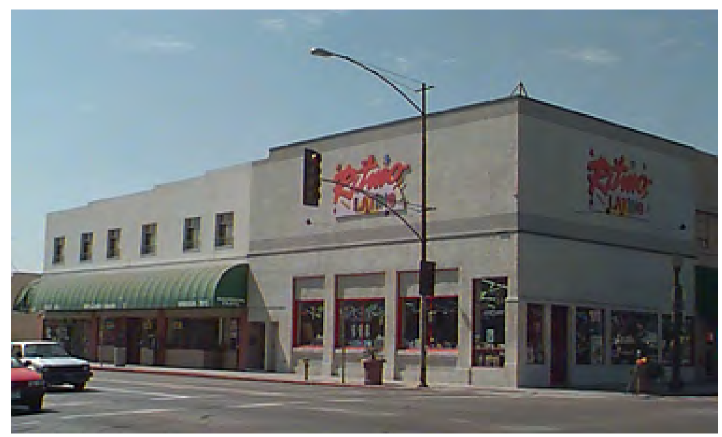
Significance: This fountain is the second of three fountains built on Euclid Avenue between 1883 and 1908. It was built in 1886 by Charles Frankish, the manager of the new land company, after the Chaffeys had sold out. The first fountain was made of bronze and was turned on and off when trains arrived at the depot to show that there was plenty of water in Ontario and thus encourage land sales for Mr. Frankish.



Address:	101/103 North Euclid Avenue
Historic Name:	Citizen's Bank Block
Best Known As:	**Ritmo Latino**
Construction Date:	1895
Architectural Style:	Commercial

Description: The Citizen's Bank Building was built in 1895 at the northwest corner of Euclid Avenue and Holt Boulevard ("A" Street). It had a tall, round tower on top of the second story to make it look more imposing, and lend proper dignity to this important corner. Citizens had complained that without the tower, the plans for the building looked "cheap and cheesy". The front entry to the bank originally faced the corner. There is a side entry from Holt leading to a stairway to the second floor where there is a skylight atrium. In 1948, the building was given the "new look" with the facade being drastically altered.

Significance: This building served an important role in the early commercial life of Ontario. Numerous important businesses were located in the building. Its design and construction generated much public controversy and debate.



 Information and photographs provided by the City of Ontario Planning Department and the Model Colony Room in the Ontario Public Library.

Address:	105/107 North Euclid Avenue
Historic Name:	W.W. Smith's Grocery
Best Known As:	**Mexico Lindo**
Construction Date:	
Architectural Style:	Commercial

Description: The Holbrook Block/W.W. Smith's Grocery at 105 North Euclid Avenue was a store with offices upstairs. This was formerly part of the earlier 1888 Holbrook Store incorporated into the Bank Block. Today only a slight facade indentation remains as evidence of the original development.

Address: 107/109 North Euclid Avenue

Historic Name: Rose Block

Best Known As: **Rose Block**

Construction Date: 1889

Architectural Style: Commercial

Description: This four-store block was completed by Henry J. Rose, a brother-in-law of Mrs. George Chaffey from Toronto, Canada, in 1889. It has a continuous style front with a center bay window flanked by balconies on the second floor. It was practically rebuilt inside and out in 1914 and the building was extended to the alley. The entire front was given the "new look" in 1948 and the bay window disappeared.

 Information and photographs provided by the City of Ontario Planning Department and the Model Colony Room in the Ontario Public Library.

Address:	114 North Euclid Avenue
Historic Name:	Citizen's National Bank
Best Known As:	**Mission Furniture**
Construction Date:	1921
Architectural Style:	Art Deco

Description: The Art Deco style building at 114 North Euclid Avenue has a terracota tile facade in front with a cream color, vertical corrugated tile between the second story casement windows with gold sash. The south (right) elevation has no windows or doors and stucco siding. There are two stories at the front of the building and a single story in the back. This building replaced the Walker Building which had been built in 1914, and was used as a skating rink, and later the Ontario Feed and Fuel Company. The floor of the skating rink was incorporated into this building.

Address: 123 North Euclid Avenue

Historic Name: Friend Block/Somerset Hall, People's Store, Library

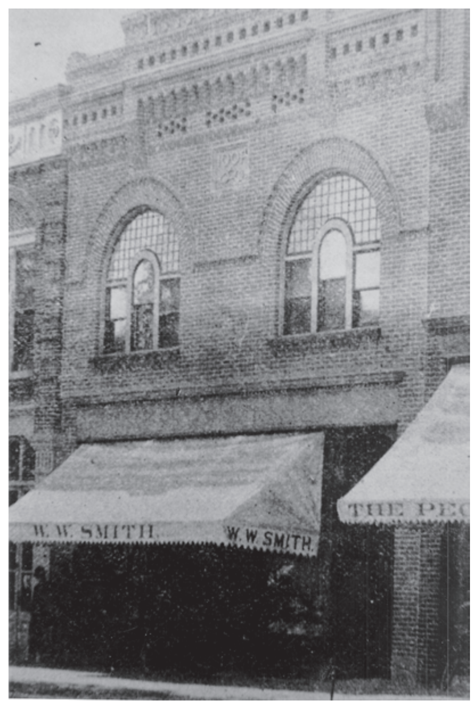
Best Known As: **Fallis Building**

Construction Date: 1894

Architectural Style: Commercial

Description: The structure is rectangular in plan and has a stucco front facade over brick construction. This building was originally two buildings.

Significance: The northern half of the building was the Friend block built in 1895, and the southern half of the building was the former I.O.O.F. (International Order of Odd Fellows) building, built in 1894. The Fallis Store took over The People's Store in 1906 in the Friend Block, and in 1950 expanded into the I.O.O.F. building, which originally had the lodge and meeting hall on the second floor and a grocery store on the ground floor. These are among the oldest remaining buildings in Ontario.



 Information and photographs provided by the City of Ontario Planning Department and the Model Colony Room in the Ontario Public Library.

Address:	122 North Euclid Avenue
Historic Name:	Lerch Building – Euclid Theater, Park Theater
Best Known As:	**Pawn Furniture**
Construction Date:	1913
Architectural Style:	Commercial

Description: The two story reinforced concrete building at 122 North Euclid Avenue has a moderne style front with casement windows on the second story, a metal awning, and 50's style plate glass windows on the store front.

Significance: This 1913 building was built as a theater by Jacob Lerch. Originally, it was known as the "Isis Theater," and finally as the "Euclid Theater," at least through 1928. It was vacant from 1934 to 1938. C.A. Gregg, an electrical contractor, used the building in 1940. Mohilef Bros. manufactured women's clothing in the building around 1945-46. The building was re-modeled in 1951 and used by the Suburban Gas Company. By 1962, the building was used as a Christian Science Reading Room.

Address:	128/130/132 North Euclid Avenue
Historic Name:	Commercial Hotel
Best Known As:	**Yangtze Restuarant**
Construction Date:	1920 (estimated)
Architectural Style:	Commercial

Description: The three story building at 128-132 North Euclid Avenue has a brick facade with raised corner quoins and a decorative diamond pattern across the top, a pediment across the front with two rows of raised bricks resembling dentils, and six-pane double-hung windows on the second and third stories, with keystone style lintels.

Significance: This 1910 hotel was the work of D. Howard Akey, a plumber whose shop was just south of this site. He was proud that his fifty room hotel had "60 pieces of modern plumbing." In March of 1910, Mrs. Gribben moved her millinery shop into the storefront to the north. By 1911, Mr. Akey had been sent to prison and Mrs. Gribben took over the hotel, calling it the Victoria Hotel. In 1915, Mr. and Mrs. B. W. Budde became managers, changing the name to Commercial Hotel. The hotel closed in 1931 due to the Depression, but opened in 1932 under new managers. By 1962, the hotel part of the building could not be brought up to current standards so it has remained closed.

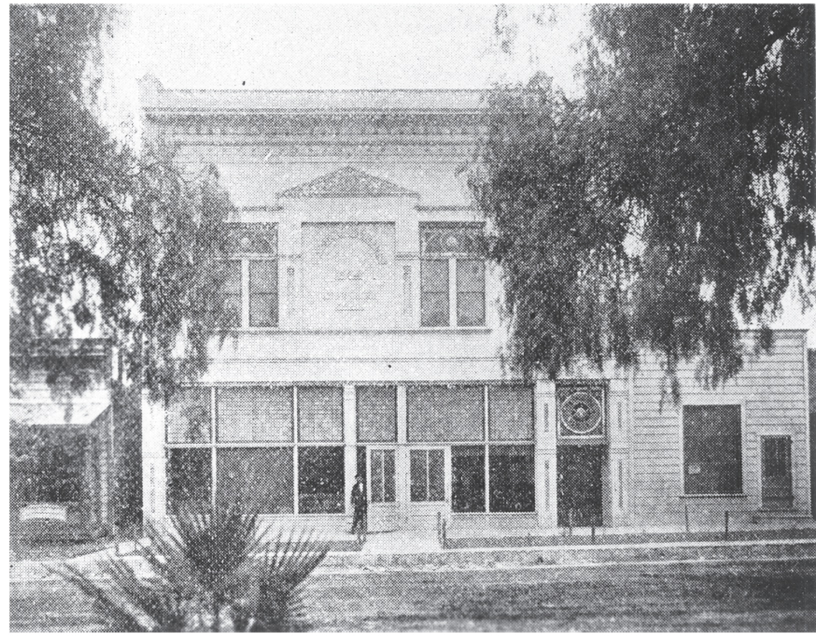
 Information and photographs provided by the City of Ontario Planning Department and the Model Colony Room in the Ontario Public Library.

Address:	203 North Euclid Avenue
Historic Name:	Ostran's Department Store
Best Known As:	**Ostran's**
Construction Date:	1908
Architectural Style:	Commercial

Description: The commercial building at 203 North Euclid Avenue has a rectangular floor plan, two stories, a basement, a flat roof, and is constructed of brick. The first story has plate glass windows, while the second story apartments have double-hung windows. Purple glass bricks in the sidewalk along "B" Street allow light into the basement.

Significance: This building served Ontario for over fifty years as Ostran's Department Store. It was built in 1908 by Cleveland & Blocker, and Ferdinand Davis of Pomona was the architect. The brickwork was done by Sanborn & Nugent, also of Pomona. Frank Minter was the plumber, and Baker Iron Works provided the reinforcement for the building. Mary Ellen Agnew was the original owner who had the building constructed. She then rented the building to Petris E. Ostran on a ten year lease. In October of 1911, the Baldwin Flyer cash and parcel carrier system was installed. It consisted of wire baskets on pulleys which moved cash and merchandise around the store and to the mezzanine at the back of the store. The second floor served as the Agnew Apartments from 1914 to 1917, and the Victory apartments from 1945 to 1974. Fred Fallis, another department store owner in Ontario, bought the building in 1916, and continued to be Mr. Ostran's landlord for many years. Mr. Ostran and/or his partners operated the store until 1950 when it was sold. This building represents a significant part of the economic history of Ontario.

Address: 231/233 North Euclid Avenue
Historic Name: Masonic Hall
Best Known As: **Masonic Hall**
Construction Date: 1904
Architectural Style: Commercial



Description: The two story building is constructed of brick, with a white brick veneer on the front facade, which was covered by stucco in the late 1970's. There are various decorative elements on the building including an original decorative cornice. Some decorative elements were lost due to the 1990 earthquake.

Significance: The second floor served as the Masonic Hall, Lodge 301 until 1965. The ground floor served as a public library and a fire station. Later the ground floor was used by the B.F. May Furniture Company. This building represents Ontario's early social, cultural, and commercial activity.

 Information and photographs provided by the City of Ontario Planning Department and the Model Colony Room in the Ontario Public Library.

Address:	235 North Euclid Avenue
Historic Name:	
Best Known As:	**Golden Web**
Construction Date:	1916
Architectural Style:	Commercial

Description: The first story of this building has a plate-glass door entrance to the second story at the left in front. This entrance also served as the Euclid Avenue entrance to the Masonic Hall on the second floor of the building at 231/233 North Euclid. The building was substantially remodeled in 1928. The first floor facade has sheets of ceramic tile, plate-glass windows, and a centered plate-glass door. The second story has a stucco facade, a Spanish tile shed roof facing the front, Italianate curvilinear brackets, multi-paned arched windows, and a recessed balcony with Hispano-Mauresque columns and an iron railing.

Significance: This building served as the People's Mutual building and Loan Association, the Pacific States Savings and Loan Co., and Miller's Boat Shop.

Address: 305 North Euclid Avenue
Historic Name: Granada Building
Best Known As: **Granada Building**
Construction Date: 1926
Architectural Style: Moderne/Art Deco-Commercial

Description: This square three-story building is a good example of early reinforced concrete office buildings. The roof line is primarily a parapet with plain entablature highlighted by a decorated pediment centered on the Euclid Avenue frontage.

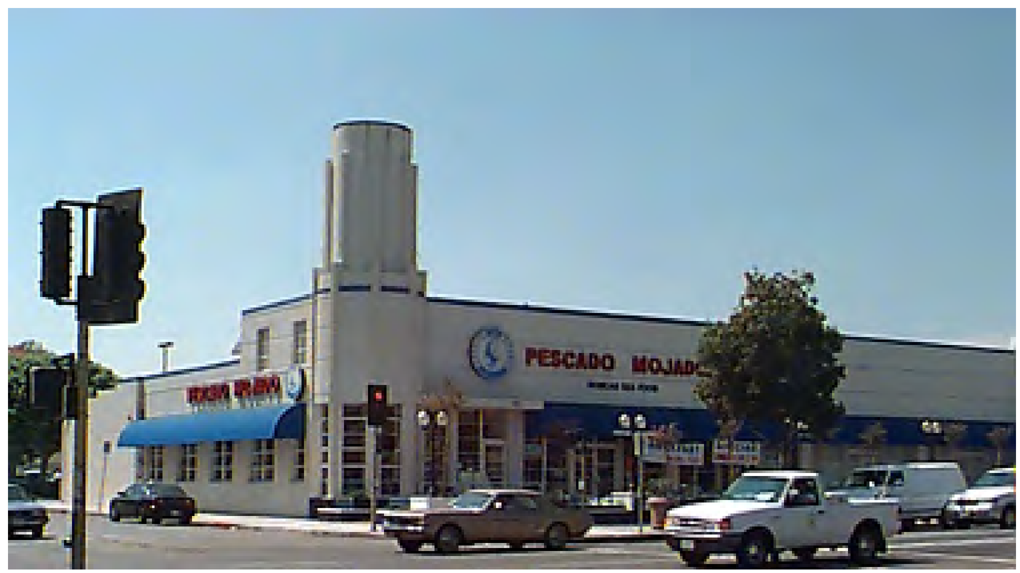
Significance: Dr. Calvert I. Emmons purchased three lots on the northwest corner of Euclid Avenue and "C" Street between 1924 and 1925. The Granada Building was constructed in 1926 at a cost of $35,000. The three-story building consists of a movie theater, retail shops, and second and third floor offices. The building's significance lies in its value as historic center for social life in the community. It remains the oldest motion picture theater in the City.

 Information and photographs provided by the City of Ontario Planning Department and the Model Colony Room in the Ontario Public Library.

Address:	401 North Euclid Avenue
Historic Name:	Blue Seal Building
Best Known As:	**Pescado/Blue Seal**
Construction Date:	1942
Architectural Style:	Moderne/Art Deco

Description: The Blue Seal Building is rectangular in plan with a saw-tooth roof and a three story high corner tower. Other features include double-hung windows and a vertical corner marquee supported by two concrete rectangular 'arms.' The building is constructed of poured concrete with corrugated metal supra-structure at its northwest corner.

Significance: The Blue Seal Building, built in 1942 is one of the best examples of the Moderne style of architecture in the city of Ontario. A laundry was established at this site in 1896 in a previous building which also housed a grocery store. In 1901, the business was purchased by the Lorbeer Brothers of Pomona. The Southern Service Company was then formed in 1911 and the Ontario Laundry resulted.



Address:	536 North Euclid Avenue
Historic Name:	Bethel Congregational Church
Best Known As:	**Bethel Church**
Construction Date:	1912
Architectural Style:	Gothic Revival (stone)

Description: Bethel Congregational Church is an excellent example of Gothic Revival architecture, probably the best in the city of Ontario. The church is constructed of split stone and has an irregular plan. The main sanctuary is in the shape of a cross. Gables with arched, lancet, stained glass windows face in four directions. Cement steps lead to each entrance., with only the 'F' Street entrance having been significantly altered over the years. Oak pews, paneling, and stair rails adorn the interior along with a 1930 Pilcher organ.

Significance: The Church is culturally significant in that it was organized in 1885; organizing members included the Chaffey family. The Church built a wood frame building at the corner of "A" (now Holt Boulevard) and Palm Streets in 1888, and their present building in 1912. The Harwood stained glass windows were transplanted from the original church to the present one.

 Information and photographs provided by the City of Ontario Planning Department and the Model Colony Room in the Ontario Public Library.

Address:	625 North Euclid Avenue
Historic Name:	Moore House
Best Known As:	**Moore House**
Construction Date:	1893
Architectural Style:	Queen Anne Victorian

Description: This Queen Anne style home built in 1893 is rectangular in plan, with a composition shingle gable and half-hipped roof with a corner turret. Other features include octagonal witch's cage, weather vane, shiplap siding, and diamond and fish scale shingles. The building is a typical Queen Anne style home built around the turn of the century.

Significance: This home was originally owned by Albert D. Moore, Mayor of Ontario from 1898 to 1900, and a resident of Ontario at least as early as 1897. After Albert died around 1914, Mrs. Frances Moore continued to own the house through 1928. The home had several owners between 1928 and 1962, when it was converted to its present use as a real estate office.

Glossary

Accent Color: The accent color is used to highlight small details on window hoods, cornices, columns and bulkheads.

Arcades: Covered walkways attached to buildings and supported on the other side by columns.

Awnings: Temporary roof-like coverings that project from the wall of a building.

Base Color: The base color is used on the majority of the building surface.

Bulkheads: The bulkhead is the solid portion at the base of the storefront that frames and protects the store window above.

Canopy: An overhead projection.

Cantilever: a beam or bracket projecting from a wall or frame and stabilized by weight on its inner end.

Casement: A hinged window frame that opens horizontally like a door.

Column: A vertical support.

Coping: The top course of a wall.

Corbel: A small projection built out from a wall to support the eaves of a roof or some other feature.

Cornice: The uppermost, projecting part of an entablature, or a feature resembling it.

Dormer Window: An upright window lighting the space in a roof.

Facade: The main front (face) of a building.

False-front Structures: Single story gabled buildings with the false front extending the facade vertically and horizontally so as to create a more interesting profile and convey the illusion of a larger size.

Gable: The triangular upper part of a wall under the end of a ridged roof, or a wall rising above the end of a ridged roof.

Gingerbread: Pierced curvilinear ornament, executed with a jigsaw or scroll saw, under the eaves of roofs. So called after the sugar frosting on German gingerbread houses.

Glazing: The glass in a window.

Hipped Roof: A roof with slopes on all four sides. The hips are the lines of meeting of the slopes at the corners.

Lintel: A beam over an opening in a wall or over two or more posts.

Major Trim Color: The major trim color has secondary importance in the color hierarchy of the facade. It is used to accentuate certain elements of the facade such as the cornice, window hoods, window frames, storefront cornice, storefront and bulkhead.

Mansard roof: A roof with two slopes to all four sides, the lower one being much steeper than the upper. It is named for the French seventeenth-century architect, Francois Mansart.

Mass: The overall volume or form of a building or building element.

Mid-floor Panel: The continuous panel between the floors was important visually. The primary signage of the building was also installed on this panel.

Minor Trim Color: The minor trim color is used to highlight elements such as window sashes and doors. This color category could be combined with the major trim color.

Patio: The courtyard of a Spanish house.

Pier: A vertical member in a metal or concrete building frame.

Pilaster: A flat-faced representation of a column, in a relief as it were, against a wall.

Pitch: The slope of the roof.

Rubble: Stones that have not been shaped or at most have been shaped by fracture (not cut). In walls of coursed rubble, the stones are of approximately the same size and shape and the courses are clearly defined. In random rubble the stones are of varying size and shape and the pattern formed by them is quite irregular.

Spandrel: In a frame building, the wall immediately below an upper story window.

Transom Window: The horizontal window panel above the storefront door.

Trellis: A light framework of horizontal or vertical members, often used to supprt climbing plants.

Note: The is a limited listing of terms used in this document.

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Block Elevations

The following section consists of design concepts for twelve blocks in the downtown area, demonstrating the design intent of the Design Guidelines. These are intended for illustrative purposes and describe the results of one possible application of the design guidelines. The facade guidelines and illustrations are intended to assist the community, property owners and tenants in visualizing the appearance of buildings in the downtown area through the implementation of the Design Guidelines. They also describe the relationship between three architectural "themes" for the retail district, including the Turn-of-the-Century subdistrict at the south end of the downtown area, the 1920's to 1940's subdistrict in the central portion, and the 1950's subdistrict at the north end of downtown.

In summary, the objectives of the supplemental facade guidelines and illustrations are as follows:

- illustrate acceptable design treatment not only for individual buildings but for each block face along Euclid Avenue in the project area;
- illustrate how the various historic design "themes" can relate to each other;
- facilitate community understanding of the concepts;
- enable the community, property owners and tenants to more readily visualize how the retail district might appear after compliance with the Design Guidelines.

A photomontage of the existing block elevation is included with each drawing. A key map is shown in Figure A4.1 on the facing page.

- ILLUSTRATED BLOCK ELEVATIONS
- 1 HISTORIC RETAIL DISTRICT
- 2 CIVIC CENTER
- 3 MUSEUM/TRANSIT DISTRICT
- 4 EDUCATION DISTRICT
- 5 RESIDENTIAL DISTRICT **
- 6 NEIGHBORHOOD COMMERCIAL DISTRICT
- EUCLID AVENUE MEDIAN
- RETAIL DISTRICT*

* Retail at street level. Offices and / or residential in upper levels.
** Includes related uses such as schools and churches.

DISTANCE IN FEET
0 200 400 1000

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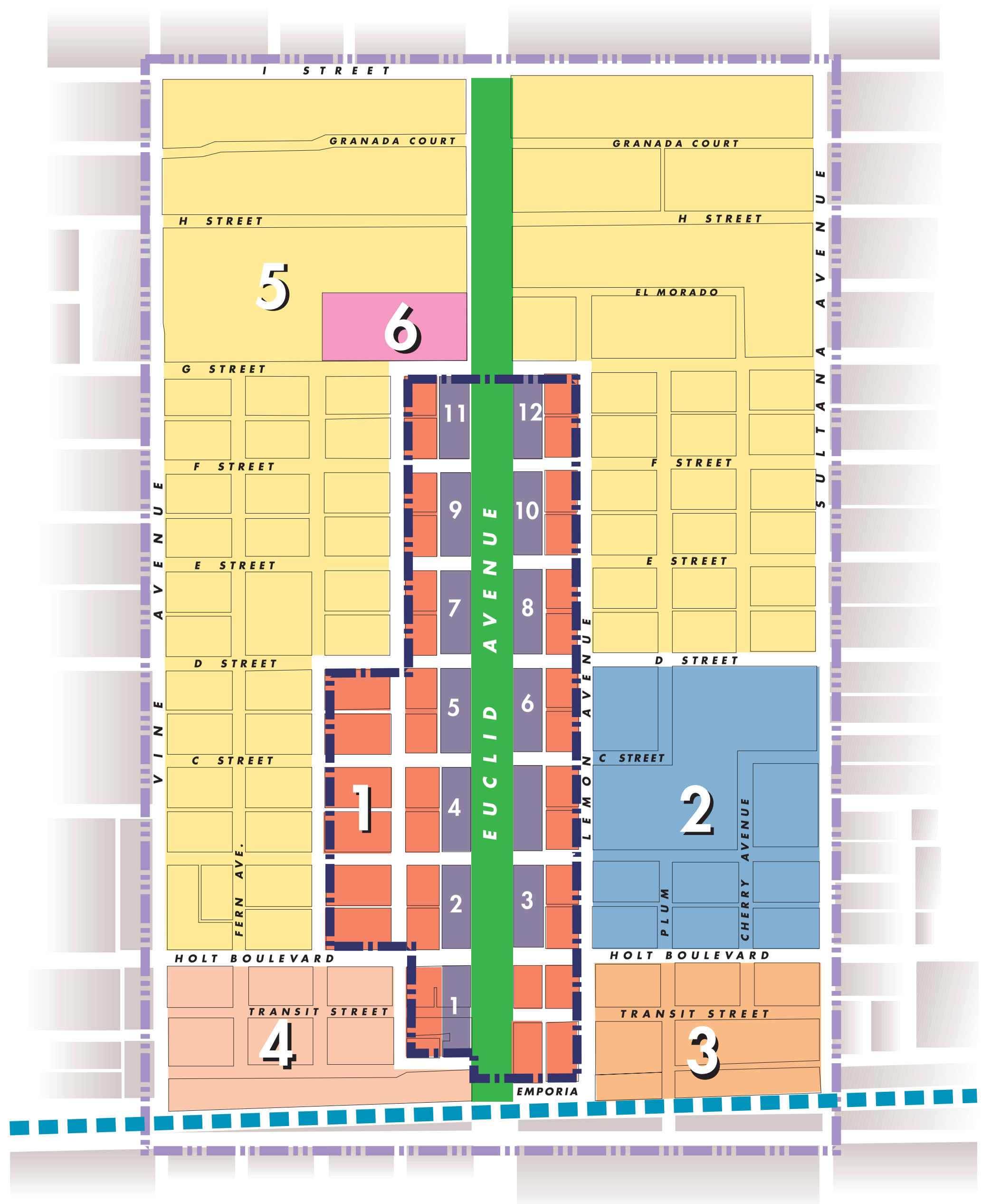


Figure A4.1: Key Map showing Illustrated Block Elevations

Block Three: Euclid Avenue, east side between Holt Boulevard and 'B' Street

If historical information (photos, drawings, plans etc.) are available, the restored building facades should be as close to the original as possible. The level of accuracy would be dependent on the condition of the original structure.

Restrict awnings to 6" - 8" from either ends of the structure to prevent dissimilar awnings from abutting each other.

Create sign band that runs across the length of the facade.

Mount awnings between the transom and the display window.

Corner Structures throughout the District shall have a "wash" of light applied to the building corner at Euclid Avenue and adjacent cross-street.

These lit corners will provide "bookends" to each block and a sense of cohesion to the district as a whole.

In addition, interesting building details such as the cornice and facade moldings. Signs may also be lit. Please refer to Chapters 2C and 2D for details on lighting signs.

Pedestrian-oriented double-sided hanging signs are also appropriate to these buildings.

The facade should have a modulation of columns/pilasters along the retail level to maintain a pedestrian scale.

Bulkheads shall be provided below the storefront windows.

Add infill structure that follows Design Guidelines for Context Buildings as shown above.

Remove nonconforming "can" signs.

Replace nonconforming painted wall signs.

Replace nonconforming shiny vinyl awnings with fabric awnings with a traditional profile.

Remove mansard roof, add false parapet to create sign band, cornice and perception of height.

Add infill structure that follows Design Guidelines for Context Buildings as shown above.

Existing Elevation

1950's styles Subdistrict

Block Six: Euclid Avenue, east side between 'D' Street and 'C' Street

Ontario's Historic Model Colony:
a unique multi-cultural urban experience

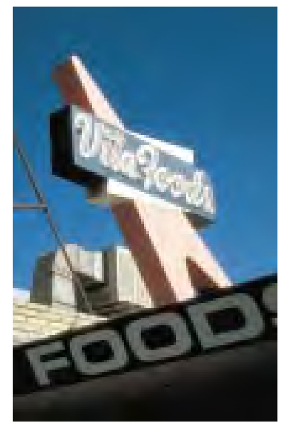
Replace the "Spanish" tile roof with white crushed rock (a typical material used in the 1950's).

Replace the "half timber" facing with plaster or embossed sheet metal.

Replace roof sign with a free-standing double-sided sign, internally lighted.

Replace fabric awnings with sheet metal overhangs

Integrate non-50's letter styles or existing corporate graphics into the facade sign design by using 50's ornamental design devices.



This excellent 50's sign could be replicated for the other two businesses in this unified facade

Add typical 1950's overhang, solid sheet metal.

D STREET

C STREET

Remove nonconforming signs.

Remove paint from brick or replace with new brick or flagstone.

Add metal canopies that are appropriate for this subdistrict. Remove wall signs.

Remove fabric canopies and replace sign with new sign appropriate for this subdistrict.

Remove roof sign.

Remove the wood fence and metal gate.

Existing Elevation

1950's styles Subdistrict

Block Eight: Euclid Avenue, east side between 'E' Street and 'D' Street

Note that the block long elevation is being treated as smaller elements to maintain the scale of typical downtown blocks.

Emphasis on entry elements of the different storefronts will help in reducing the linearity effect of the block.

Pedestrian-oriented double-sided hanging signs are also appropriate to these buildings.

The facade should have a modulation of columns/pilasters and bulkheads along the retail level to maintain a pedestrian scale.

Add corner tower element to create interest. This element also echoes the vertical element at the corner of the Casa Corona Building across the street and continues the tradition of emphasis on corners.

Rehabilitate gas station to reflect 1950's styles as shown above.

Rehabilitate these buildings as shown above.

Rehabilitate these buildings as shown above. Remove all non-conforming signs such as rectangular can signs and painted window signs.

Existing Elevation

1950's styles Subdistrict

Block Ten: Euclid Avenue, east side between 'F' Street and 'E' Street

Ontario's Historic Model Colony: a unique multi-cultural urban experience

Existing Elevation

Ontario's Historic Model Colony:
a unique multi-cultural urban experience

1950's Styles Subdistrict

Block Twelve: Euclid Avenue, east side between 'G' Street and 'F' Street

Existing Elevation

Turn-of-the-Century Subdistrict

Block Two: Euclid Avenue, west side between Holt Boulevard and ‘B’ Street

Corner Structures throughout the District shall have a "wash" of light applied to the building corner at Euclid Avenue and adjacent cross-street.

These lit corners will provide "bookends" to each block and a sense of cohesion to the district as a whole.

In addition, interesting building details such as the cornice and facade moldings. Signs may also be lit. Please refer to Chapters 2C and 2D for details on lighting signs.

If historical information (photos, drawings, plans etc.) are available, the restored building facades should be as close to the original as possible. The level of accuracy would be dependent on the condition of the original structure.

Awnings should generally be mounted between the transom and the display window. Awnings can also be used to conceal or disguise inappropriate storefront modifications.

Awnings/canopies should be restricted 6" - 8" from either ends of the structure to prevent dissimilar awnings from abutting each other.

The storefront should be composed almost entirely of glass.

The facade should have a modulation of columns/pilasters along the retail level to maintain a pedestrian scale.

Bulkheads at the base of the storefront shall be provided.

Replace nonconforming awnings.

Rehabilitate the Fallis Building.

Pedestrian-oriented double-sided hanging signs are also appropriate to these buildings.

Create sign band that runs across the length of the facade.

Existing Elevation

1920's – 1940's Subdistrict

Block Four: Euclid Avenue, west side between 'B' Street and 'C' Street

Ontario's Historic Model Colony: a unique multi-cultural urban experience

If historical information (photos, drawings, plans etc.) are available, the restored building facades should be as close to the original as possible. The level of accuracy would be dependent on the condition of the original structure.

Create sign band that runs across the length of the facade.

Add spandrel bas relief detail above the transom window (appropriate for 1920's through 1940's subdistrict).

Create tripartite division of the facade (appropriate for 1920's through 1940's subdistrict.)

Pedestrian-oriented double-sided hanging signs are also appropriate to these buildings.

The facade should have a modulation of columns/pilasters along the retail level to maintain a pedestrian scale.

Restore the Ostrans Building: Add cornice; lower canopy; change profile of canopy to traditional; recreate sign band; and remove all non-conforming signs.

Rehabilitate these buildings as shown above.

Rehabilitate these buildings as per historical information. Remove all non-conforming signs.

Remove all non-conforming signs.

Existing Elevation

1950's styles Subdistrict

Block Five: Euclid Avenue, west side between 'C' Street and 'D' Street

If historical information (photos, drawings, plans etc.) are available, the restored building facades should be as close to the original as possible. The level of accuracy would be dependent on the condition of the original structure.

Corner Structures throughout the District shall have a "wash" of light applied to the building corner at Euclid Avenue and adjacent cross-street.

These lit corners will provide "bookends" to each block and a sense of cohesion to the district as a whole.

In addition, interesting building details such as the cornice and facade moldings. Signs may also be lit. Please refer to Chapters 2C and 2D for details on lighting signs.

Add curved canopy to create break up montony of long facade.

Add a sheet metal facing to the center portion of the facade. The facing projects above the adjoining parapet line to add verticality.

Pedestrian-oriented double-sided hanging signs are also appropriate to these buildings.

Maintain bulkheads along the storefront.

The facade should have a modulation of columns/pilasters along the retail level to maintain a pedestrian scale.

Redesign facade to visually break up the long storefront as three storefronts.

Retain brick facade.

Remove nonconforming signs. Add street front windows in clear glass to allow views into the interior.

Replace nonconforming signs such as wall painted signs and oversized signs with appropriate 1950's style signs as shown above.

Existing Elevation

1950's styles Subdistrict

Block Seven: Euclid Avenue, west side between 'D' Street and 'E' Street

Ontario's Historic Model Colony:
a unique multi-cultural urban experience

The horizontality of this historic design is enhanced with the addition of horizontal mouldings and neon tubing to form a sign band.

A historically accurate vertical element that interupts the top edge of the building is added here to better define this separate commercial space.

Use a different, but similar, color on the awnings for this separate commercial space.

Individually fabricated letters internally or externally lighted are preferred

Sheet metal overhangs replace fabric covered awnings

A bold "egg crate" grille projects above the building.

Reface the facade in glossy stone tiles that is appropriate to the 50's

A non-rectilinear lit sign can with an acrylic face is added.

Edge mounted letters added to an existing overhang

Historically correct letter styles alone can tranform a simple contemporary facade.

'D' STREET

'E' STREET

Break up the facade length to emphasize the separate businesses.

The canopies on these building are too high to provide shade to the pedestrian. Replace fabric awnings with sunshades appropriate to the subdistrict and lower the level of the sunshades as well.

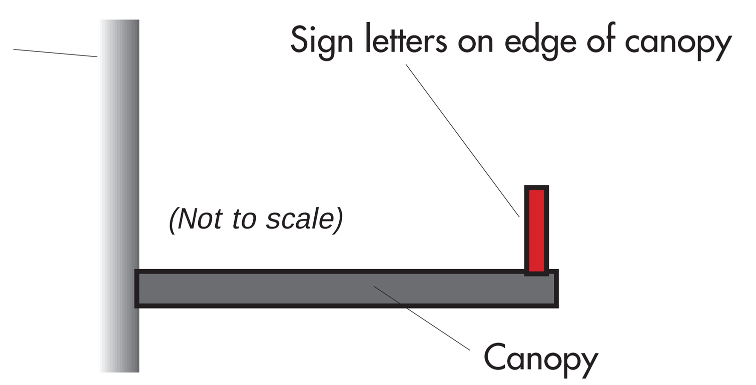
Remove nonconforming signs.

Existing Elevation

1950's styles Subdistrict

Block Nine: Euclid Avenue, west side between 'E' Street and 'F' Street

Ontario's Historic Model Colony:
a unique multi-cultural urban experience



Existing Elevation

1950's styles Subdistrict

Block Eleven: Euclid Avenue, west side between 'F' Street and 'G' Street

Existing Elevation

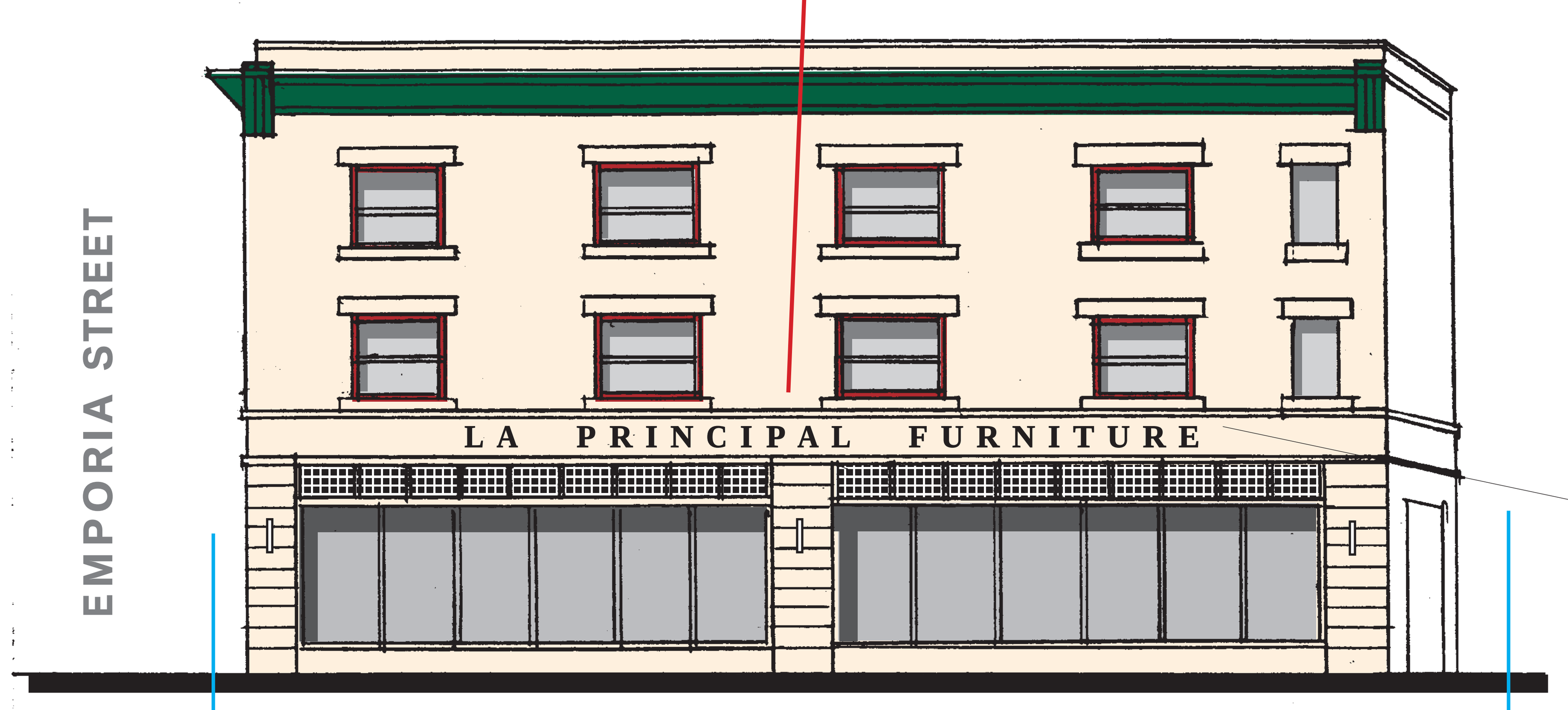
Block One: Euclid Avenue, west side between Transit Street and Holt Boulevard

If historical information (photos, drawings, plans etc.) are available, the restored building facades should be as close to the original as possible. The level of accuracy would be dependent on the condition of the original structure.

Note: In the Beverly Hotel, a facade mounted sign is allowed as an exception to the Sign Design Guidelines for the Turn-of-the-Century Subdistrict. This building is a Designated Building and thus major facade modifications are not allowed. As there is no signband present on the facade, the addition of one would significantly alter the facade.

Because this building has multiple street level businesses sharing common entries...the building name and address are the major sign identities. The tenant businesses are listed under a large address numeral.

LA PRINCIPAL FURNITURE



Mount awnings between the transom and the display window. Awnings can also be used to conceal or disguise inappropriate storefront modifications.

Awnings/canopies should be restricted 6" - 8" from either ends of the structure to prevent dissimilar awnings from abutting each other.

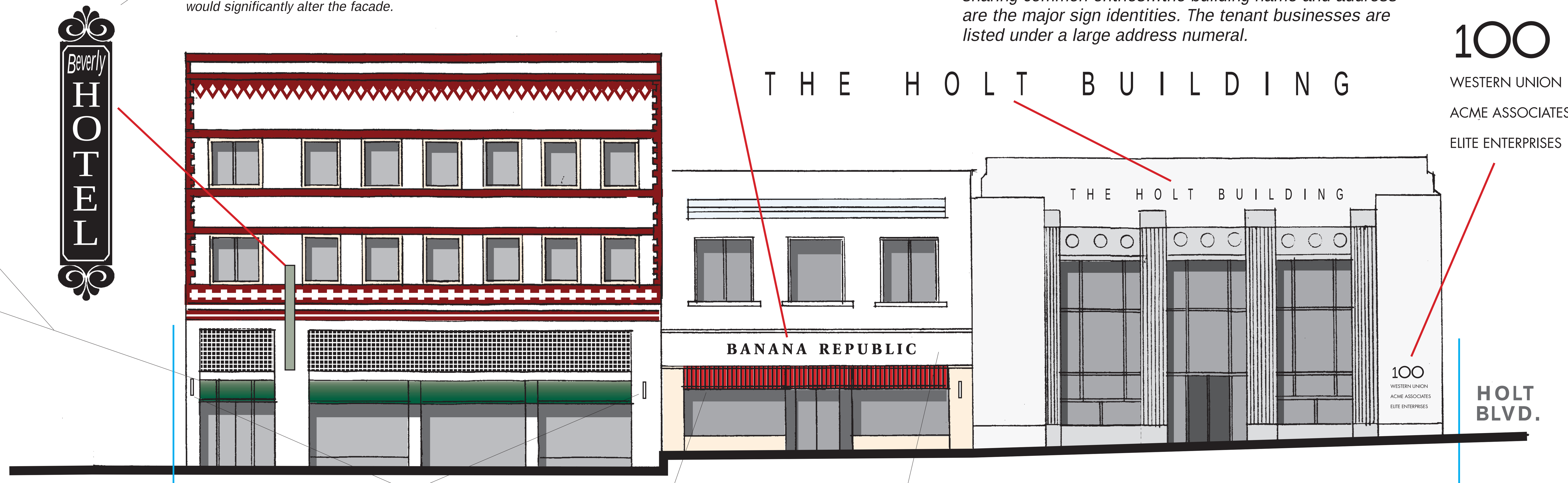
Create sign band across the length of the facade.

TRANSIT STREET

BANANA REPUBLIC

THE HOLT BUILDING

100
WESTERN UNION
ACME ASSOCIATES
ELITE ENTERPRISES



Pedestrian-oriented double-sided hanging signs are also appropriate to these buildings.

Add fabric awning.

Create sign band across the length of the facade.

Corner Structures throughout the District shall have a "wash" of light applied to the building corner at Euclid Avenue and adjacent cross-street.

In addition, interesting building details such as the cornice and facade moldings Signs may also be lit. Please refer to Chapters 2C and 2D for details on lighting signs.

Remove all nonconforming signs.

Remove all nonconforming signs.

Existing Elevation

Reference D—Residential Design Guidelines

Sections:

D.01.001: Purpose

A. The design guidelines for residential developments contained in this section are applicable to all residential zoning districts, and are intended as a reference to assist the designer in understanding the City's goals and objectives for high quality residential development. The guidelines compliment the mandatory development regulations contained in this chapter, by providing good examples of potential design solutions and by providing design interpretations of the various mandatory regulations.

B. Furthermore, it is the intent of these guidelines is to ensure that single-family residential developments are architecturally diverse, and appear to be neighborhoods that have evolved naturally over time, rather than master planned communities.

D.01.002: Applicability

A. The Residential Design Guidelines are general and may be interpreted with some flexibility in their application to specific projects. Variations may be considered for projects with special design characteristics during the City's development review process to encourage the highest level of design quality while at the same time providing the flexibility necessary to encourage creativity on the part of project designers. Nonetheless, unless there are compelling reasons or practical difficulties, these guidelines shall be observed.

B. Determinations of compliance with the Residential Design Guidelines shall be made by the Approving Authority.

C. These Residential Design Guidelines are authorized by Subsection H of Development Code Section 6.01.010, and are enforceable in the same manner, and to the same extent, as any other applicable requirement of the Ontario Development Code.

D.01.003: Neighborhoods

A. **Mix of Uses.** Neighborhoods should be designed to promote a mix of uses, including parks, religious assembly, and schools. Additionally, neighborhood commercial centers are encouraged to be integrated into neighborhood design.

B. Neighborhood Design and Orientation.

1. Neighborhoods should be oriented around community uses, such as parks, schools, and neighborhood commercial centers (see example, right).

2. Neighborhoods that are segregated from other uses, forcing residents to commute by automobile to reach services, should be avoided.

3. Neighborhoods should be distinguished from one another using edges and landmarks that are formed with trees, open space, parks, natural features, or major streets.

Acceptable Neighborhood Design

C. Mix of Housing Types. A mix of housing types and sizes are encouraged. Mixing multiple-family housing into single-family neighborhoods, and varying the size and dimensions of detached lots, is encouraged. Neighborhoods that have little variation in housing type and lot size should be avoided.

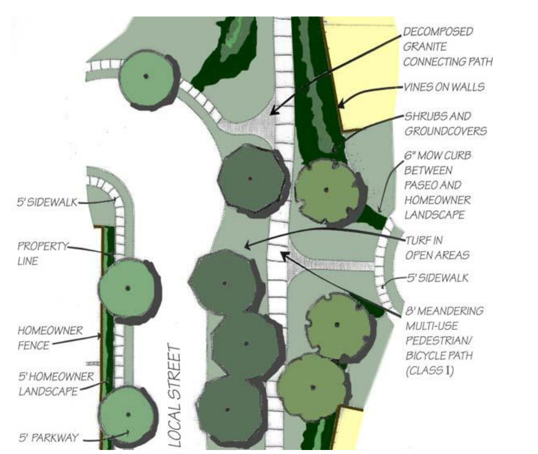
D. Encourage Outdoor Activity and the Use of Alternate Forms of Transportation. Neighborhoods should be designed to promote a sense of community, and to encourage outdoor activity and alternate forms of transportation. The use of landscaped parkways, street design, mixed uses, and building orientation and design can encourage outdoor activity and the use of alternate forms of transportation. Neighborhoods that are designed with a reliance on automobile transportation, and do not provide pedestrian linkages, are discouraged.

E. Neighborhood Connectivity. Neighborhoods should be designed to be integrated with other areas. An interconnected pattern of streets and pedestrian pathways should be provided in projects exceeding 3 acres.

1. Local streets networks should be designed to provide increased connectivity between neighborhoods.

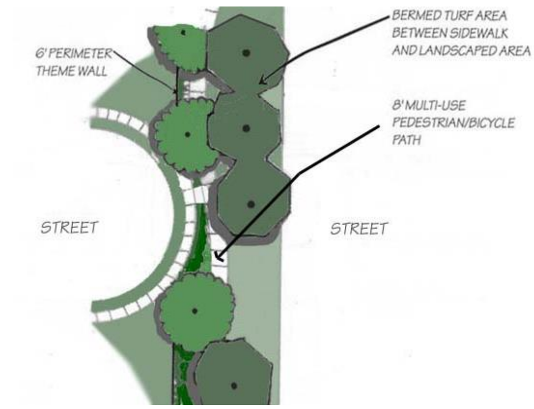
2. The street network should be based upon a grid system, with local streets connections to arterial streets occurring at least every one-quarter mile on average. This level of connectivity should allow residences to face streets with acceptable traffic volumes and create safer walking environments where complementary land uses, such as retail and office uses, are located in close proximity.

3. The use of cul-de-sac and dead end streets should be avoided. When cul-de-sac streets are necessary, pedestrian connections should be created to allow for access to either open space or other streets (see example, right).



Appropriate Treatment of Cul-De-Sacs

4. Neighborhoods should be designed to include paseos (see example, right), trails, or other connections to community facilities. Paseos should be used for pedestrian connections at terminus of cul-de-sac and dead end streets. Neighborhoods designed without connections to community facilities should be avoided.



Appropriate Paseo Design

F. Protect Natural Features. Neighborhoods should be designed to protect natural features. Natural areas can enhance a neighborhood while protecting the environment. Developments that alter or destroy natural features should be avoided.

G. Neighborhood Circulation. Streets should be designed to provide an increased sense of neighborhood and community, reduced reliance on the automobile, promote energy conservation, and a more attractive, aesthetically pleasing streetscape.

1. <u>Reduced Width Streets</u>. Narrow streets help reduce automobile speeds, which create a safer environment for residents. Neighborhood (local) streets should be designed for residents of the neighborhood and not as automobile thoroughfares. Large streets should be avoided.

2. <u>Streetscape</u>. Landscaped parkways provide a more attractive streetscape and create a buffer between automobile and pedestrian traffic.

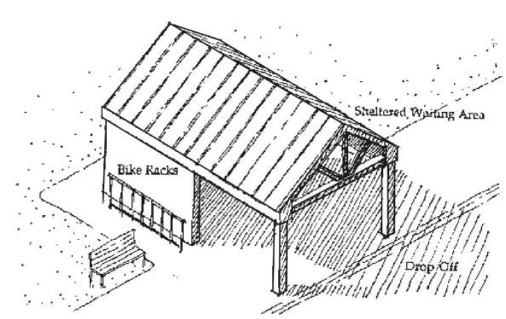
a. All neighborhood streets should be designed with landscaped parkways, which are irrigated and permanently maintained. Streets with sidewalks adjacent to the curb should be avoided.

b. Trees planted within landscaped parkways create a pleasant environment for pedestrians, and provide shade during the hot summer months. Street trees should be shade trees that are deciduous or evergreen. Trees such as palms and other non-shade trees should be avoided.

c. Alleyways should be designed with the same considerations as streets. Alleys have earned a reputation as being high crime, dirty areas. Alleys should be designed as mini-streets, generally providing the same amenities as streets, including landscaping and lighting.

H. Transit.

1. Residential neighborhoods should be designed to take advantage of mass transit opportunities. Neighborhood edges along arterial and collector streets should provide transit stops, including turnouts for bus stops. Neighborhoods without transit connections should be avoided.



Transit Shelter Example

2. Transit shelters should be designed to fit into a neighborhood. Transit shelters that are incorporated within the form of a building, such as under an awning or arcade, are encouraged. For freestanding shelters, the developer should explore with the transit agency and the City, possibilities for a structure that is integrated architecturally with the project through its color, materials and architectural style.

D.01.004: Single-Family Residential Development

A. Introduction. The intent of these guidelines is to ensure that single-family residential developments are architecturally diverse and appear to be neighborhoods that have evolved naturally over time rather than master planned communities. Variation in home sizes, floor plans, elevations, and lot sizes contribute to such diversity. The use of regional architecture styles, such as Craftsman, Spanish Colonial Revival, Monterey, Mission Revival, and Bungalow, are encouraged.

B. Site Planning.

1. Project Entry and Character. Project entries should incorporate special paving, architectural elements, and landscaping treatments to set the overall tone for the development's character and design. In larger projects, a hierarchy of design should be established, with smaller, but similar, secondary entry features that serve to further distinguish the character of the project.

a. Project entry features shall reflect the overall architectural identity and character of a residential subdivision or development project. Entry features should consist of authentic materials (natural rock and stone, brick, wood, ironwork, etc.). Stucco is discouraged unless true to the architectural style of the home, such as Spanish Colonial Revival, Monterey and Mission Revival architectural styles.

b. A combination of the accent features should be incorporated into project entries, such as lighting, public art, specimen trees, landscaped medians, stone wall features, water features, architectural monumentation, and signage.

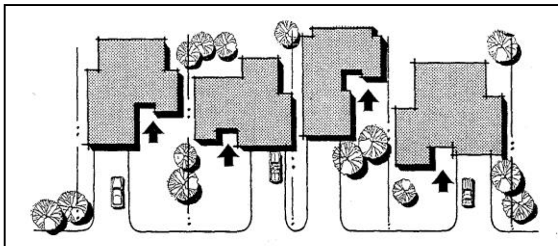
c. Colored and textured paving treatment should be integrated into vehicle and pedestrian entries of a project.

2. Lot Design.

a. Single-family lot patterns should be varied to avoid monotonous streetscapes.

b. No street should have more than 5 consecutive lots of the same width and area.

c. For projects larger than 3 acres, lot sizes should vary from the average lot size by at least 20 percent for at least one-third of all lots.



Appropriate Varied Streetscape

3. Circulation. Single-family residential development should have a circulation network that will efficiently interconnect all parts of the neighborhood. All modes of transportation -- vehicular, transit, bicycle, and pedestrian -- should be integrated into the circulation network.

a. Blocks within single-family residential subdivisions should be 300 to 400 FT in length, with a maximum length of 500 FT.

b. Single-family residential developments should provide vehicular, bicycle, and pedestrian connections to adjacent residential and non-residential areas.

c. Security walls and fences should not be used to define a "neighborhood edge" because they isolate neighborhoods from surrounding areas. Pedestrian access and mobility through neighborhoods is encouraged. Walls and fences may be appropriate as a "land use edge" treatment, depending on the type of adjoining use(s).

d. Where shrub planting or low walls are used for screening, allow for a clear line of site into the area.

e. A street circulation network should provide access to all areas of the development. Dead end streets are discouraged.

f. The circulation network design shall consider the location of street trees, parkways, pedestrian scale lighting, sidewalks, and on–street parking, along with determining the appropriate relationship between street widths and building setbacks.

g. In addition to walkway lighting, peripheral lighting shall be provided for neighborhood streets to provide security.

h. Neighborhood streets should be as narrow as possible and shaded by rows of trees. These techniques slow traffic and create an environment suitable for pedestrians and bicycles.

i. Streets should be bordered with a street-adjacent minimum 5-FT wide landscape and irrigated parkway, and a minimum 5-FT wide sidewalk.

4. Building Placement. Building placement should enhance the quality of the streetscape. Neighborhood development should provide variation in lot sizes and building placement to avoid a repetitive and regimented appearance.

a. When siting homes, care should be taken to highlight view corridors of the surrounding mountains from streets and neighborhood open spaces.

b. Architectural diversity in neighborhoods should be enhanced by providing a variations in lot widths, interior and street side setbacks, and building heights at the rate of every fourth house. Additionally, to create a varied streetscape, the front setback should be staggered an additional five feet at the rate of every fourth house.

c. No two identical floor plans should be placed on adjacent lots.

d. Residents should be provided with privacy, both inside and outside their homes, by utilizing site layout techniques, such as alternating the placement of windows, rear yard outdoor patio areas, and entrances on adjacent lots. Windows on adjacent properties shall not be located directly across from one another.

e. Maximize energy conservation by considering climactic factors, such as prevailing winds, shade trees, window and door orientation, and the positioning of buildings on the site.

Side-Facing Garage Orientation

5. Building Orientation to the Street. Homes shall be oriented towards the street to establish a sense of belonging and community for the residents.

a. Homes and other structures shall be sited to define the street environment and the transition between public and private space.

b. Residential development on a single loaded street shall look onto the adjacent open space.

c. Lots should not be centered on "T" intersections, as noise and glare from on-coming vehicle headlights is often problematic for homes on those lots.

Appropriate Building Orientation

6. Off-Street Parking and Access. Parking lots for cluster-type single-family developments, and garages in conjunction with single-family homes, should be as invisible as possible.

a. In new subdivisions, no more than one plan-type should have a garage that extends beyond the main portion of the home. All other plan types should vary garage door placement and layout to de-emphasize the garage. Possible techniques include:

(1) Locate the garage at the rear of the lot, accessible from the side or rear;

(2) Recess the garage at least 7 FT behind the face of the main living portion of the home;

(3) The garage door must be architecturally compatible with the style of the house;

(4) Locate the garage perpendicular to the street, in a side-on configuration; and

(5) Provide shared driveway access.

b. Garages should be used for vehicle parking and should not be used for storage, except within areas of a garage specifically designed for storage pursuant to Subsection C (Storage) of this Section.

c. Lots with public alley access should provide parking (garages, driveways, and parking lots) access from the alley rather than from the public street.

d. The use of tandem parking bays are generally not recommended, but may be used in certain special circumstances, such as garage spaces provided in excess of the minimum parking requirement or parking for second dwellings on a driveway.

e. If parking spaces for guests are necessary, the parking facilities should be integrated into the overall project design, consisting of small lots located central to the residential units.

f. Parking lots should generally be placed behind buildings, screened from street views. Not more than one-third of any linear street frontage should be lined by parking lots. Parking lots must be setback at least 20 FT behind the front property line and must be screened by a 3-FT high decorative masonry wall and dense landscaping.

g. Driveways should be designed to minimize their visual impact on the streetscape, while at the same time providing adequate space for the maneuvering of vehicles. Not more than 25 percent of a property's frontage should be utilized for driveway openings, excepting flag lots and lots fronting a cul-de-sac bulb.

C. **Storage.** Adequate private storage space should be provided for each single-family dwelling, which is accessible from within the dwelling or garage, or from within rear yard areas. Usable storage space should be provided in addition to the garage parking spaces and necessary utility area. Residential storage should not be allowed on balconies, patios, or porches, or any other areas that are visible from public or private streets, alleyways, or exterior ground-floor areas of neighboring properties.

D. **Building Design.** These guidelines seek to promote high quality architectural designs that enhance the character of City neighborhoods. New developments should utilize architectural styles that complement one another and any nearby existing development. The architectural style and design theme of residential developments should establish a unique neighborhood identity.

1. <u>Architectural Style</u>. For the purpose of these guidelines, "architectural style" classifies architecture in terms of form, techniques, materials, period, and region.

a. Several common characteristics can be used to identify the existing or proposed architectural style of a building, including roof type, symmetry and shape, frame, articulation, massing, windows and doors, building materials and colors, decorative trim, and porches, eaves and columns.

2. <u>Street Environment and Building Frontage</u>. Single-family residential development should efficiently use the site, and relate to the street.

a. Front porches are encouraged to create an attractive interface with front yard areas. Porches should match the scale and be integral to the architectural design of the home.

b. The front entry should be the focal point of the home. Roof elements, columns, porticos, or other architectural features should be utilized.

c. Garages in single-family residential neighborhoods should be subordinate to the front of the house and should not dominate the streetscape.

d. The height, mass, and appearance of dwellings should include some variation to provide visual interest to the streetscape. The lower floor of a two-story house should use architectural accents, texture, and color to add detail and interest.

3. Building Form and Articulation. Building form and articulation includes variation in wall planes (projections and recesses) and wall height (vertical relief), as well as variations in roof forms and heights to reduce the perceived scale of the structure.

a. Single-family dwellings should incorporate articulation on all facades, including variation in massing, roof forms, and wall planes, as well as surface articulation.

b. The highest level of articulation will likely occur on the front facade and facades visible from public streets. Similar and complementary massing, materials, and details should be incorporated into every other structure elevation.

c. Elements and details of homes should be true to an established architectural style. While there is no required architectural style for single-family residential projects, the use of styles common to the region, such as Art Deco, Art/Streamline Moderne, Craftsman, Colonial Revival, French Provincial Revival, Mediterranean Revival, Mission Revival, Monterey, Prairie, and Spanish Colonial Revival, are encouraged. The primary focus should be on constructing a high-quality residential environment.

d. Wall planes on all sides of the house should be articulated if visible from a public street or pedestrian pathway.

e. Surface detailing should not serve as a substitute for well integrated and distinctive massing.

f. Architectural elements that add visual interest, scale, and character, such as recessed or projecting balconies, trellises, recessed windows, and porches, are strongly encouraged.

g. Architectural elements, such as overhangs, trellises, projections, and awnings, should be used to create shadows that contribute to a structure's character.

h. Chimneys should be featured as architectural elements rather than hidden with a wall surface. Chimney caps should be decorative and spark arrestors should be concealed.

i. Variation in mass and building height in higher density developments along streets and public right-of-ways should be incorporated by providing a mix of single-story and two-story homes. Two-story homes should have single-story elements on prominent elevations.

j. A mix of single-story and two-story homes should be included to provide an appealing streetscape with a variety of home types, height, mass, and size.

k. Massing should accentuate entries and minimize garage prominence.

l. Porches should be a minimum of 6 FT in depth (measured on the interior side of any posts or railings), with materials and details that are authentic to the architectural style of the home.

4. Building Height. Single-family dwellings should be one or two stories in height. Homes within a development should have varied heights to create visual interest in the neighborhood.

a. Corner lots should feature single-story homes.

b. Additions to structures should be designed to be compatible with adjacent structures and the surrounding neighborhood. The height and mass of additions should not adversely affect any adjacent structures.

c. The second story of a house should be designed to reduce the appearance of the overall scale of the structure, depending upon the chosen architectural style. Possible techniques include setting the second story back from the front and sides of the first story, providing larger front and/or side setbacks for the entire structure, and/or concentrate the bulk of the second story floor area over the back one-half of the first story.

d. A second story should not exceed 80 percent of the area of the first floor.

5. Roof and Upper Story Details. Visual diversity should be created by incorporating multiple rooflines and designs, while remaining consistent with the architectural style of the home.

a. A variety of roof types should be incorporated throughout the development (e.g., gabled, hipped, dormers, etc.).

b. Multiple roof forms (gable, hip and shed roof combinations) should be used to break up the massing of buildings.

c. Various roof forms and changes in roof plane should be used on all exterior elevations visible from a public street or pedestrian right-of-way.

d. Variation in ridgeline height and alignment should be utilized to create visual interest.

e. Full, sloped roofs are strongly encouraged, with both vertical and horizontal roof articulations.

f. Where applicable to the architectural style, roof overhang should extend a minimum of 12 inches, measured from the primary wall surface, to enhance shadow lines and articulation of surfaces.

g. Roof overhangs should be sized appropriately for the desired architectural style.

h. Gable ends should face the street.

i. Exposed gutters and downspouts, unless designed as an outstanding feature consistent with the overall architectural theme, should be colored to match the fascia board.

6. Building Materials and Finishes. The use of high quality materials will create a look of permanence within a project. Materials and colors should be varied to generate visual interest in the facades and to avoid the monotonous appearance that is sometimes common in some contemporary residential development projects.

a. Key elements of the building facade should be enhanced with special materials and color.

b. Material changes should occur at intersecting planes, preferably at inside corners of changing wall planes, or where architectural elements intersect (e.g., chimney, pilaster, projection, fence line, etc.).

c. Contrasting but complementary colors should be used for trim, windows, doors, and key architectural elements.

d. Roof materials and colors shall be consistent with the desired architectural style.

e. Heavier materials should be used on the lower portion of a building's elevation to form the base of the structure.

f. Paving materials should be compatible with the project aesthetic. The use of permeable paving materials is encouraged.

g. Stucco may be an appropriate building material if careful attention is paid to ensure it is appropriate to the architectural style of the house.

7. Windows, Doors and Entries. The desired architectural style of a building can be captured by carefully designing windows, doors, and entries.

a. Entrances should be enhanced through lighting, landscaping, and architecture detailing.

b. The main entrance to a home should be clearly identifiable and should be articulated with projecting or recessed forms, creating a covered landing that will provide for shelter from the weather.

c. Window type, material, shape, and proportion shall complement the architectural style of the building.

d. Windows should be located to maximize incoming daylight, reduce the need for indoor lighting, and promote energy efficiency through the use of low e-coatings.

e. In order to enhance privacy, windows on side elevations, that face a neighboring dwelling, should be staggered and should not be positioned directly opposite of the adjacent structure's windows.

f. The window design should be appropriate to the architectural style of the structure, and should be articulated with sills, trim, kickers, shutters, or awnings that are authentic to the architectural style.

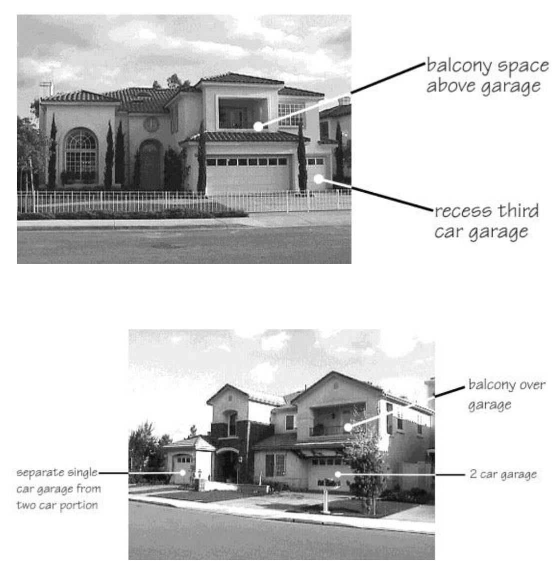
g. Where architecturally appropriate, windows should be generously inset from structure walls to create shade and shadow detail.

8. Garages. Garages that are well integrated into a project will ensure that they do not dominate front facades or the overall streetscape.

a. Garage doors should be recessed a minimum of 6 inches, measured from the face of the garage.

b. A garage with doors facing the street should be set back at least 5 feet behind the exterior face of the main house to help reduce the adverse visual impact of the garage.

c. A maximum of 2 garage bays should face the street. Garages with more than 2 bays may face the street if the garage is placed toward the rear of the site, or if a third bay is oriented differently.



Appropriate Garage Designs

d. Garage doors should incorporate panels and/or windows to articulate large planes.

e. The ratio of garage frontage to the width of the house should not be greater than 50 percent.

f. Roof forms, trellises, and balconies should be located above the garage door to help minimize the impact of garage doors on the streetscape.

9. Compatibility with Neighborhood. In new developments, single-family homes should vary from neighboring dwellings in architectural style, height, and material selection, while still relating to the overall theme of the larger development as a whole.

a. The same floor plan should not be placed side-by-side, nor should the same exterior colors be used.

b. Homes directly across the street from one another should not have the same floor plan.

E. **Accessory Structures.** Additions, renovations and new accessory structures should be designed to provide variety and interest while creating an overall unified image. Building facades should be designed with consideration of appropriate materials, complementary colors, and by using materials with textures and depth of materials such as brick or stone. The additions of accessory structures should be designed in a manner that is integrated with the existing structures and avoid the appearance of being simply tacked on by the owner. This can be accomplished by:

1. Using similar roof pitches and types;

2. Using complementary or consistent materials and colors;

3. Designing additions as an integral part of the building;

4. Maintaining appropriate proportions of the existing building design; and

5. Maintain a balance between the proportions of the existing building in terms of building mass and scale. Avoid placing architectural elements that are visually more massive or heavier above elements that are visually lighter or less massive.

F. **Landscaping.** Landscaping should be used to define entrances to neighborhoods and homes, to provide a visual buffer between incompatible land uses, and to provide screening when necessary.

1. A variety of height, textures, and colors should be used in the landscape palette. Additionally, a combination of trees, shrubs, and ground cover should be incorporated into landscape plans.

2. Plant materials should be placed so as to not interfere with lighting or line-of-sight, or restrict access to emergency equipment (e.g., fire hydrants, fire alarm boxes, etc.).

3. Trees or large shrubs should not be planted under overhead lines or over underground infrastructure if there is a potential that growth may interfere with public utilities.

4. Large specimen trees should be strategically placed to assist new development in looking "established" as quickly as possible.

5. Trees should be properly pruned. When selecting tree species, consider tree and root growth, maintenance, nearby pedestrian activities and vehicular accesses, and potential impacts on the public right-of-way.

6. Trees and shrubs should be located and spaced to allow for mature and long-term growth.

7. Root problems caused by trees and shrubs should be minimized by careful selection and planting procedures. Root barriers should be provided for any tree placed adjacent to pavement, or other situations where roots could disrupt adjacent paving/curb surfaces.

8. Landscaping efforts should be coordinated with adjacent property owners whenever possible to provide a consistent aesthetic.

9. Parkways should be planted with shade trees to provide a pleasant pedestrian environment and contribute to streetscape continuity.

10. Individual lot landscaping should be compatible with the architectural style, size, and massing of the individual home, creating a diverse streetscape.

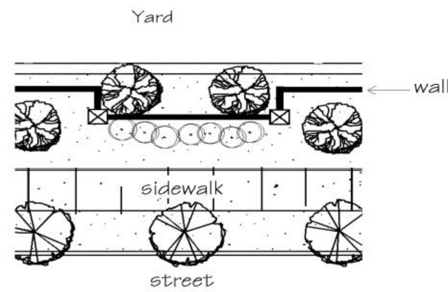
G. Walls and Fences. Walls and fences should be designed to complement the architecture of adjacent buildings and should be designed in concert with the surrounding landscaping.

1. The maximum height of any perimeter project and property line wall should be 6 feet. Specialty walls such as screen walls, sound walls, and retaining walls should have a maximum height dependent on necessity and location.

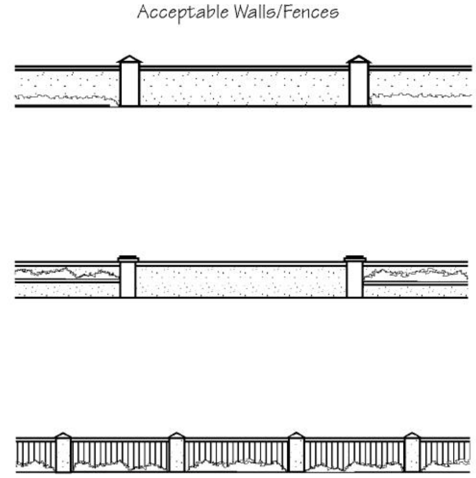
2. Perimeter walls and fences should be architecturally enhanced, and use materials and colors that complement the architecture of adjacent buildings. Pilasters, planter boxes, trellises, material changes, planar changes or other treatments should be used to avoid long and monotonous expanses of wall.

3. Perimeter and property line walls should incorporate design techniques such as textures, staggered setbacks, and variation in height in conjunction with landscaping, to provide visual interest and to soften the wall's appearance.

4. Walls and fences should be designed in a style, material, and color to complement the adjacent buildings.



One option is to incorporate a 2' stagger to wall at appropriate intervals.



Fences and walls should be built with attractive, durable materials. Pilasters should include a distinctive cap.

Fence and Wall Designs

5. Walls should be constructed as low as possible, while still performing screening, noise attenuation, and security functions, with a maximum height of 6 FT, unless additional height is required for noise attenuation or site security.

6. Walls required for screening purposes should be constructed of non-transparent materials and incorporate standards to provide for wall inserts and/or decorative columns or pilasters to provide relief.

7. Perimeter walls and fences should be architecturally treated on both sides and incorporate landscaping whenever possible.

8. Walls on sloping terrain should be stepped to follow the terrain.

Landscaping Should Be Used in Conjunction with Fences and Walls to Soften the Appearance

9. Walls should be softened using plants that camouflage their hard edges (e.g. cap, base, and ends), such as vines cascading over the top of walls and base plantings. Planting mature tall trees in front or behind a wall can effectively reduce the apparent wall height, and shrubs and vines can be used to break up the expanse of the wall body.

10. Either no front yard walls or fencing, or the use of low (3 FT high) decorative masonry walls or fencing is preferred. Walls and fencing should be constructed of authentic materials (e.g., natural woods, common brick, stone, river rock, wrought iron slump block, split-face block, or other masonry approved by the Planning Director). However, vinyl and other manufactured fencing materials may be acceptable if the overall appearance appears natural. No wire or chainlink fencing, or unfinished precision masonry block should be used.

11. Whenever possible, homes adjacent to common open space areas should have wrought iron or tube steel grillwork and view fences to provide visual access to open space.

H. **Open Spaces.** Single-family residential development projects should be designed with open space and community facilities as integral parts of the project. Integrated open space and public facilities foster a sense of community and create a more livable environment. Open spaces, whether public or private, serve a variety of functions, should be centrally located, and are important places for residents to gather, socialize, and play. These areas should be safe and secure, and may provide area for small intimate meetings or larger neighborhood gatherings.

1. The size and scale of neighborhood amenities should be appropriately scaled.

2. Open space areas should be a prominent feature of a development project. Open space areas do not consist of the unusable landscaped areas between buildings.

3. Open space shall accommodate a variety of sitting areas, gathering areas, and active recreational areas.

4. Open spaces and community facilities should be visible from adjacent dwellings to help promote site safety.

5. Open spaces and community facilities should be easily accessible from all residential units within a development project.

6. Community features such as plazas, interactive water features, and community gardens should be included whenever possible.

7. Public art may be used to help create an identity and character for a neighborhood, and should be designed in context with the surrounding neighborhood and development.

8. Neighborhood open spaces may be used to promote connectivity by providing pedestrian and bicycle access to adjacent neighborhoods and open spaces, and other land uses where possible.

D.01.005: Multiple-Family Residential Developments

A. Site Planning.

1. Building Orientation and Massing.

a. Views, particularly of Mount San Antonio, Mount Baldy and the surrounding San Gabriel Mountains, existing mature trees, and any other natural amenities unique to the site should be preserved and incorporated into a multiple-family residential development project, whenever possible.

b. Clustering of multiple-family dwellings into larger buildings should be a consistent site-planning element. Large multiple-family development projects should be broken up into groups of buildings consisting of 4 to 8 dwelling units for low-medium density projects (up to 11.0 DU/Acre) and 12 to 16 dwelling units for medium density projects (up to 11.1 to 25.0 DU/Acre). High density residential projects (25.1 to 45.0 DU/Acre) should be massed in response to the scale of surrounding buildings, unless doing otherwise helps to achieve a specific neighborhood character desired for specific growth areas identified in the Policy Plan component of The Ontario Plan.

c. Buildings should be generally oriented to the street, with varying setbacks to provide visual interest and varying shadow patterns.

d. Developments should relate directly to the adjacent street, and present an attractive and interesting facade to the casual observer.

e. Buildings should be oriented to promote privacy to the greatest extent possible.

f. New development projects should respect existing development in the immediate area.

2. Circulation. Multiple-family residential development should have an efficient circulation network, connecting all modes of transportation to the project site.

a. Vehicular access onto a multiple-family project site should be through an entry drive aisle. Direct access to off-street parking spaces from a public street is not permitted.

b. All site entrances should be easily viewed from a public street and well lighted.

c. Vehicular and pedestrian site entries should incorporate enhanced pavement treatments, such as stamped concrete or interlocking pavers.

d. Unique accents, such as monuments, public art, ornamental features, enhanced paving, flowering accents, decorative walls, and specimen-sized trees should be used to generate visual interest at entries.

e. All main site entrances from public streets should have sidewalks on both sides, providing pedestrian access into the site from the public street.

f. All site entrances should be coordinated with existing or planned driveways and median openings.

g. Where possible, all multiple-family development projects should incorporate pedestrian connections to adjoining residential and commercial projects, and other compatible land uses.

h. Cross circulation between vehicles and pedestrians should be minimized. A continuous, clearly marked walkway should be provided from on-street and off-street parking areas, to the main entrances of buildings.

i. Walkways should be located to minimize the impact of pedestrians on the privacy of nearby residences or private open space. Additionally, walkways should not be constructed directly against a building or wall — landscaped planter areas should be provided between walkways and building facades or walls.

3. Off-Street Parking.

a. For low-medium and medium density projects, parking areas should be divided into a series of connected smaller parking courts. For high density projects, parking areas should be located within structure, utilizing a "podium" or "wrap" design.

b. For high density projects utilizing a parking structure, the structure shall be screened using architectural and landscape solutions. The method of screening should be compatible with the overall project architecture and landscaping themes. Visible parking structure elevations should be finished in the same style as the primary buildings, with compatible materials. This will help integrate the structure into the overall project design while reducing its visual impact.

c. Parking areas should be located within the development's interior, behind buildings, so as to be screened from street views. Parking lots located adjacent to the street, if necessary, may take-up no more than 20 percent of any linear street frontage, must be setback at least 20 FT behind the street property line, and must be screened from street views by a 3-FT high decorative masonry wall and dense landscaping. Carports and tuck-under parking should not be visible from a public street.

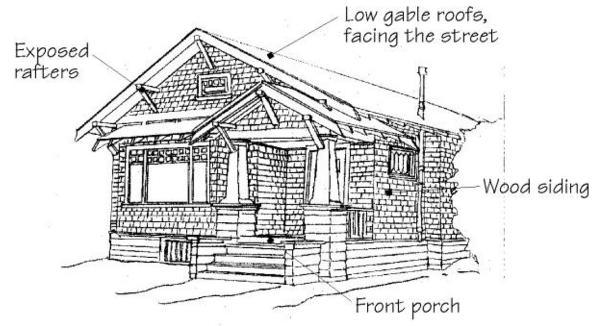
d. To the greatest extent possible, adverse visual impacts on the residential streetscape from parking areas, garages, and unarticulated garage doors and walls viewed through driveway openings along a project's street frontages, should be minimized.

e. Carports, detached garages, and accessory structures should be designed as an integral part of a project's architecture, and should be similar in material, color, and detail to the principal buildings of a development project.

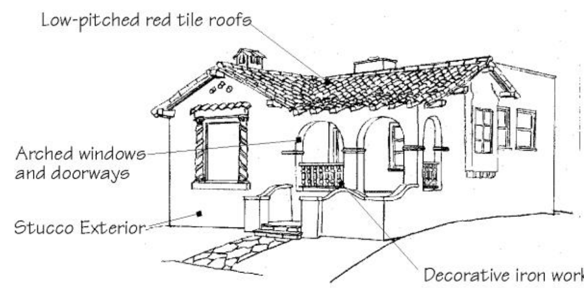
f. Prefabricated metal carports that are unarticulated and void of architectural embellishment should not be used.

g. Parking courts should be treated as a highly visible public space, the character of which is clearly articulated by landscaping, lighting, building massing, and pedestrian and vehicular circulation.

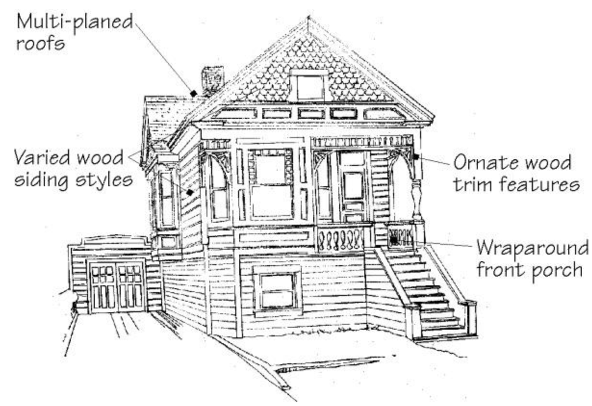
h. Where garages are utilized, garage doors should be recessed a minimum of 6 inches, measured from the face of the garage, so as not to appear flush with the exterior wall. Furthermore, the large, flat planes created by garage doors should be articulated through the incorporation of decorative panels and/or windows.



Craftsman Bungalow



Mediterranean Revival



Queen Anne Victorian

B. Storage. Adequate private storage space should be provided for each multiple-family dwelling, which is accessible from within the dwelling or associated parking facility. Residential storage is not allowed on balconies, patios, or porches, or any other areas that are visible from public or private streets, alleyways, or exterior areas of neighboring properties. As such, Usable storage space should be provided in addition to necessary utility areas.

C. Building Design. These guidelines seek to promote high quality architectural designs that enhance the higher density residential areas of the City. New developments should utilize architectural styles that complement one another and existing development.

1. Architectural Style. For the purpose of these guidelines, "architectural style" classifies architecture in terms of form, techniques, materials, period, and region.

a. While there is no required architectural style for multiple-family residential projects, the use of styles common to the region, such as Art Deco, Art/Streamline Moderne, Craftsman, Colonial Revival, French Provincial Revival, Mediterranean Revival, Mission Revival, Monterey, Prairie, and Spanish Colonial Revival, are encouraged. The primary focus should be on constructing a high-quality residential environment.

b. The incorporation of architectural elements that add visual interest, scale, and character to the neighborhood, such as bays, bay windows, recessed or projecting balconies, verandas, balconies, porches, and other architectural elements, are encouraged.

2. Building Form and Articulation.

a. *Low-Medium and Medium Density Projects*.

(1) Building heights should be varied to give the appearance of a collection of smaller structures. Additionally, upper stories should be stepped back to reduce the scale of facades that face the street, common space, drive aisles through the project, and adjacent residential structures.

(2) For buildings containing 3 or more attached dwellings in a row, each dwelling unit should have at least one horizontal projection of at least 2 FT, measured from the primary wall plane, which is not less than 8 feet wide. Projections should extend the full height of single-story buildings, at least one-half the height of 2-story buildings, and two-thirds the height of a 3-story building. In addition, a horizontal change in wall plane of at least 3 FT, for a minimum vertical distance of 12 FT, should be provided for every 2 units.

(3) The perceived height and bulk of multi-story buildings should be reduced by dividing the building mass into smaller scale components, and adding projecting architectural details, such as eaves, dormers, and balconies. The use of awnings, moldings, pilasters, and comparable architectural embellishments are also encouraged.

b. *High Density Projects*.

(1) A variety of stacked massing arrangements should be used to create visual interest.

(2) The mass of a building should step down at the corners and entries to provide a greater definition of the building.

(3) A minimum of 15 percent of the horizontal length of any building elevation should be articulated by varying the form or footprint, and/or by introducing architectural elements and/or horizontal projections of at least 2 FT, measured from the primary wall plane.

(4) Major building entries should be clearly discernible through the incorporation of architectural elements such as porches, arcades, ornamental lighting, landscaping, and other embellishments.

c. *All Projects, Regardless of Density.*

(1) All building elevations should be considered in the evaluation of any new construction, additions, or alterations.

(2) Side and rear views of a building should not be minimized because of their orientation away from the public right-of-way. The same or compatible design features should be continued or repeated on all elevations of a building, providing full, 360-degree architecture.

(3) Arcades, colonnades, and other types of overhead structures should be used to provide human scale to the interface between the façade and sidewalk.

(4) Building facades that enclose stairwells should include windows to reduce the visual bulk of the stairwell and enhance safety. Building facades enclosing elevator shafts should use architectural treatments to reduce visual mass.

(5) All mechanical equipment, whether mounted on the roof or the ground, should either be suitably screened or placed in locations that will not be viewed by the general public, project residents, or occupants of neighboring properties. All screening devices must be compatible with the architecture and color of the adjacent buildings.

3. Entryways.

a. Courtyard doors or gates used at building entries should be attractively designed as an important architectural feature of the building or complex.

b. Strongly delineate the separation between public and private space with special paving, changes in building materials, grade separations, or with physical barriers, such as landscaping, fences, walls, screens, or building enclosures.

c. For low-medium and medium density projects, each dwelling unit entry should be emphasized and differentiated utilizing architectural elements, such as porches, stoops, roof canopies, and detailing.

d. Opportunities should be provided for residents to personalize their entry by providing a ground-level private area on low-medium and medium density projects, or for high density projects, increase the entry corridor width at dwelling entries to allow for the placement of potted plants.

4. Exterior Stairways.

a. Exterior (unenclosed) stairwells should not be used on buildings greater than 2 stories in height. Not more than 4 second-floor dwelling units should be served by a single flight of exterior stairs. Where appropriate for the architectural style, the stairway design should be open to allow views for natural surveillance.

b. Stairways should be constructed of durable material that is compatible with the design of the primary structure.

c. Prefabricated metal stairs are strongly discouraged but may be considered on a case-by-case basis.

5. Building Materials and Finishes.

a. A project's dwelling units, recreation and open space amenities, and parking facilities should be unified through the consistent use of building materials, textures, and colors. Exterior columns or supports for site elements, such as trellises and porches, should utilize materials and colors that are compatible with the project, as a whole.

b. Building materials should be durable, require low maintenance, and relate a sense of quality and permanence. Frequent changes in materials should be avoided.

c. Inappropriate materials for exterior applications include plastic and plastic laminate; flat asphalt shingles; corrugated fiberglass, metal or plastic; unrealistic imitation rock veneers; highly reflective materials; unfinished concrete; and unfinished metal and alloy products.

6. Roofs.

a. Roofs should clearly reflect a residential appearance. Rooflines should be articulated through the use of stepped and segmented roof sections, and the incorporation of towers or other vertical elements to achieve varying roof heights, provide visual interest, and accent a predominant horizontal massing.

b. Full hipped or gabled roofs covering the entire building are preferred over mansard roofs and segments of pitched roofs applied at the building's edge.

c. Garage and carport roofs visible from buildings or streets should incorporate pitched roofs and roof materials matching adjacent buildings. Flat garage and carport roofs should not be used.

7. Color and Materials.

a. Color is an important element in establishing a structure's character and architectural style. The predominant color of the building and accessory structures shall be a muted, non-garish tone.

b. Color may be used as an important accent in a project's appearance. More than one predominant paint color is encouraged. Compatible accent colors should be used to enhance important architectural elements and details.

c. Bright or intense colors should be used very sparingly, and should typically be reserved for more refined or delicate detail work.

d. Employ high quality materials that are durable, long lasting, and aesthetically appealing.

e. Materials such as brick and stone should be left in their natural colors.

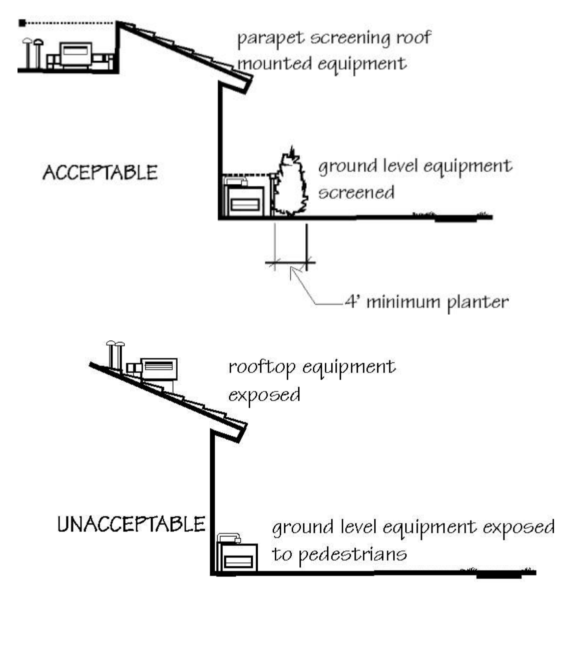
f. The use of complementary colors and changes in materials can add visual interest to a building; however, to avoid a false appearance, texture or color changes should not occur at external corners.

D. Mechanical Equipment. Mechanical equipment should be integrated as part of a project's site and building design. The following conditions apply to mechanical equipment:

1. Rooftop and ground-mounted equipment should be screened from view of elevated highways, streets, parking lots, connecting walkways and freeways.

2. Roof-top equipment (including satellite dishes) should be integrated into the overall mass of a building by screening it behind parapets or by recessing equipment into hips, gables, parapets or similar features; plain boxes are not acceptable.

3. Screening details should incorporate capping elements and the same



Mechanical Equipment Screening

exterior trim details as found elsewhere in the project.

4. The top of screens should be at least as high as the top of the equipment, yet the screen walls shall be generally kept as low as possible. Cross-section drawings shall be prepared to illustrate the method in which the equipment will be screened from view of adjacent streets, freeways and properties.

5. Transformers, heating units and other ground-mounted equipment should be adequately screened with walls and landscaping. Design these features to be graffiti and vandal-resistant by providing a 2-FT landscape strip at the base of these walls for tall shrubs, and by using materials that are easily cleaned or painted. Additional area for future ground-mounted equipment and screening needs should be considered and set aside. Avoid interrupting connecting walkways with these features.

6. Antennas should be placed in attics or building interiors. New units should be pre-wired to accommodate cable reception. Satellite dish antennas should be ground mounted and screened from public view on all sides with a combination of walls, landscaping or buildings.

E. **Site Lighting.** The form and quality of on-site lighting should establish an attractive, distinctive, and safe nighttime environment. Furthermore, lighting should not create an unwanted nuisance for neighboring residential areas, or for other sensitive uses.

1. Site lighting intensities must conform to the minimums established by the City's security standards contained in OMC Title 4 (Public Safety), Chapter 11 (Security Standards for Buildings), commencing with Section 4-11.01.

2. Lighting within parking areas should be arranged to provide safety and security for residents and visitors, but prevent direct glare of illumination onto adjacent dwellings and neighboring properties.

3. Pedestrian-scaled lighting should be located along all pedestrian routes of travel. Pedestrian pathways should be lighted by pole or bollard-type fixtures, not to exceed 12 FT or 3 FT, respectively.

F. **Landscaping.** Landscaping for multiple-family development projects can be used to define and accent specific areas (e.g., building entrances, parking lots, etc.), define the edges of various land uses, provide a transition between neighboring properties (buffering), and screen storage areas. Landscaping may be used as a unifying element within a project and with surrounding projects.

1. Landscaped areas shall generally incorporate plantings utilizing a layered, 3-tier design consisting of: **[i]** grasses and ground covers, **[ii]** shrubs and vines, and **[iii]** trees.

2. New landscaping shall complement existing landscape materials, location, and massing on adjacent established developments where appropriate.

3. The following planting design concepts are encouraged within each project:

a. Specimen trees in informal groupings throughout the site, or formal groupings at major focal points;

b. Use of plantings to create shadow and pattern against walls;

c. Use of planting to soften building lines and emphasize the positive features of the site;

d. Use of flowering vines on walls, arbors, or trellises;

e. Trees to create canopy and shade, especially in parking areas and passive open space areas; and

f. Berms, plantings, and walls to screen parking lots, trash enclosures, storage areas, and utility boxes.

4. Landscaping shall be protected from vehicular and pedestrian encroachment by raised planting surfaces and the use of curbs.

5. Concrete step areas shall be provided in landscape planters adjacent to parking spaces.

6. Vines and climbing plants on powder coated metal trellises and perimeter walls are encouraged.

7. Gravel, bark, decomposed granite, artificial turf, and other similar materials are not allowed as a substitute for plant materials.

8. Landscaping shall emphasize water efficient plants.

9. Vehicular entries provide a good opportunity to introduce and identify multiple-family projects. Vehicular entry areas should be treated with special landscape elements that will help establish an individual identity to the project (e.g., special paving, graphic signage, specialty lighting, specimen trees, flowering plants, etc.).

G. **Walls and Fences.** Walls and fences may be used to provide security and privacy, or screen unsightly views, and may be utilized with landscaping to enhance and/or buffer the appearance of development. The following guidelines apply to walls and fences used in multiple-family residential development projects.

1. The maximum height of perimeter project and property line wall should be 6 feet. Specialty walls such as screen walls, sound walls, and retaining walls should have a maximum height dependent on necessity and location.

2. The design of walls and fences, as well as the materials used, must be consistent with the development's overall architectural theme. Fence and wall color should be compatible with the development and adjacent properties. Paint color used on fences should be common colors readily purchased and kept readily available on the development's premises.

3. Perimeter walls and fences should be architecturally enhanced, and use materials and colors that complement the architecture of adjacent buildings. Pilasters, planter boxes, trellises, material changes, planar changes or other treatments should be used to avoid long and monotonous expanses of wall.

4. Perimeter walls and fences should be architecturally treated on both the interior and exterior sides of the wall.

5. Walls on sloping terrain should be stepped to follow the terrain.

6. Walls should be softened using plants that camouflage their hard edges (e.g. cap, base, and ends), such as vines cascading over the top of walls and base plantings. Planting mature tall trees in front or behind a wall can effectively reduce the apparent wall height, and shrubs and vines can be used to break up the expanse of the wall body.

7. Visually penetrable materials (e.g., decorative wrought iron or tubular steel) should be used in areas of high activity, such as pool and playground areas, and areas adjacent to street frontages.

8. Wall and fence designs, and the selection of materials, shall consider maintenance issues, especially graffiti removal and long-term maintenance. Decorative capstones are required on walls to help prevent water damage from rainfall and moisture, and provide a finished appearance.

9. Perimeter walls and fences should incorporate textural changes, staggered setbacks, and variations in height, in conjunction with landscaping, to provide visual interest and to soften the wall's appearance.

10. The height of screen walls and sound walls is determined by site features and location, such as proximity to noise generators and privacy issues.

11. The proportion, scale, and form of the walls should be consistent with the design of adjacent buildings.

12. The colors, materials and appearance of walls and fences should complement the architecture of adjacent buildings. Fencing located where screening is not specifically required should be of decorative iron or tube steel.

H. **Open Spaces.** Multiple-family development projects should provide its residents access to useable open space and recreation amenities, such as gardens, courtyards, natural areas, and active recreation areas.

1. Outdoor seating, tables with umbrellas, water features, landscaping, gazebos, or other place-making features are encouraged within open space areas, and should be consistent with the architectural style of the project. Open space features should cater to anticipated residents (e.g., play lots for children, seating areas for the elderly, etc.).

2. All support buildings within multiple-family residential projects (e.g., laundry facilities, recreation buildings, sales/lease offices, etc.) should be compatible in architectural design with the balance of the project.

3. Open space areas should be sheltered from the noise generated by traffic on adjacent streets, or other incompatible land uses.

4. Buildings should be oriented to create courtyards and open space areas; thus, increasing the aesthetic appeal. Community features, such as plazas, interactive water features, and community gardens, should be included whenever possible.

5. Common open space areas and recreation amenities should be conveniently located for the majority of units, and should be linked to streets via connecting walkways at least 12 FT in width.

6. Open space should be designed to integrate buildings and other structures.

a. At least 75 percent of common open space areas should be bordered by building walls with windows, architectural elements such as low walls or trellises, landscape features such as hedges or rows of trees, or by some combination of these elements.

b. Common open spaces bordered by a parking lot or driveway should be minimized or discouraged. If a parking lot or driveway must border an open space area, the portion of parking lot or driveway adjacent to the open space should be of decorative pavers, or the parking lot or driveway should be screened by a 3-FT high decorative wall.

7. Open space areas should take advantage of prevailing breezes and orientation of the sun to provide natural lighting and ventilation.

8. Common open space areas and recreation amenities should be screened from public view and located contiguous to the units they serve.

9. Children's play areas should be visible from as many dwelling units as possible.

10. In large developments, separate, but not necessarily segregated, play areas and informal outdoor spaces should be provided for differing age groups for reasons of safety. Small developments may combine play areas, such as tot lots joined with a larger activity area for older children.

11. Mailboxes should be located in highly visible and heavily use areas to promote safety and convenience, and casual social interaction.

I. **Pathways.** Connecting pedestrian pathways providing a convenient pedestrian route between all entries and the street should be provided.

1. Walkways and trails should be between 5 FT and 8 FT in width, accompanied by a landscaped strip at least 4 FT in width.

2. Walkways should consist of decorative pavers, or scored or stamped concrete. Trails should be of a permeable, easy to maintain material, such as compacted decomposed granite.

3. Where a walkway is oversized to accommodate occasional emergency vehicles, landscaping, Grasscrete or turf-block, and other materials should be used to accommodate traveling widths that exceed 8 FT.

Reference E—Commercial Design Guidelines

Sections:

E.01.001: Purpose

These Commercial Design Guidelines are intended as a reference to assist the designer in understanding the City's goals and objectives for commercial development, and to:

A. Encourage office and commercial development that is convenient and attractive, and enhances surrounding neighborhoods, the downtown area and the City as a whole;

B. Provide for both convenient motor vehicle access and safe pedestrian access, recognizing that some commercial-bound trips may be on foot for some uses; and

C. Compliment the mandatory commercial development regulations established by Development Code Section 6.01.015 (Commercial Zoning Districts) by providing examples of potential design solutions, and by providing design interpretations of the various mandatory regulations.

E.01.002: Applicability

A. The Commercial Design Guidelines are general and may be interpreted with some flexibility in their application to specific projects. Variations may be considered for projects with special design characteristics during the City's development review process to encourage the highest level of design quality while at the same time providing the flexibility necessary to encourage creativity on the part of project designers. Nonetheless, unless there are compelling reasons or practical difficulties, these guidelines shall be observed.

B. Determinations of compliance with the Commercial Design Guidelines shall be made by the Approving Authority.

C. These Commercial Design Guidelines are authorized by Subsection F of Development Code Section 6.01.015, and are enforceable in the same manner, and to the same extent, as any other applicable requirement of the Ontario Development Code.

E.01.003: Open Space and Landscaping

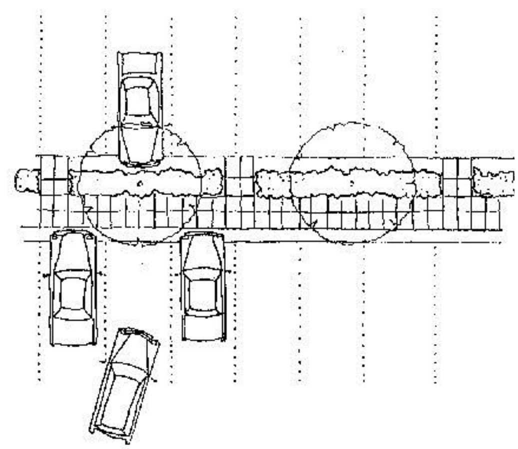
A. Site Accessories.

1. Site design features, such as recycling bins, bike racks, litter cans, planters, benches and transit shelters, should be attractive.

2. Materials should and have an architectural character consistent with the overall project.

3. Design features should be graffiti and vandal resistant by using materials that are easily cleaned or painted.

B. Connecting Walkways. Walkways should connect major building entries with the public sidewalk along the street.



Parking Lot Connecting Walkway

1. Where possible, connecting walkways should follow an alignment that connects building entries, and should be at least 8 FT in width.

2. Where connecting walkways pass through parking lots, they should be at least 5 FT in width (excluding car overhangs), and should be accompanied by a minimum 5-FT wide landscape buffer, with trees planted at least every 30 FT on-center. Walkways should consist of special pavers or scored concrete, with modules that should not exceed 3 FT in width.

3. Where a walkway is oversized to accommodate occasional emergency vehicles, landscaping, Grasscrete, and other similar features, should be used to give the walkway a more appropriate scale.

4. Pedestrian walkways should avoid excessively meandering alignments.

C. Off-Site Connections.

1. Where complementary land uses are close (e.g. residential & employment), and conditions make it feasible, vehicular connections and pedestrian paths to neighborhood-serving retail are encouraged.

2. Pedestrian paths should be well lighted and have entries or windows facing them. For additional security, they may be gated at certain hours, and designed to accommodate emergency vehicles (while discouraging other vehicles).

D. Plazas. Plazas are encouraged as a site amenity and design detail.

External Retail Plaza

Internal Retail Plaza

1. Retail centers over 10,000 SF in area should provide at least one SF of plaza area for each 100 SF of GFA, and Employment uses with more than 20 employees should provide at least 10 SF of outdoor plaza area for each employee. The area of a plaza should be calculated separately from areas devoted to connecting walkways.

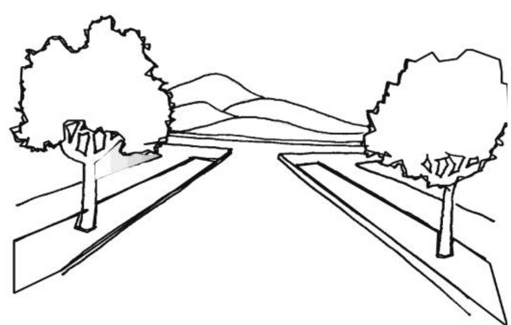
2. Plazas should be at least 10 FT in width and include decorative paving. If accompanied by a building entry, plazas may occur within front or street side setback areas; however, trellises and other structures are not allowed in the setback areas.

3. Outdoor seating, tables and umbrellas, water features, landscaping, gazebos, or other "making" features are encouraged in plazas and should be consistent with the architectural style of the project. Shaded areas should be provided.

4. Plazas are encouraged where high-levels of pedestrian-activity are expected, such as adjacent to major entrances and food services (e.g., bakeries, delis, and restaurants).

5. Building entries and windows should look onto plazas to enhance activity and security.

E. Views. Scenic views can enhance the design of a space. Site circulation and plazas can be used to draw attention to distinctive features (e.g. entrances, fountains, plantings, the San Gabriel Mountains, etc.).



Street Design May Be Used to Enhance Local Scenic Features

F. Landscaping. Landscaped areas should include a mixture of evergreen and deciduous trees, shrubs, vines and groundcover to provide year-round interest.

1. Use evergreen trees to block winter winds and screen unsightly features.

2. Provide special landscaping treatment, such as intensifying density (size and/or number) of trees, accent trees, and decorative paving at pedestrian and motor vehicle site entries, and building entries.

3. Provide shade/canopy trees within parking areas.

4. Use plants to define outdoor spaces such as edges, outdoor plazas, or movement paths between parking and building entrances.

5. Plant trees to provide a continuity of form throughout the project.

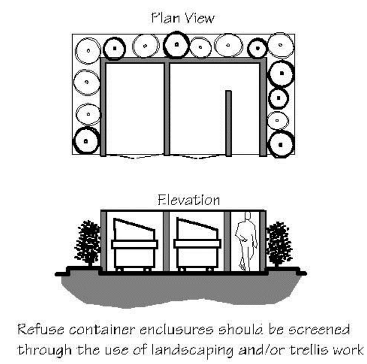
6. Provide a minimum 5-FT wide landscaped planter adjacent to buildings, walls, and fences.

G. Refuse Enclosures and Equipment.

1. Refuse enclosures and equipment should be integrated into the design of a project, and should be easily accessible by service vehicles.

2. Locate refuse enclosures and equipment within a building's facade or within a screened enclosure.

3. The design of refuse enclosures should reflect the architectural style of adjacent buildings, and should incorporate similar high quality materials. Landscaping or trelliswork is encouraged where screened enclosures are visible from a street or connecting walkway, and must be permanently maintained.



Refuse Enclosure

H. Outdoor Storage Areas. Outdoor storage areas should be incorporated into the design of a project to avoid adverse visual impacts to the site.

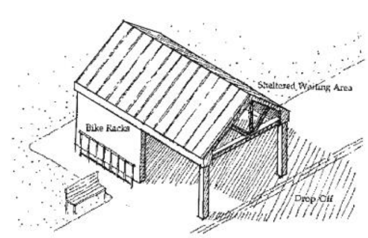
1. Locate outdoor storage areas away from the street, behind or to the side of buildings.

2. Materials stored outdoors must be screened from public view by a decorative masonry block wall.

I. Transit Shelters. Transit shelters should be incorporated into the design of commercial project.

1. Where a transit stop is planned adjacent to a project that is at least 5 acres, the developer should coordinate with the transit district to determine a location for an on-site transit shelter.

2. Transit shelters that are incorporated within the form of a building (e.g. under an awning or arcade) are encouraged. For freestanding shelters, the developer should explore with the transit agency and the City, possibilities for a structure that is integrated architecturally with the project through its color, materials, and architectural style.



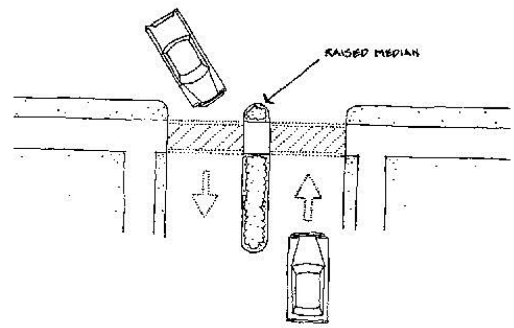
Transit Shelter Example

J. Driveways and Sidewalks. Driveways should be designed to minimize impacts to pedestrians.

1. Minimize pedestrian crossing distances at driveways.

2. Ideally, a raised median should be used to separate ingress and egress lanes, and to provide a pedestrian island, especially where there are 3 or more lanes.

3. Pedestrian crossings should be defined through the use of decorative pavers, scored concrete, or equivalent treatments.



Raised Median Separating Ingress and Egress Lanes

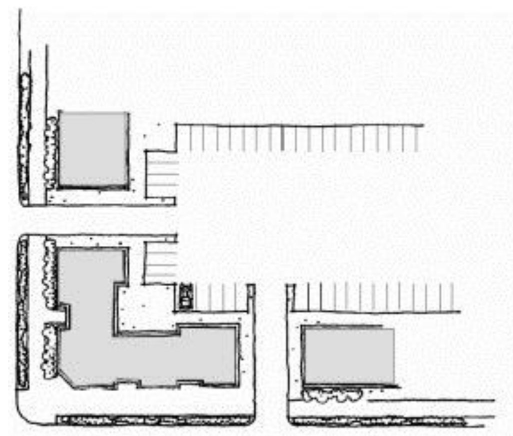
E.01.004: Site Design

A. Basic Orientation. Generally, commercial development should front onto public streets, incorporating building entries, windows (including display windows), and landscaping, except under the following circumstances:

1. Where parking lots and driveways front the street and conform with guidelines contained within "street frontage and parking lots";

2. Where the use is auto-serving or service commercial, and conforms with specific exceptions; or

3. Where the use occurs within CS zoning district, pre-existing loading and drop-off areas in the front of a building should be allowed.



Preferred Orientation

B. Entry Locations. All primary entries should face onto a street or a connecting walkway.

1. Entries that do not front directly onto a street should be connected to a street and the surrounding neighborhood via a landscaped connecting walkway.

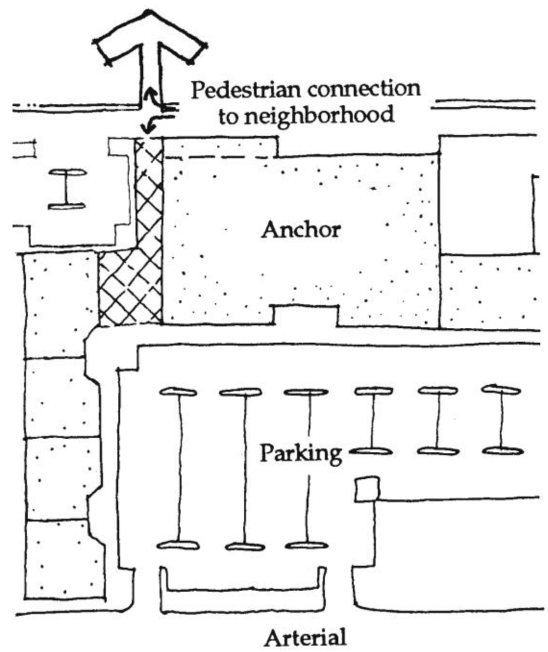
2. Street side entrances to stores with large floor areas (exceeding 10,000 SF) are often difficult to achieve. Pedestrian access to these stores can be enhanced by:

a. Providing an entry at or near the street, which may be in addition to an entry relating directly to parking;

b. Locating small shops along connecting walkways linking anchor stores to the street;

c. Placing outdoor retail areas along the street (e.g. garden centers and outdoor seating for anchor store delis); or

d. Constructing landscaped connecting walkways through parking lots to provide a direct connection to the street.



Vehicle Entries and Pedestrian Connections

C. Street Frontage and Buildings. Where a building fronts onto a street, 50 percent of the building's linear street side frontage should consist of an entrance, window, or display window.

1. Street side buildings should not be more than 100 FT long, without a pedestrian plaza or walkway connecting the parking lot with the street.

2. On corner lots, buildings should mark the corner with added height, major entry, or other notable architectural feature(s).

3. Auto-serving and service commercial uses permitted in the CN and CC zoning districts need not conform to the above-listed street frontage requirements.

D. Street Side Setbacks and Buildings. Where a front or street side setback is required, buildings that front onto the street should meet one of the following conditions:

1. The setback should be landscaped with dense, permanently maintained vegetation, reaching a height of at least 1.5 FT, except where walkways lead to building entries; or

2. The setback area may be paved with decorative pavers or scored concrete (3 FT by 3 FT maximum module size) if building entries occur at least every 25 FT, or a continuous arcade or trellis is provided.

E. Street Frontage and Parking Lots. Parking lots should generally be placed away from the street, preferably to the rear or interior side of buildings.

1. In no case should street frontages consist of uninterrupted parking lots. Where parking lots occur along street frontages, a landscaped buffer should be provided to minimize views of parked cars from the street.

2. Within landscaped buffers, trees should be planted at a minimum spacing of 30 FT on center, within 5 FT of the street property line. In addition, the landscape buffer should include a decorative screening feature that is 2.5 FT to 3 FT in height, such as a combination of walls and hedges.

F. Facades Facing Parking Lots. Facades facing parking lots should be designed as a building focal point.

1. Where buildings face the street with parking behind, the facade facing the parking lot should contain at least three of the following features:

a. Upper-story uses with windows overlooking the parking lot;

b. Secondary entrances to ground-floor or upper-story uses;

c. Windows (including display windows) occupying at least 60 percent of the building's length, with at least 50 percent of the window being transparent;

d. A minimum 4-FT horizontal change in the building plane for each 50 FT in building plane length;

e. A trellis or arcade that is at least 5 FT deep (clear and unobstructed); or

f. A 5-FT wide landscaped strip containing trees, shrubs, and ground cover.

G. Infill within Existing Development.

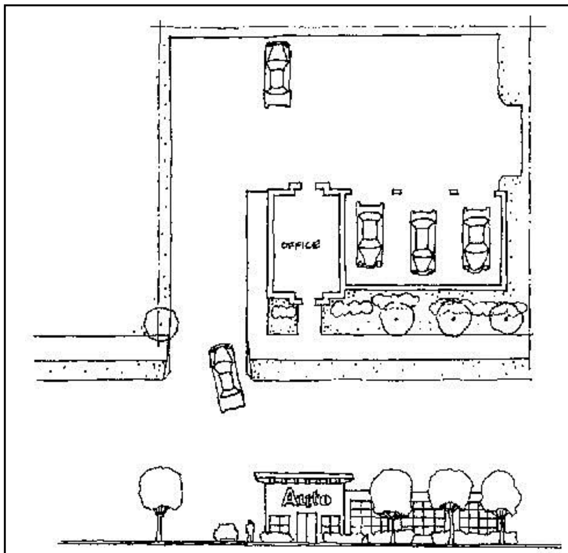
1. Within existing projects, new buildings are encouraged to reinforce streets as walkable, civic environments, and to establish pleasant and convenient pedestrian pathways between streets and existing storefronts.

2. The architectural style of new buildings should complement the existing center or be the basis for future remodeling for the existing center.

H. Auto-Serving and Service Commercial Uses. Entries and windows for auto-serving and service commercial uses need not front onto streets; however, entries should be linked to the street via a connecting walkway.

1. Avoid facing auto service bays, loading areas, and blank walls toward the street; orient these features to the side or rear, while presenting windows, entries and landscaping to the street. Trees and other landscaping should be used to further screen these features when viewed from the street.

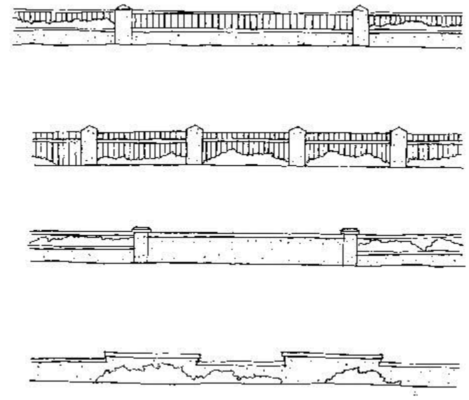
2. When possible, place auto-serving and service commercial near the street, including gas stations, auto service establishments, or other buildings with a floor area under 10,000 SF, or a lot coverage under 25 percent, whichever is less. At least 25 percent of the linear street frontage should contain windows, excluding clerestory and glass block, to enhance the street's security and appearance.



Preferred Auto-Serving Building Orientation

3. Fast food restaurant building entrances should face the street with parking located to the side and rear of the building. Where the size of a parcel may be constraining, one bay of parking may be allowed in front.

I. Fence and Wall Design.



Fence and Wall Design

1. Fences and walls should be built with attractive, durable materials, including, but not limited to, wrought iron, decorative masonry block, or tilt-up concrete. The use of chainlink fencing, corrugated metal fencing, and tennis court screening material, is not permitted. Fences or walls should be consistent with materials and designs used throughout the project.

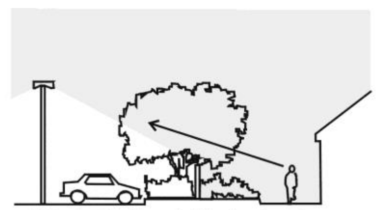
2. All fences and walls should have a distinctive cap of varying width, material, or texture, within the top 8 inches. Walls should not exceed a height of 6 FT without being made of textured concrete block, interlocking "diamond" blocks, tilt-up or poured-in-place concrete, or other similar materials.

3. At the street, avoid long expanses of uninterrupted fences and walls. Use an opening, planter box, material change, pilaster or post, or a 3-FT horizontal change every 50 to 75 FT in length.

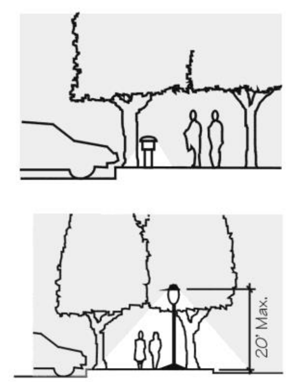
4. Provide an opening in fences and walls to connect walkways directly to the street, and avoid circuitous routes for pedestrians. Pedestrian gateways should be announced by pilasters, trellis, special landscaping, or other special features.

J. Fences and Walls Adjacent to Residences. Where a side or rear property line of a commercial site is common with a residential zoning district, an 8-FT high decorative masonry block wall is required to be constructed at the common property line.

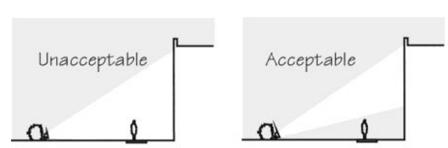
K. Exterior Site Lighting. Exterior lighting standards should be located and designed to minimize direct glare beyond the parking lot or service area.



Exterior lighting shall be located to minimize glare.



Illuminate pedestrian paths with bollards or lighting standards that are of an appropriate scale



Avoid unnecessary glare when using architectural lighting to enhance a building's identity.

Exterior Site Lighting

1. On-site light standards under 15 FT in height (including lighting bollards) should illuminate street adjacent sidewalks and connecting walkways, and are encouraged throughout a project. Taller standards, while generally discouraged, may be used only if:

a. Reflectors direct light only toward the center of parking areas and at least 60 FT from a residential property; and

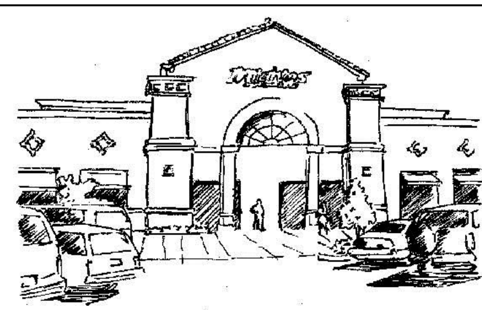
b. Trees are planted along streets and property lines at a spacing of not more than 30 FT on center.

2. All lighting poles and fixtures should be consistent with the overall architectural style of the project. At a minimum, all light poles should have an attractive base and top. The use of "cobrahead" standards are not permitted.

3. Buildings and landscaping can be illuminated indirectly to create a strong positive image. Concealing light features within buildings and landscaping can highlight attractive features and avoid intrusion into neighboring properties. Thoughtful use of lighting is especially encouraged at entries, plazas, and other areas where evening activity is expected.

E.01.005: Building Design

A. Entry Design. Gables, awnings, sign locations or other features should clearly express the location of doorways. Greater attention should be given to materials and detailing adjacent to entries.



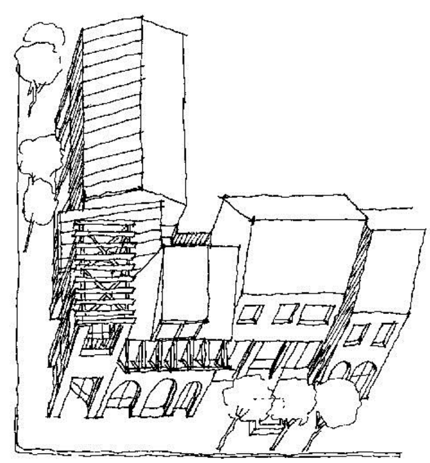
Entry Design

B. Arcades and Awnings. Outdoor arcades are encouraged to protect pedestrians from summer heat and winter rain.

1. Where an arcade is not provided, a separate awning or other architectural feature should be used for each business, to enhance the individual identity of small shops.

2. Because they can quickly deteriorate, the use of canvas awnings is discouraged, unless regularly maintained.

C. Form and Massing. The mass and form of building roofs should be varied, especially with larger projects.



Form and Massing of Buildings

1. Varying building heights may be used to communicate different uses or shops.

2. Bay windows and stepped buildings also create added visual interest and relate directly to the pedestrian environment.

3. Furthermore, an arcade may be used to connect varied masses, and provide a more comfortable experience along pedestrian routes.

4. The use of tower elements and other similar features are encouraged at focal points, such as plazas, major entrances, or where walkways meet streets.

D. Upper-Story Uses. Upper-story uses with bay windows and balconies are encouraged to provide informal surveillance, and create a pleasant sense of enclosure, especially around plazas and along streets.

1. Lobbies for upper-story should be clearly expressed through the use of gables, awnings, special materials, or other architectural treatments.

2. The use of bay windows and balconies are encouraged, and should not appear to be cantilevered for more than 6 inches, without the incorporation of visible blocking, brackets, corbels, etc.

E. Roof Forms. Roof forms should be simple, and reflect the internal organization of buildings.

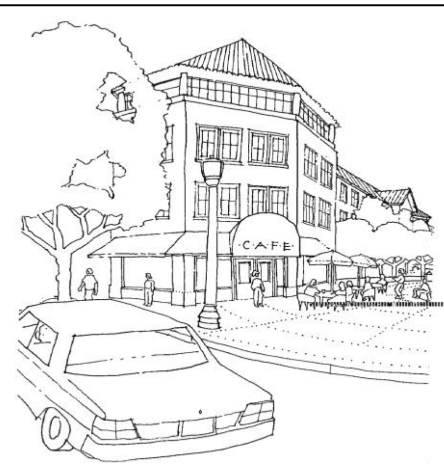
1. The use of hip and gable roofs are encouraged.

2. Flat roofs with parapets should be accompanied by a built-up or recessed cornice, or other shadow-creating detail at the top of the parapet.

F. Gateway Facades. Facades visible from freeways, Mission Boulevard, Euclid Avenue, and passenger rail connections, should be especially attractive.

1. Facades should include a major entry feature, along with fenestration over at least 30 percent of the facade's exterior surface.

2. A monolithic appearance should be avoided through application of the design guidelines noted previously.



Gateway Facade

G. Hotels and Motels. The facades of hotels and motels should include bay windows, balconies, arcades, towers, and other projections, to avoid a monotonous appearance and an overly horizontal composition.

1. Roofs should be of hip or gable design, and the use of tile roofs are encouraged.

2. The use of roof dormers are encouraged and should be coordinated with the rhythm of fenestration and bays

H. Drive-Up Windows. Provide roofs or overhead trellises at drive-up windows.

1. Posts supporting roofs or trellises should be substantial in appearance. These features should be integrated into the overall architectural design of the project, and should not appear as an afterthought.

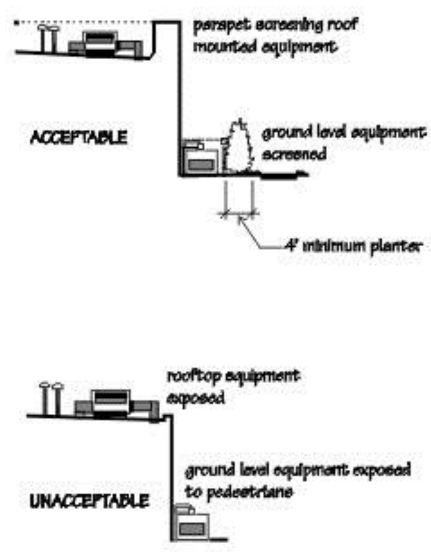
2. The stacking area for drive-up windows should be screened from the street through a combination of low decorative masonry walls and landscaping.

I. Screening Equipment. Mechanical equipment should be integrated into the project site and building design, and should not appear as an afterthought.

1. Roof-top and ground-mounted equipment should be screened from view of elevated highways, streets, parking lots, connecting walkways and freeways.

2. Mechanical equipment can be screened behind parapets, or by recessing equipment into hip, gable, parapet, or similar roof features. The use of plain box structures are not acceptable.

3. Screening details should incorporate decorative cap elements, and the same exterior trim details as found elsewhere in the project.



Equipment Screening

4. The top of screens should be at least as high as the top of the equipment being screened; however, the screen walls should be generally kept as low as possible. If freeways or other public ways have an elevation that is equal to or above the elevation of equipment, a section should be prepared which shows the relationship of the equipment to the public way and the manner in which this view will be screened.

5. Transformers, heating units, and other ground-mounted equipment, should be adequately screened with walls and/or landscaping. These features should be designed to be graffiti- and vandal-resistant by providing a 2-FT wide landscape strip at the base of walls, to accommodate the planting of dense shrubs, and by using materials that are easily cleaned or painted. Additionally, area for future ground-mounted equipment and screening needs should be considered, and set aside if needed.

J. Loading and Storage Areas. Loading docks, overhead doors, and storage areas, should not face streets and freeways, and should preferably be located behind or to the side of buildings.

1. Where oblique views are possible from streets, freeways, connecting walkways, or residences, the loading docks, overhead doors, and storage areas, should be screened through the use of walls, decorative metal trellises, and tall landscaping or equivalent features.

2. Loading docks and storage areas should not conflict with connecting walkways.

3. If located adjacent to residential areas, the design of overhead doors should minimize noise through devises such as dock seals and/or other dampening features.

4. Locate fixed hardware for rolling doors on the inside of buildings to minimize visual clutter caused by door hardware.

5. Fences or walls, in combination with landscaping, should be used to screen outdoor storage and loading areas that may be visible from freeways or passenger rail connections.

E.01.006: Architectural Details

A. Architectural Styles. Construction should render any chosen style well through appropriate detailing, properly applied materials, and quality workmanship.

1. A consistent architectural style should be used for a building and the elements that relate to it, such as trellises, planters, light-standards, etc. Multiple building projects should also use a consistent architectural style. While specific architectural styles are not dictated by the Development Code, several styles predominate in Ontario and should be emulated to help keep Ontario's unique "sense of place".

2. These styles generally respond to the region's climate. Shade windows, outdoor circulation, and outdoor courtyard or plazas with deep eaves, recessed window frames, awnings, arcades, loggias, trellises, and trees. Predominant styles include Mediterranean Revival. "High tech" styles with unarticulated surfaces and insubstantial materials should be avoided.

B. Blank Walls. Building facades should not be monotonous or have a flat, shadowless appearance on any side.

1. No wall should have a blank, uninterrupted length exceeding 20 FT without including one of the following:

   a. Change in texture;

   b. Vertical and Horizontal changes in plane of at least 2 FT;

   c. Windows (excluding clerestory windows and glass block;

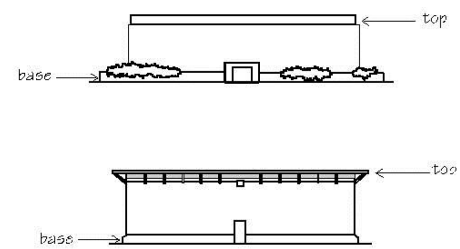
   d. Decorative trellis work; or

   e. Tree or equivalent element.

2. Facades that are visible from adjacent streets or walkways should display even greater visual interest by using architectural elements that break up the massing of large buildings, such as windows, arcades, porticos, and other architectural features.

C. Base and Top Treatments. All facades should have a recognizable "base" and "top".

1. Base. The base should visually carry the weight of the building. A recommended rule of thumb is approximately one-eighth of a building's height, unless associated with window stem walls where it may be as little as 18 inches tall. Techniques for establishing a base



A "top" and "base" should be established within the top-most and bottom-most one-eighth of a building.

Base Treatment

Top Treatment

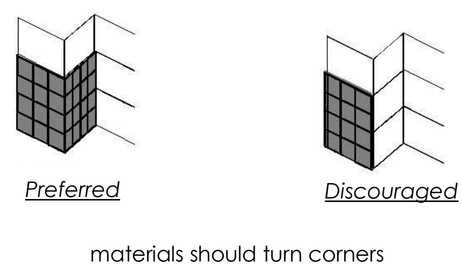
include (but are not limited to): (a) thicker walls, (b) richly textured materials (e.g. tile or masonry treatments), (c) darker colored materials, mullion, and/or panels, and/or (d) enriched landscaping with a mature height of at least 18" and permanently maintained. Special materials, such as ceramic tile, granite and marble, are encouraged on the base of buildings that face streets or connecting walkways, especially adjacent to major entries.

2. Tops. The top takes advantage of the visual prominence of a building's silhouette and should be approximately one-twentieth of a building's height, or 12 inches, whichever is greater. Techniques for clearly expressing a top include (but are not limited to): (a) cornice treatments, (b) roof overhangs with brackets, (c) stepped parapets, (d) richly textured materials (e.g. tile or masonry treatments), and/or (e) differently colored materials. Colored "stripes" are not acceptable as the only treatment.

D. **Quality of Construction.** Give an attractive appearance to all facades through careful and correct detailing, especially at the base of buildings, along cornices, eaves, parapets or ridge tops, and around entries and windows. Appearance may also be enhanced through the correct use of materials, expansion joints, and reveals.

E. **Exterior Materials.** The use of high quality building materials are encouraged. Recommended materials include stucco, exterior plaster, wood siding, tile, and natural stone or river rock. The use of veneers having an artificial appearance are not recommended. Materials and detailing should have a natural, substantial, and long-lasting appearance.

F. **Material Changes.** To avoid the false appearance of lightweight veneers, material changes should not occur at external corners. Material changes should occur at interior corners, or as a "return," extending at least 2 feet past an external.



Material Changes

G. **Roof Materials.** Roof materials should be durable and display frequent, clearly marked, shadow lines. Generally acceptable roof materials include metal standing seam, concrete tile, ceramic tile, and slate or slate-like materials, and architectural grade composition shingles (*Note: Only tile roofs should be used within the Euclid Avenue Overlay District*). Roof materials that are not acceptable include combustible or nonfire-rated materials, roll roofing, and lightweight asphalt shingles.

H. **Colors.** For larger building surfaces (excluding trim), colors should be muted and lighter in value. Muted colors contain a mix of complementary colors that result in off-whites, tans, and other "softer colors". Lighter colors have a value equivalent to 30% or less on a grey scale. Accent colors may include brighter and darker colors.

I. **Windows.** To provide a base element and greater safety, window frames should generally be set on a stem wall or framed panel that is at least 18 inches high. Additionally, window frames should be substantial and should be framed or inset to establish an attractive shadow, which is flush with the exterior finish. Glazing should be inset at least 2 inches from the front face of the exterior finish.

J. **Downspouts.** Downspouts should be concealed on facades that face a street or freeway.

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Reference F—Industrial Design Guidelines

Sections:

F.01.001: Purpose

These Commercial Design Guidelines are intended as a reference to assist the designer in understanding the City's goals and objectives for commercial development, and to:

A. Encourage office and commercial development that is convenient and attractive, and enhances surrounding neighborhoods, the downtown area and the City as a whole;

B. Provide for both convenient motor vehicle access and safe pedestrian access, recognizing that some commercial-bound trips may be on foot for some uses; and

C. Compliment the mandatory commercial development regulations established by Development Code Section 6.01.025 (Industrial Zoning Districts), by providing examples of potential design solutions, and by providing design interpretations of the various mandatory regulations.

F.01.002: Applicability

A. The industrial design guidelines are general and may be interpreted with some flexibility in their application to specific projects. Variations may be considered for projects with special design characteristics during the City's development review process, to encourage the highest level of design quality, while at the same time providing the flexibility necessary to encourage creativity on the part of project designers. Nonetheless, unless there are compelling reasons or practical difficulties, these guidelines shall be observed.

B. Determinations of compliance with the industrial design guidelines shall be made by the Approving Authority.

C. These Industrial Design Guidelines are authorized by Subsection F of Development Code Section 6.01.025, and are enforceable in the same manner, and to the same extent, as any other applicable requirement of the Ontario Development Code.

F.01.003: Open Space and Landscaping

A. Site Accessories.

1. Site features, such as recycling bins, bike racks, litter cans, planters, benches and transit shelters, should be designed as an integral part of the project.

2. Architectural character and use of materials should be consistent with the overall project. Design these features to be graffiti- and vandal-resistant by using materials that are easily cleaned or painted. Avoid interrupting connecting walkways with these features.

B. Connecting Walkways.

1. Walkways should connect major building entries with the public sidewalk along the street.

2. Ideally, pedestrian walkways should be adjacent to buildings, and overlooked by frequent entries or windows.

3. Connecting walkways should be at least 5 FT in width (excluding car overhangs), and should be accompanied by a minimum 5-FT wide landscape buffer, with trees planted at least every 30 FT on center.

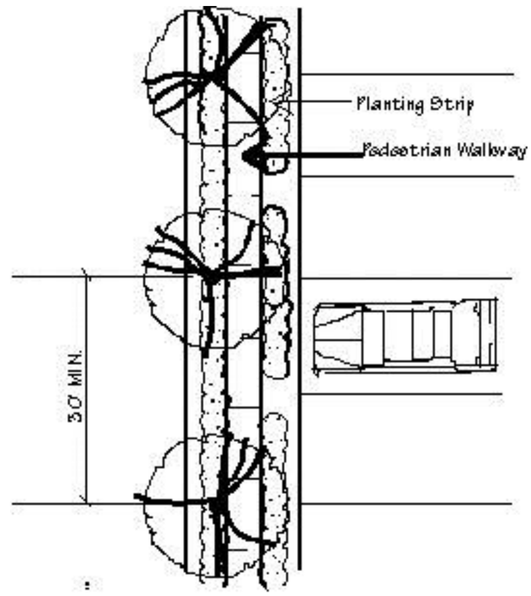
4. Walkways with decorative pavers, or other special design treatment, are preferred. Walkways should provide a direct route, without conflicting with parking and loading areas, and vehicular access and egress points to the parking areas.

C. Site Entries.

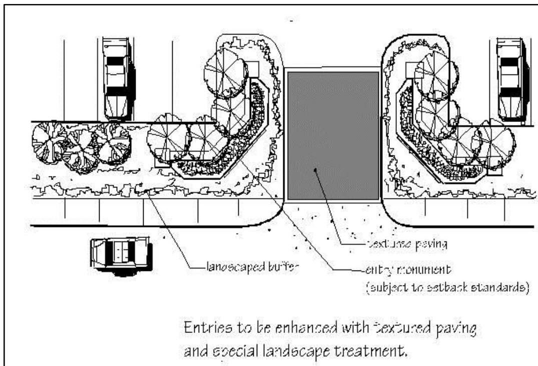
1. Create visible "gateways" at major vehicular and pedestrian entries.

2. Entries to a project should be identified by decorative pavement, intensified landscaping, accent trees, and other decorative features.

3. Where site entries are adjacent to a building entry, the incorporation of pedestrian plazas are strongly encouraged.



Pedestrian Walkways Adjacent to Buildings and Parking Areas



Enhanced Pavement at Site Entries

Outdoor Plaza Between Buildings

D. Plazas.

1. Plazas are encouraged as a site amenity and design detail.

2. Arrange buildings to include opportunities for plazas, courts or gardens, and lunch areas for employees with such amenities as outdoor seating, landscaping, water elements, pergolas, special lighting and other "place-making" features. Plazas are encouraged where high levels of pedestrian activity are expected, such as adjacent to major entrances and food services such as delis, restaurants and bakeries or between building clusters in a business park development.

3. Building entrances and windows should look onto plazas to enhance activity and security.

4. Locate outdoor employee welfare (break) areas away from loading areas, or other high-traffic areas.

F.01.004: Transit Facilities

A. Transit Stops.

1. Industrial Developments should be designed to take advantage of mass transit opportunities.

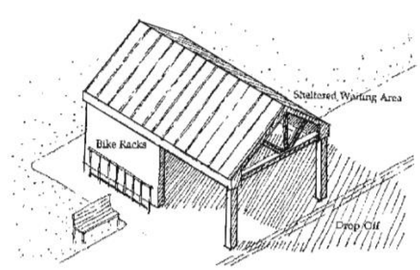
2. Development edges along arterial and collector streets should provide transit stops, including turnouts for bus stops. Developments without transit connections should be avoided.

B. Transit Shelters.

1. Transit shelters should be provided near major concentrations of employees.

2. Where a transit stop is planned adjacent to a project of at least 5 acres, the developer should coordinate with the transit district to determine a suitable location for an on-site transit shelter.

3. Freestanding shelters should be integrated architecturally with the project with respect to color, materials, and architectural style. Transit shelters should also contain trash receptacles and utilize solar power to provide lighting.



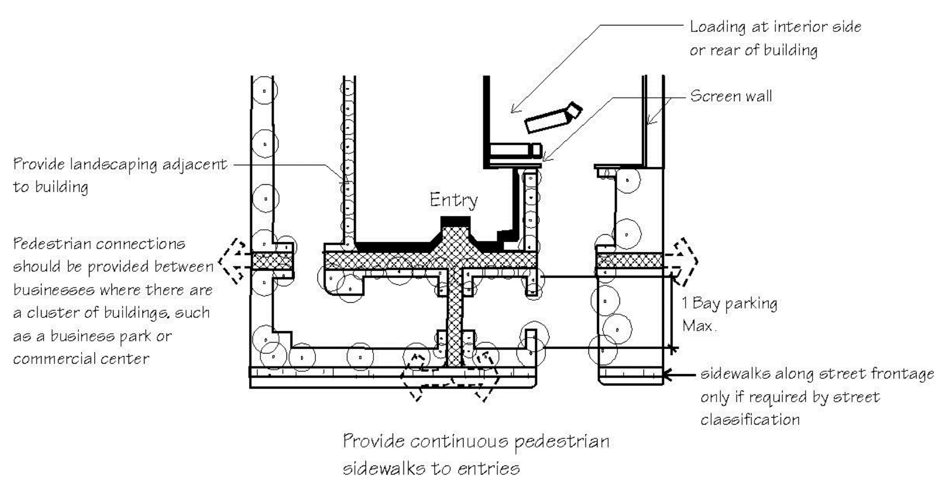
Transit Shelter Example

F.01.005: Site Design

A. Basic Orientation.

1. Entries, buildings, administrative (office) areas, and windows should front onto the street.

2. Attention should be provided to the "public perimeter" (i.e. areas visible from public streets and freeways and public access on-site and adjacent properties). Loading and parking should generally be located to the side and rear of buildings with the following exceptions:

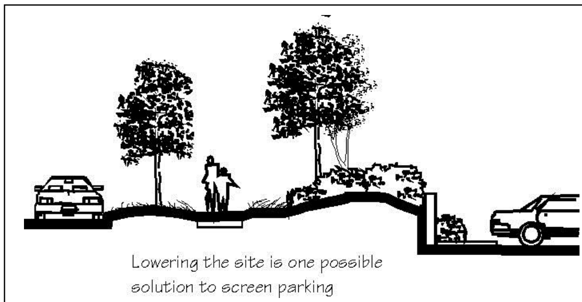


Recommended Site Orientation

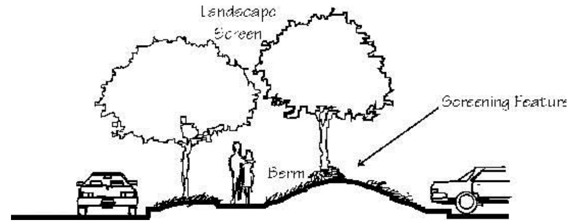
a. Parking lots may front onto streets but must conform to guidelines contained within "Street Frontage and Parking Lots."

b. Where rear or side loading areas are not practical because of rail service or northerly winds, loading and service areas may front onto streets but must conform to guidelines contained within "loading and storage areas."

c. For buildings fronting on freeways or Mission Boulevard, loading areas should not face freeways or Mission Boulevard.



Landscape Screening at Parking Lot



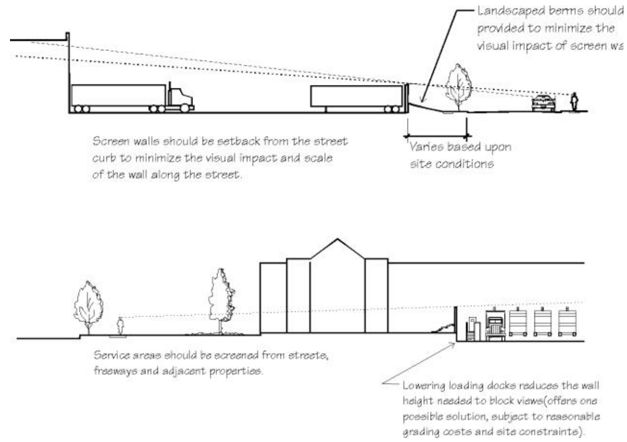
Streetscape Design

B. **Street Frontage and Parking Lots.**

1. Visitor and short-term parking lots may be sited between the street and building entrances.

2. Parking lots should not be the dominant visual element of a site. Large expansive paved areas between the street and building(s) are to beavoided in favor of smaller lots separated by landscaping and buildings.

3. Where parking lots occur along streets, a landscaped buffer should be provided to minimize views of parked cars from the street and be permanently maintained. The landscaped buffer at the street should be at least 15 FT in width, excluding parkway landscaping. Within the landscaped buffer, trees should be spaced at 30 FT apart, and within 5 FT of the front property line. In addition, the landscape buffer should include a screening feature that is 3 FT in height, and includes a low wall, hedge, or equivalent.



Preferred Loading and Service Area Screening

4. Parking areas should be arranged to minimize conflicts with loading activities.

5. Parking areas should be accessed from the street so that circulation to parking areas does not interfere with other site activities. Visitor parking should be located at the front and sides of buildings, near primary building entrances.

C. Lighting.

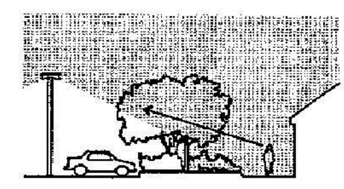
1. Exterior lighting standards should be located and designed to minimize direct glare beyond the parking lot or service area.

2. Light standards under 25 FT in height (including lighting bollards) are encouraged throughout a project and should illuminate all sidewalks and connecting walkways. Taller standards may be used only if:

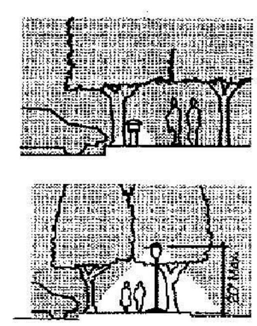
a. Reflectors direct light only toward the center of parking areas and at least 60 FT from a residential property; and

b. Trees are planted along streets and property lines at a spacing of not more than 30 FT.

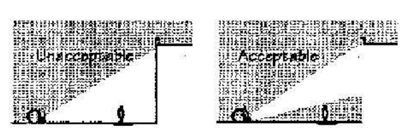
3. Concealing light features within buildings and landscaping can highlight attractive features and avoid intrusion into neighboring properties. Use of lighting is especially encouraged at entries, plazas and other areas where evening



Exterior lighting should be located to reduce glare



Illuminate pedestrian paths with bollards or lighting standards that are of an appropriate scale



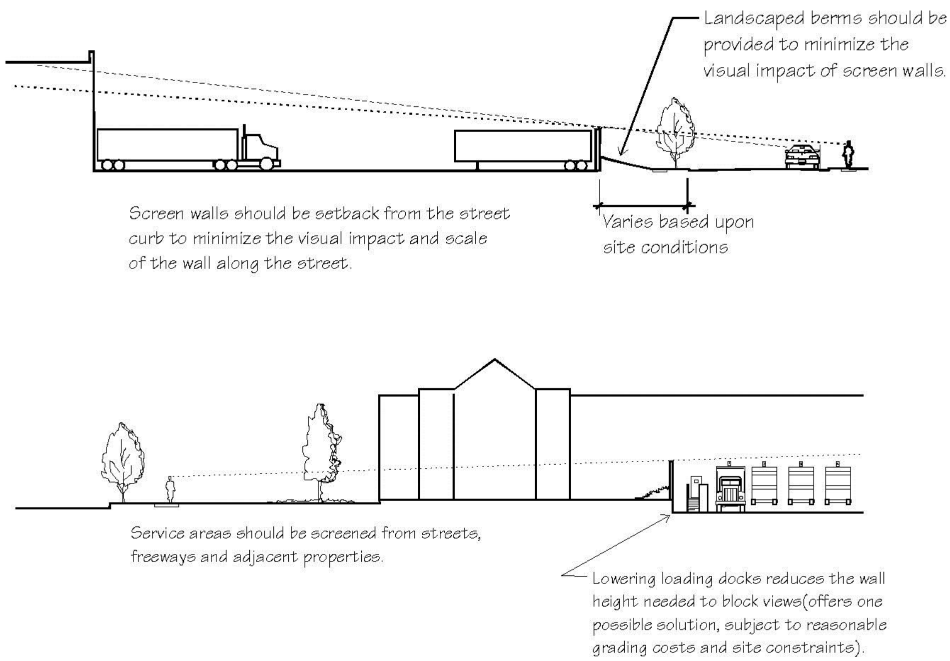
Avoid unnecessary glare when using architectural lighting to enhance a building's identity

Examples of Appropriate Lighting

activity is expected. Lighting should utilize Metal Halide luminaires.

D. **Loading and Storage Area Orientation/Design.** Loading and storage areas should generally not face streets.

1. When loading areas must face a street due to the implementation of a cross-dock design or northerly winds, they must be screened with a decorative masonry wall. Where oblique views of these features are possible from streets, freeways, connecting walkways or residences, the features should be screened through the use of walls, trellises, tall landscaping, or equivalent features. Section plans should be prepared to show that the wall height is sufficient to screen the loading area, vehicles and trailers from view of adjacent properties and streets.



Preferred Loading and Service Area Screening

2. Adequate room should be provided for trucks to maneuver or staging to unload. The area within 120 FT in front of loading docks should be paved and kept free of obstacles. In addition, loading and storage areas should not conflict with connecting walkways or required parking areas.

3. Loading areas should be designed to include attractive and durable materials. Design considerations for loading and storage areas include:

a. Locate fixed hardware for rolling doors on the inside of buildings to minimize visual "clutter".

b. In the loading and storage areas, building segments above loading doors visible from the street and surrounding properties should conform with other guidelines pertaining to building features, materials and finishes.

c. If located adjacent to residential areas, the design of overhead doors should minimize noise through devices such as rubber seals and/or other dampening features.

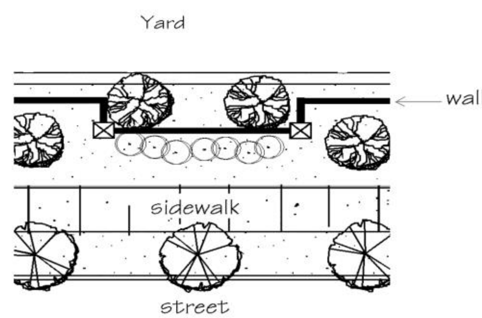
d. Avoid outdoor storage exceeding a height of 8 feet and lower the grade of loading docks, where practical, to minimize views from the street and the need for tall walls or fencing.

E. Fences, Walls and Hedges. Fences and walls should be designed as an integral part of the whole project.

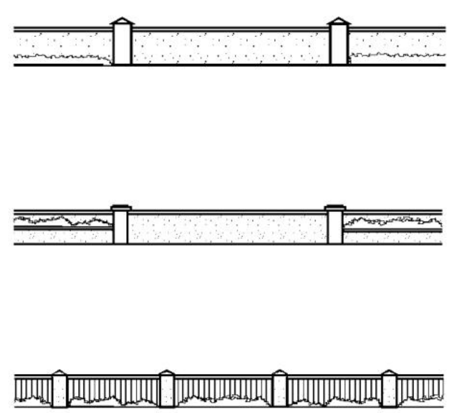
1. Materials.

a. Fences and walls should use materials and design elements that make it consistent with the design of the whole project.

b. Fences and walls in public view should be built with attractive durable materials, including (but not limited to) wrought iron, textured concrete block, or formed concrete with reveals. Fences or walls should be consistent with materials and designs used throughout the project. Sliding gates to loading areas visible from a street should be constructed with wrought iron and high density perforated metal screening, painted to match or complement adjacent walls. Site entries requiring gates should be offset from direct view to loading areas where possible to minimize extent of screening, and avoid direct view to loading areas when gates are open.



One option is to incorporate a 2' stagger to wall at appropriate intervals.



Fences and walls should be built with attractive, durable materials. Pilasters should include a distinctive cap.

Fence and Wall Styles

2. Height. Street side fences or walls should adequately screen views to the top of loading doors and bays, and parked tractors and trailers. The height of screen walls should not exceed 14 FT from the highest finished grade. The area in front of walls and fences should be landscaped with shrubs and trees reaching a mature height that exceeds the height of adjacent walls or fences.

3. Special Design Considerations.

a. Along street frontages, avoid long expanses of uninterrupted fences and walls. Long expanses of wall surfaces should be offset and architecturally treated to prevent monotony. Techniques to accomplish this treatment may include but are not limited to the following: raised planters, openings, material change, staggered sections, and pilasters or posts.

b. Provide openings to fences and walls to connect walkways directly to the street and avoid circuitous routes for pedestrians. These pedestrian "gateways" should be announced by pilasters, trellises, special landscaping, or other special features. Landscape berms should be provided to minimize the height impact of screen walls.

4. Fences and Walls Adjacent to Non-Industrial Uses. Where industrial uses are adjacent to non-industrial uses, appropriate buffering techniques such as setbacks, screening, and landscaping need to be provided to mitigate any negative effects of industrial uses.

5. Fence and Wall Styles. While site plans should avoid placing rear property lines along local streets and minor collectors, tall walls and fences are sometimes unavoidable along a street. Pilasters, planter boxes, trellises, material changes, planar changes, or other treatments should be used to avoid long and monotonous street fronts. Appropriate designs include:

a. A solid wall with pilasters;

b. A short wall with fencing and pilasters;

c. Fencing with pilasters, staggered walls (i.e. change-in-plane);

d. Gated openings and planters integrated with walls. Pilasters, openings, or a 3-FT minimum change-in-plane, should occur at least every 40 FT; and

e. Exterior security fencing should be considered in the initial design stage to avoid the need for future modifications to the plan.

6. Refuse Enclosures and Equipment.

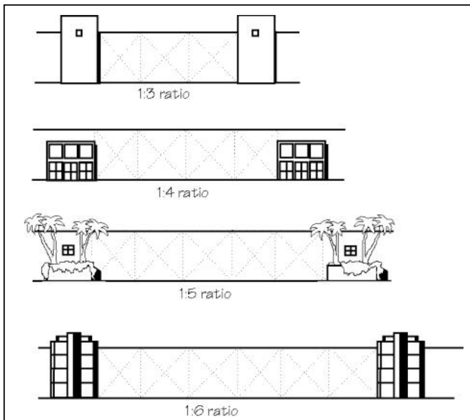
a. Refuse containers and equipment should be easily accessed by service vehicles, but screened from public view.

b. Locate refuse containers and equipment within a building's facade or within a screened enclosure. Reflect the architectural style of adjacent buildings in the design of enclosures, and use similar, high-quality materials. Landscaping or trellis work should be provided on each side of screened enclosures within parking areas, and when visible from a street or connecting walkway.

F.01.006: Building Design.

A. General Massing and Roof Form. A single, dominant building mass should be avoided. Substantial variations in massing should include changes in height and horizontal plane.

1. Typically, horizontal masses for building elevations less than 700 lineal FT should not exceed a height to width ratio of 1:5 without a substantial architectural element that projects up or away from the building, such as towers, bays, lattices, or other architectural features. Buildings greater than 700 lineal feet should not exceed a height to width ratio of 1:6 without massing variations. A ratio of 1:10 may be considered for facades greater than 700 lineal FT with



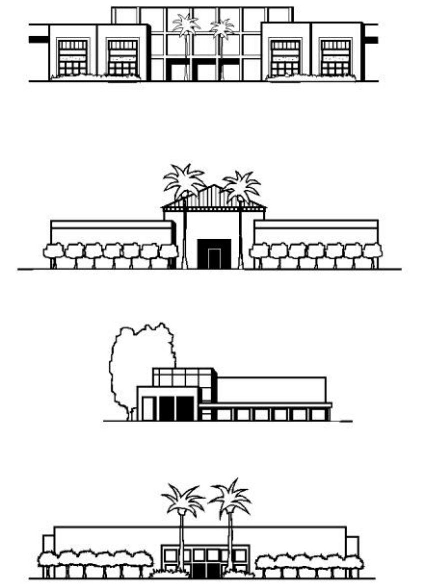
General Massing Ratios

external treatment detached from the building to help break the mass of the structure between massing breaks, including columns, colonnades, trellises, or enhanced landscape treatment.

2. The extent of massing breaks and building projections should relate visually to the overall scale of the building.

3. Roof forms should be simple, avoid a massive appearance, and reflect the internal organization of buildings.

4. Building projections should project 4 FT and must project a minimum of 2 FT. Building projections must also contain returns having a minimum length of 6 FT.



Vertical variations to the roof line should incorporate roof projections, to avoid false front/unfinished appearance.

Examples of Vertical Massing Breaks

B. Entry Design. Entries and windows are encouraged to face streets and pedestrian walkways.

1. Projects with few employees should attempt to place entries and the most active areas near the street to avoid long, "unguarded" walkways. Incorporate special materials, color, detailing, or equivalent architectural treatment at major entries.

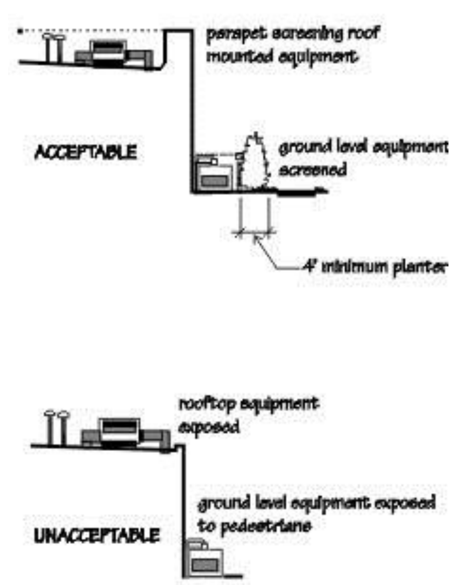
2. Highlight primary building entries through the massing of the building. Greater height can be used to highlight and accentuate entries in the form of corner tower elements, tall voids, or a central mass meeting an entry plaza. Smaller building masses can be used to identify secondary entries.

C. Gateway Facades. Facades visible from freeways, major arterial streets, and passenger rail connections should be especially attractive. These facades should include a major entry feature and fenestration over at least 25 percent of the facade's surface. A monolithic appearance (areas of unarticulated mass that is out of scale with the balance of the building) must be avoided.

D. Mechanical Equipment Screening.

1. Rooftop and ground-mounted equipment must be screened from public view.

2. Where possible, integrate rooftop equipment into the overall mass of a building. At a minimum, screen roof mounted equipment through the use of parapets, screen walls, equipment wells, mechanical room enclosures and similar design features. Screening devices other than parapet walls shall be designed as an integral element of the building mass. Picket fencing, chain-link fencing and metal boxes shall



Appropriate Equipment Screening

be avoided. The top of screens should be at least as high as the top of the equipment, with additional height provided where larger equipment units could be used in the future.

3. Cross-section drawings should be prepared to illustrate the method in which the equipment will be screened from view of adjacent streets, freeways and properties.

4. Typical ground-mounted equipment (such as transformers and heating units) should be screened with walls and/or landscaping. Large structures and/or equipment such as water tanks, silos and large bins, should be screened from public view through the use of building walls, decorative screen walls, and landscaping,

F.01.007: Architectural Treatments

A. Architectural Style.

1. Construction should reflect a chosen style through appropriate detailing, properly applied materials, and quality workmanship.

2. A consistent architectural style should be used for a building and the elements that relate to it, such as trellises, planters, light-standards, etc. Multiple building projects should also use a consistent architectural style.

B. Base and Top Treatments. Facades having a recognizable "base" and "top" are highly encouraged.

1. Base. The "base" should visually relate to the proportion and scale of the building. Techniques for establishing a base include, but are not limited to:

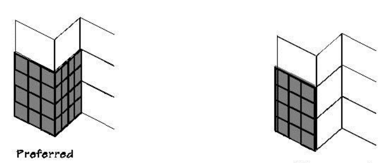
- Material changes incorporating richly textured materials (e.g., natural or manufactured stone, tile, or masonry treatments);
- Color blocking through the use of darker colored materials;
- Thickened wall panels; and
- Reveal and mullion patterns.

2. Top. The "top" takes advantage of the visual prominence of a building's silhouette. Techniques for clearly expressing a top may include, but are not limited to:

- Decorative, cornice treatments;
- Roof overhangs incorporating decorative brackets;
- Material changes incorporating richly textured materials;
- Color blocking through paint and material changes;

Massing Break Example

Example External Treatment for Long Elevations



Materials Should Turn Corners

Preferred s should tur ***Discouraged***

Material Changes

- The use of colored “stripes” is not an acceptable treatment;
- Texture, reveals and color may be appropriate in some applications, and
- On larger buildings (greater than 250,000 SF), vertical expressions that comply with the general massing provisions contained in Subsection F.1 (General Massing and Roof Form) of this Section, may be considered an alternative for “top” treatment.

C. Building Wall Treatment.

1. Avoid blank walls between massing breaks, especially along facades visible from adjacent streets or walkways, by use of the following techniques:

- Changes in materials and textures;
- Revealed pilaster;
- Horizontal changes in plane (2 FT minimum and 4 FT recommended) that correspond with vertical changes in the parapet height;
- Mullion and glazing patterns; and
- Projecting horizontal lattices and colonnades with roofs or overhead trellises.

2. Vertical variations to the roofline should incorporate roof projections, to avoid a false front/unfinished appearance. Rear elevations screened from public view may be excluded.

D. Roof Materials. Roofing materials should be durable. Where visible from the street, acceptable roofing materials include metal standing seam, and concrete tile.

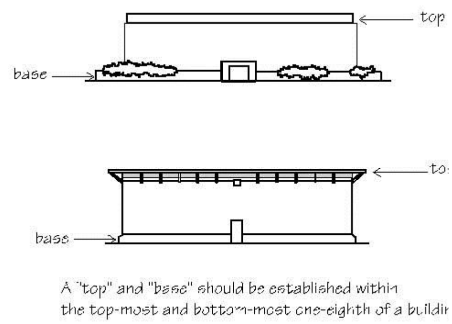
E. Material Changes. Avoid the false appearance of lightweight veneers, by hiding material changes through careful detailing. Material changes should not occur at external corners, but rather at “reverse” or interior corners, or as a “return” of at least 4 FT, measured from external corners, with extended returns provided for larger buildings.

F. Paint Palettes.

1. For larger building surfaces (excluding trim), colors should be muted.

2. Lighter colors should have a value equivalent to 30 percent or less on a grey scale.

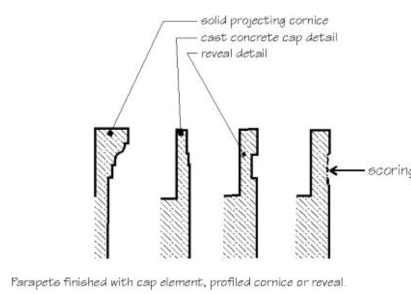
3. Accent colors may include brighter and darker colors.



Base Treatment Example

A “top” and “base” should be established within the top-most and bottom-most one-eighth of a building

Top Treatment Example



Acceptable Top (Cornice) Treatments

G. Quality of Construction. An attractive appearance to all facades should be provided through careful detailing, especially at **[i]** the base of buildings, **[ii]** along cornices, eaves, parapets or ridgetops, and **[iii]** around entries and windows. Appearance may also be enhanced through the correct use of materials, expansion joints, and reveals.

H. Downspouts. Downspouts should be concealed on facades that that are visible from a street or freeway.

I. Windows.

1. Window frames should appear substantial and should not be flush with the exterior finish.

2. Glazing should be inset at least two inches from the front face of the exterior finish.

J. Lighting.

1. All light standards should be consistent with respect to design, materials, color and color of light, and with the overall architectural style of the project.

2. At a minimum, all light standards should have an attractive base and top.

3. The use of "cobrahead" standards is not permitted.

4. Buildings and landscaping can be illuminated indirectly, to create a strong positive image.

Reference G—Landscape Design and Construction Guidelines

Sections:

Worksheets:

G.01.001: Purpose

These Landscape Design and Construction Guidelines are intended as a reference to assist design professionals, landscape contractors and homeowners in their understanding of the City's goals and objectives for the preparation of landscape construction documentation plans, and the installation of landscape materials and elements.

Furthermore, these guidelines are intended to compliment the mandatory landscape and irrigation regulations established by Development Code Division 6.5 (Landscaping), by providing examples of potential design solutions, and by providing design interpretations of the various mandatory regulations.

G.01.002: Applicability

A. The industrial design guidelines are general and may be interpreted with some flexibility in their application to specific projects. Variations may be considered for projects with special design characteristics during the City's development review process, to encourage the highest level of design quality, while at the same time providing the flexibility necessary to encourage creativity on the part of project designers. Nonetheless, unless there are compelling reasons or practical difficulties, these guidelines shall be observed.

B. Determinations of compliance with the Landscape Design and Construction Guidelines shall be made by the Approving Authority.

C. These Landscape Design and Construction Guidelines are authorized by Development Code Section 6.05.045 (Landscape Design and Construction Guidelines), and are enforceable in the same manner, and to the same extent, as any other applicable requirement of the Ontario Development Code.

G.01.003: Landscape Design Guidelines

A. Water conservation is a high priority in the City of Ontario. Landscapes shall be designed to use water efficiently without waste to the lowest practical amount and comply with the State's current Model Water Efficient Landscape Ordinance. Sources for low water plants are WUCOLS, "Water Use Classification of Landscape Species" http://www.owue.water.ca.gov/docs/wucols00.pdf.

B. Landscape areas should be composed primarily of living plant materials spaced no greater than the mature diameter of each plant. Non-living ornamental features (boulders, gravel, dry stream beds, etc.) should comprise no more than 5 percent of the total landscape area, and shall be a pervious material.

C. Warm season turf is recommended for recreational use projects (parks, sports fields, etc. where turf provides a playing surface) and residential projects with a maximum 50 percent of the landscape area. Planter areas irrigated by spray should be no less than 8 FT in width. Low water use groundcovers should be used in traditional turf areas; parkways, etc.

D. Design landscape areas and irrigation systems for use with recycled water where required by the City. New multiple-family residential projects must use recycled water for homeowner association (HOA) maintained areas, such as parks, parkways, neighborhood edges, and common areas. Single-family residential projects must use potable water with a backflow for all landscape areas, even if HOA maintained.

E. Property irrigated with recycled water must provide a physical separation from areas irrigated with potable water, by means of a wall, fence, paving, or a center mow curb within the landscape area, located 4 FT from the area irrigated with recycled water. Irrigation lines and heads may be located no closer than 2 FT of each side of the mow curb.

F. Concrete mowstrips, minimum 6 inches wide by 6 inches high or 4 inches wide by 6 inches high, must be provided at turf areas located adjacent to landscape planter areas, and to provide separation between adjacent properties or maintenance responsibility areas. Redwood header boards are allowed only for use with individual single-family homes, and to define a lot line adjacent to undeveloped property.

G. Design landscape areas so that utilities, such as backflow preventers, are screened by minimum 4-FT wide planter areas, and massed with similar height shrubs (Note: Paint brass backflow preventers green (RAL 6009 Fir Green or equal)). Furthermore, coordinate landscape plans with utility plans, so that transformers are: **[i]** setback at least 4 FT from paved area and 5 FT from roadways, **[ii]** screened with shrubs of similar height on 3 sides; and **[iii]** planted with a maximum 18-inch high groundcover at the front.

H. Accent trees (single or multi-trunk specimens) are required at all nonresidential corner statements, including vehicular entries and the corners of major intersections. All accent trees should be minimum 36-inch box. Palms should have a minimum 17-FT brown trunk height (BTH), and a minimum 4-FT cubed rootball.

I. Foundation planting adjacent to buildings (hedgerows or shrub masses in a hierarchical pattern) must be provided at nonresidential primary exterior building elevations, and at residential front yards, to soften the break between the horizontal ground plane and the vertical building plane.

J. Plants at monument signs shall be made up of a hierarchy of ornamental shrubs or perennials.

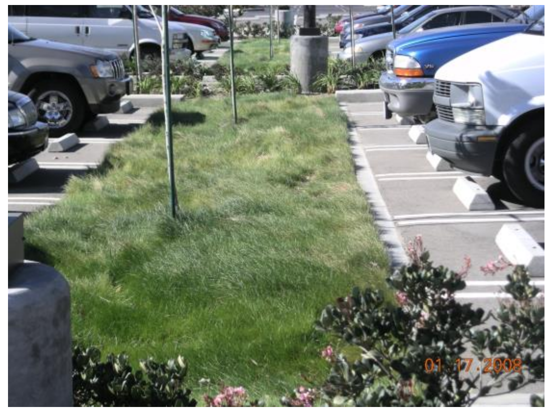
K. Landscape areas must have a minimum inside dimension of 5 FT to accommodate tree growth, and must have a minimum inside dimension of 6 FT in if it contains a vegetated swale.

L. Parking areas visible from public streets or adjacent parcels should be screened with landscaping having a height of at least 3 FT, or a combination of landscaping and maximum 3-FT high decorative walls.

M. Landscape areas adjacent to parking areas should be planted to accommodate a 2-FT overhang of vehicles, unless wheel stops are provided.

N. Parking lots should be planted with canopy shade trees having a minimum canopy diameter of 30 FT, provided at the minimum rate of one tree for each 5 parking spaces.

O. Parking lots with double rows of parking spaces are encouraged to provide a 4-FT to 5-FT wide landscaped strip containing an infiltration trench, where possible (see Infiltration Trench Example, right).



Infiltration Trench Example

P. Parking lot landscaping shall maximize broad canopy shade tree planting to reduce heat gain on paving and buildings. Add large planters, center planter strips or diamond planters between parking rows for shade trees.

Q. Planters adjacent to parking spaces shall have a 12-inch wide curb, providing a step-out area for access to vehicles.

R. Landscape areas should be bordered by 6-inch concrete curbs, except where openings into infiltration basins or swales are provided.

S. Trash enclosures should have adjacent planters with trees, shrubs, and vines to screen (see Trash Enclosure Adjacent Planters Example, right).

Trash Enclosure Adjacent Planters Example

T. Parkway areas within street rights-of-way must be landscaped with living plant material less than 18 inches in height, automatically irrigated, and contain street trees pursuant to the Master Street Tree Plan, spaced at 25 to 35 FT apart, and coordinated with utility locations and setbacks.

U. Undeveloped areas within a project site must be seeded with a wild flower or ornamental grass mix, and automatically irrigated to prevent soil erosion from rain and strong winds.

V. Projects with landscape areas within Caltrans rights-of-way must enter into a cooperative agreement with Caltrans San Bernardino Division, for landscape installation and maintenance.

W. Wireless telecommunications facilities must be screened with groupings (minimum 3) of approved live trees and shrubs, to blend the facility with adjacent tree or palm stands (California native trees and shrubs are preferred). Tree size should be minimum two-thirds the height of the facility, or as approved by the Planning Director. Permanent irrigation and regular maintenance shall be provided for all landscaped areas.

X. Additional landscape requirements may be required for projects located within established specific plan areas.

Y. Plant selection and irrigation design must be appropriate with the City's regional climate (Zone 18), classified as Mediterranean, and characterized by hot, dry summers and mild winters. Winter temperatures average between 60 and 70 degrees, with occasional lows in the 20's. Summers average from 75 to 90 degrees, with highs exceeding 100 degrees. Average yearly rainfall is approximately 16 inches. Winds develop from the southwest, averaging 6 mph. Hot, dry Santa Ana winds occur between October to March, from the northeast, at 30 mph, with gusts at 60 mph or more. Air quality is considered poor due to frequent temperature inversions trapping pollutants below the inversion.

G.01.004: Prescriptive Compliance Option

A. This Section contains prescriptive requirements which may be used as a compliance option to the State Model Water Efficient Landscape Ordinance (CCR Title 23, Division 2, Chapter 2.7).

B. Compliance with the following items is mandatory and must be documented on landscape plan and irrigation plans in order to use the Prescriptive Compliance Option:

1. Submit Landscape and Irrigation Construction Documentation Plans (pursuant to Development Code Section 6.05.015.B.1, Landscape and Irrigation Construction Documentation Plans Required), which includes the following elements:

a. Date;

b. Project applicant;

c. Project address (if available, parcel and/or lot number(s));

d. Total landscape area (square feet), including a breakdown of turf and plant material;

e. Project type (e.g., new, rehabilitated, public, private, cemetery, homeowner-installed);

f. Water supply type (e.g., potable, recycled, well) and identify the local water purveyor;

g. Contact information for the project applicant and property owner; and

h. Applicant signature and date, with the following statement: "I agree to comply with the requirements of the prescriptive compliance option to the Model Water Efficient

Landscape Ordinance".

2. Incorporate compost at a rate of at least 4 CY per 1,000 SF, to a depth of 6 inches into landscape area (unless contra-indicated by a soil test);

3. Plant material shall comply with all of the following;

a. For residential areas, install climate adapted plants that require occasional, little or no summer water (average WUCOLS plant factor 0.3) for 75 percent of the plant area excluding edibles and areas using recycled water; For non-residential areas, install climate adapted plants that require occasional, little or no summer water (average WUCOLS plant factor 0.3) for 100 percent of the plant area excluding edibles and areas using recycled water;

b. A minimum 3-inch layer of mulch shall be applied on all exposed soil surfaces of planting areas except in turf areas, creeping or rooting groundcovers, or direct seeding applications where mulch is contraindicated.

4. Turf shall comply with all of the following:

a. Turf shall not exceed 25 percent of the landscape area within residential zoning districts, and there shall be no turf allowed within non-residential zoning districts;

b. Turf shall not be planted on sloped areas which exceed a slope of one foot vertical elevation change for every 4 FT of horizontal length;

c. Turf is prohibited in parkways less than 10 feet wide, unless the parkway is adjacent to an off-street parking area, and is used to enter and exit vehicles. Any turf in parkways must be irrigated by sub-surface irrigation or by other technology that creates no overspray or runoff.

5. Irrigation systems shall comply with the following:

a. Automatic irrigation controllers are required and must use evapotranspiration or soil moisture sensor data.

b. Irrigation controllers shall be of a type which does not lose programming date in the event the primary power source is interrupted.

c. Pressure regulators shall be installed on the irrigation system to ensure the dynamic pressure of the system is within the manufacturers recommended pressure range.

d. Manual shut-off valves (such as a gate valve, ball valve, or butterfly valve) shall be installed as close as possible to the point of connection of the water supply.

e. All irrigation emission devices must meet the requirements set in the ANSI standard, ASABE/ICC 802-2014. "Landscape Irrigation Sprinkler and Emitter Standard," All sprinkler heads installed in the landscape must document a distribution uniformity low quarter of 0.65 or higher using the protocol defined in ASABE/ICC 802-2014.

C. At the time of final inspection, the permit applicant must provide the owner of the property with a certificate of completion, certificate of installation, irrigation schedule, and a schedule of landscape and irrigation maintenance.

City of Ontario

Landscape Planning Division

G.01-1: Water Efficient Landscape Worksheet

Reference Evapotranspiration (ETo):

Hydrozone # / Planting Description	Plant Factor (PF)	Irrigation Method [b]	Irrigation Efficiency (IE) [c]	ETAF (PF/IE)	Landscape Area (SF)	ETAF x Area	Estimated Total Water Use (ETWU) [d]
Regular Landscape Areas							
				Totals	(A)	(B)	
Special Landscape Areas							
				1			
				1			
				1			
				Totals	(C)	(D)	
			ETWU Total				
			Maximum Allowed Water Allowance (MAWA) [e]				

Legend:

[a] ***Hydrozone #/Planting Description*** *e.g.: [1] front lawn; [2] low water use plantings; and [3] medium water use planting*	[b] ***Irrigation Method*** *overhead spray or drip*	[c] ***Irrigation Efficiency*** *0.75 for spray head* *0.81 for drip*
[d] ***ETWU* (Annual Gallons Required)** **=** *Eto x 0.62 x ETAF x Area* where 0.62 is a conversion factor that converts acre-inches per acre per year to gallons per square foot per year	[e] ***MAWA (Annual Gallons Allowed) = (****Eto) (0.62) [(ETAF x LA) + ((1-ETAF) x SLA)]* where 0.62 is a conversion factor that converts acre-inches per acre per year to gallons per square foot per year, LA is the total landscape area in square feet, SLA is the total special landscape area in square feet, and ETAF is .55 for residential areas and 0.45 for non-residential areas.	

<u>ETAF Calculations</u>:

Regular Landscape Areas

Total ETAF x Area	(B)
Total Area	(A)
Average ETAF	**B ÷ A**

Average ETAF for Regular Landscape Areas must be 0.55 or below for residential areas, and 0.45 or below for non-residential areas.

All Landscape Areas

Total ETAF x Area	(B+D)

City of Ontario

Landscape Planning Division

G.01-2: Landscape Architect—Certificate of Compliance

Senior Landscape Planner: 909/395-2237
Associate Landscape Planner: 909/395-2615

Project Name: ______________________________

Project Address ______________________________

Permit No.: ______________________________

The undersigned Landscape Architect certifies that the complete landscape and irrigation installation is in compliance to approved plans. Any deviation to approved plans shall require a re-submittal to the Landscape Planning Division for review and approval prior to installation.

Landscape Architect's Inspection	*Date*	*Initial*
1) Hardscape construction complies with approved plan:		
2) Irrigation installation verified: trench, pipe size, pressure test, coverage test:		
3) Irrigation controller chart with landscape maintenance schedule:		
4) Soil report, compaction test and amendments verified with receipt:		
5) Verification of plant material, quantity, and quality:		
6) Verified ET sensor and controller installed and programming set up:		
7) Water Budget: Landscape: SF: __________ MAWA: __________ Gallon/year ETWU = __________ Gallon/year		

After the receipt of this Certification, the Landscape Planner will conduct the final landscape Inspection. The Owner's Representative and Landscape Contractor shall be present.

Landscape Architect (Print) ______________________ Company Name ______________________

Landscape Architect (Signature) ______________________ Address ______________________

License Number ______________________ Phone Number ______________________

City of Ontario

Landscape Planning Division

G.01-3: Recommendations for Vegetated Swales

Hydroseed mix for irrigated and partially irrigated sites with some standing water:

SEED	LBS/ACRE
ACHILLEA MILLEFOLIUM	1.0
ESCHSCHOLZIA CAESPITOSA	1.0
JUNCUS BUFONIUS	1.0
LEYMUS TRITICOIDES RIO	6.0
DESCHAMPSIA CESPITOSA	4.0
FESTUCA RUBRA 'MOLATE'	10.0
HORDEUM BRACHYANTHERUM	6.0
MUHLENBERGIA RIGENS	1.0
MUHLENBERGIA MICROSPERMA	3.0
HORDEUM DEPRESSUM	3.0

Hydroseeding slurry component for slopes from 3:1 to 2:1:

Product	Application Rate
Wood Fiber Mulch	2000 lbs/acre
Binder/Tackifier	200 lbs/acre

Product	Application Rate
Organic fertilizer	800 lbs/acre
Mycorrhizal inoculum	60 lbs/acre

Add to slope rolled erosion control netting product (RECP Netting) 20.6 ounce weight per yd2, for landscape areas directly receiving pavement run off.

Shrubs from 1- 5 gallon containers should be approximately planted on the swale side slopes:

FESTUCA IDAHOENSIS — Blue Fescue, 1 FT x 1 FT
MUHLENBERGIA RIGENS — Deer Grass, 4 FT x 4 FT
FESTUCA MAIREI — Marie's Fescue, 2 FT x 2 FT
CAREX PANSA — California meadow sedge, 1 FT x 1 FT
LEYMUS CONDENSATUS — Canyon Prince, 4 FT x 3 FT
LEYMUS TRITICOIDES — Creeping Wild Rye, 2 FT x 2 FT

Trees from containers 5 to 15 gallons should be appropriately planted on the top of side slopes:

QUERCUS AGRIFOLIA — COAST LIVE OAK, space 35 FT apart.
PLATANUS ACERIFOLIA — LONDON PLANE TREE, space 35 FT apart.

Soils with low infiltration rates less than one inch per hour shall:

- Excavate an additional 18 to 36 inches deep, and add engineered soil mix in the swale bottom.
- Provide soil testing to determine additional methods to increase infiltration.

Suitable Bioswale Soil:

- General. Topsoil shall be free of roots, clods, or stones larger than 1-inch in the greatest dimension, pockets of coarse sand, noxious weeds, sticks, lumber, brush and other litter. It shall not be infested with nematodes or other undesirable disease-causing organisms such as insects and plant pathogens or any hazardous materials.

1. Topsoil shall be friable and have sufficient structure in order to give good tilth and aeration to the soil.

2. Gradation limits-soil shall be a sandy loam. Gravel over ¼inch in diameter shall be less than 20 percent by weight.

3. Permeability Rate shall be not less than one inch per hour, nor more than 20 inches per hour.

- Soil Organic Matter Content. The desirable range is 3% to 5%. Sufficient soil organic matter shall be present to impart good physical soil properties but not be excessive to cause toxicity or cause excessive reduction in the volume of soil due to decomposition of organic matter.

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Reference H—Community Climate Action Plan

(The Community Climate Action Plan, adopted by the Ontario City Council on December 16, 2014, by Resolution No. 2014-122, follows this page)

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Community Climate Action Plan

November 2014

City Council Approval December 16, 2014
Resolution No. 2012-122

45774.00020\8833477.1

ICF International. 2014. *City Of Ontario Community Climate Action Plan*. November. (ICF 00649.10.) San Francisco CA. Prepared for the City of Ontario, Ontario, CA.

RESOLUTION NO. 2014-122

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF ONTARIO, CALIFORNIA, APPROVING THE COMMUNITY CLIMATE ACTION PLAN, AN IMPLEMENTATION COMPONENT OF THE ONTARIO PLAN SUPPORTING THE ENVIRONMENTAL IMPACT REPORT (SCH #2008101140).

WHEREAS, on January 27, 2010, the City Council certified The Ontario Plan ("TOP") Final Environmental Impact Report ("EIR") (SCH #2008101140), and adopted and approved TOP, which serves as the City's business plan and provides a framework and foundation for the City to operate as a municipal corporation; and

WHEREAS, the TOP EIR includes a programmatic greenhouse gas emissions analysis and mitigation measures that committed the City to the development of a Community Climate Action Plan ("Community CAP"). TOP EIR requires development of a Community CAP reducing greenhouse gas emissions from community activities by at least 30 percent below projected "business-as-usual" emissions for the Year 2020. The goal of the Community CAP shall be to reduce greenhouse gas emissions for all activities within the City boundaries to support the State's efforts under AB 32 and to exemplify leadership in our community; and

WHEREAS, the Community CAP includes a greenhouse gas inventory baseline for the Year 2008, a future "business-as-usual" projection of greenhouse gas emissions for the Year 2020, an emissions reduction target consistent with the State's emissions reduction goals and an implementation plan identifying specific measures and a timeline for implementation of said measures to reach the reduction target; and

WHEREAS, by way of the Community CAP's Implementation Plan, the City Council directs Staff to implement the Community CAP's measures in phases; and

WHEREAS, the Staff has authority to revise and/or adjust said measures as required and provide yearly updates, with a comprehensive update on a three year schedule; and

WHEREAS, the Community CAP meets the functional and legal mandate of a general plan; and

WHEREAS, the Community CAP is consistent with Mitigation Measures 6-1 through 6-6 of the TOP EIR; and

WHEREAS, as the first action on the Project, on December 16, 2014, the City Council adopted an Addendum to the Environmental Impact Report (SCH #2008101140) adopted by City Council on January 27, 2010 for File No. PGPA06-001. The Addendum finds that the proposed project introduces no new significant environmental impacts, and all previously adopted mitigation measures are incorporated into the Project by reference; and

WHEREAS, on December 16, 2014, the City Council of the City of Ontario conducted a hearing to consider the Project, and concluded said hearing on that date; and

WHEREAS, all other legal prerequisites to the adoption of this Resolution have occurred.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF ONTARIO:

SECTION 1. As the decision-making body for the Project, the City Council does hereby make the following findings: (1) the Community CAP meets the requirements of TOP EIR and its mitigation measures, and identifies goals and strategies to reduce greenhouse gas emissions by 30% below business as usual projections for the Year 2020, consistent with the State's emissions reductions goals; (2) the Addendum has been completed in compliance with CEQA and is consistent with state and local guidelines implementing CEQA; and (3) the City Council designates Staff as having authority to revise and/or adjust said measures as required and provide yearly updates each calendar year, with a comprehensive update every three year schedule.

SECTION 2. Based on the entire record before the City Council and all written and oral evidence presented to the City Council, the City Council finds that the Community CAP complies with CEQA (Public Res. Code, § 2100 et seq.), the State CEQA Guidelines (14 CCR § 1500 et seq.) and the City's CEQA Guidelines. The City Council further finds that the TOP EIR is hereby incorporated by this reference and that no substantial new information exists that would show that such impacts would be more significant than determined in the TOP EIR.

SECTION 3. Based on the entire record before the City Council, all written and oral evidence presented, and the findings made in this Resolution, the City Council approves the Community CAP.

SECTION 4. The location and custodian of the documents and any other material which constitute the record of proceedings upon which the City Council based its decision is as follows: City Clerk, City of Ontario, and 303 East B Street, Ontario, CA 91764. The custodian of these records is the City Clerk of the City of Ontario.

The City Clerk of the City of Ontario shall certify as to the adoption of this Resolution.

PASSED, APPROVED, AND ADOPTED this 16th day of December 2014.

PAUL S. LEON, MAYOR

ATTEST:

MARY E. WIRTES, MMC, CITY CLERK

APPROVED AS TO LEGAL FORM:

BEST BEST & KRIEGER LLP
CITY ATTORNEY

STATE OF CALIFORNIA)
COUNTY OF SAN BERNARDINO)
CITY OF ONTARIO)

I, MARY E. WIRTES, City Clerk of the City of Ontario, DO HEREBY CERTIFY that foregoing Resolution No. 2014-122 was duly passed and adopted by the City Council of the City of Ontario at their regular meeting held December 16, 2014 by the following roll call vote, to wit:

AYES:	MAYOR/COUNCIL MEMBERS:	LEON, WAPNER, BOWMAN, DORST-PORADA AND AVILA
NOES:	COUNCIL MEMBERS:	NONE
ABSENT:	COUNCIL MEMBERS:	NONE

Mary E. Wirtes

MARY E. WIRTES, MMC, CITY CLERK

(SEAL)

The foregoing is the original of Resolution No. 2014-122 duly passed and adopted by the Ontario City Council at their regular meeting held December 16, 2014.

Mary E. Wirtes

MARY E. WIRTES, MMC, CITY CLERK

(SEAL)

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Acknowledgements

The following individuals contributed to the preparation of the
City of Ontario Community Climate Action Plan

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Special Acknowledgments

Chris Hughes, former City Manager
Jerry Blum, former Planning Director
Dexter Thomas, former Police Captain
Linda Mathews, former Human Resources Director

Acronyms and Abbreviations

AB	Assembly Bill
ARB	California Air Resources Board
BAU	Business-As-Usual
BE	Building Energy
BMP	best management practice
C_2F_6	hexafluoroethane
CAA	Clean Air Act
CAFE	Corporate Average Fuel Economy
Cal-EPA	California Environmental Protection Agency
CAPTAC	Climate Action Plan Technical Advisory Committee
CCAs	Community Choice Aggregations
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CFLs	Compact Fluorescent Light bulbs
CH_4	methane
City	City of Ontario
CO_2	carbon dioxide
CO_2e	CO2 equivalent
CPUC	California Public Utilities Commission
EIR	Environmental Impact Report
EM	existing measure
EO	Executive Order
EPA	U.S. Environmental Protection Agency
ESPs	energy service providers
FED	Functional Equivalent Document
GHG	greenhouse gas
GPS	Global Positioning Systems
GWh	gigawatt hours
GWP	global warming potential
HFCs	hydrofluorocarbons
ICF	ICF International
IEUA	Inland Empire Utilities Agency
IOUs	investor-owned utilities
IPCC	Intergovernmental Panel on Climate Change
kWh	kilowatt hours
LCFS	Low Carbon Fuel Standard
LGOP	Local Governments Operations Protocol
MCAP	Municipal Climate Action Plan
MPOs	metropolitan planning organizations
MT	metric ton
MW	megawatts
N_2O	nitrous oxide
NGOs	non-governmental organizations
NO_2	nitrous oxide
NPDES	National Pollutant Discharge Elimination System
NSPS	New Source Performance Standards
ODS	ozone-depleting substances
PACE	Property Assessment for Clean Energy
PFCs	perfluorocarbons

PM	planned measure
ppb	parts per billion
ppm	parts per million
ppt	parts per thousand
PS	Performance Standard for New Development
RAD	responsible appliance disposal
RPS	Renewable Portfolio Standard
RTPs	Regional Transportation Plans
SANBAG	San Bernardino Associated Governments
SAR	Second Assessment Report
SB	Senate Bill
SCAG	Southern California Association of Governments
SCAMQD	South Coast Air Quality Management District
SCE	Southern California Edison
SCGC	Southern California Gas Company
SF_6	sulfur hexafluoride
UC	University of California
UNFCCC	United Nations Framework Convention on Climate Change
VMT	vehicle miles traveled
W	waste
WT	wastewater

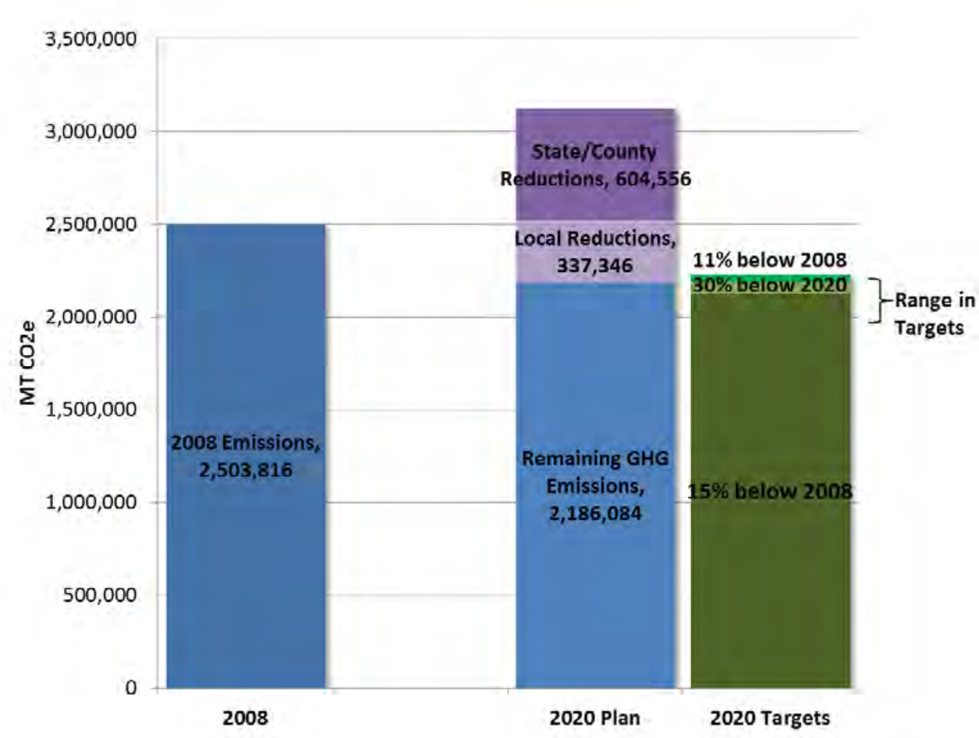
Community Climate Action Plan

Executive Summary

Executive Summary
Overview of the Community Climate Action Plan

With the approval of The Ontario Plan (TOP) and Final Environmental Impact Report (FEIR), the City of Ontario committed to the development of a Community Climate Action Plan with the GHG emissions reduction goal of 30% below business-as-usual (BAU)[1] 2020 levels. This goal is roughly equivalent to the Scoping Plan adopted by the State of California in 2008 that recommends a target of 15% below current emissions levels. The Scoping Plan was developed to implement Assembly Bill (AB) 32 and provides a recommended goal that local communities adopt a GHG reduction target of 15% below "current" (2005-2008) levels by the year 2020. Subsequently, based on the Air Resources Board's (ARB) latest GHG inventory data for California, the state would have to reduce statewide emissions by 10 – 11% (not 15%) to meet 1990 levels. As shown within Figure ES-1, the City is within the recommended target range of the Scoping Plan.

Figure ES-1. Summary of GHG Emissions Reductions and Range in Targets (MT CO_2e)



[1] Business-As-Usual for 2020 refers to no additional efficiency measures (e.g. Cal Green code, Title 24 revisions, etc.) being applied to future growth for projection purposes to determine 2020 baseline emissions.

The primary purpose of the Community Climate Action Plan (CAP) is to design a feasible strategy to reduce GHG emissions generated from community activities that is consistent with statewide Scoping Plan GHG reduction efforts. Community activities are defined as those activities occurring in association with the land uses and activities within the City's jurisdictional boundary, generally from sources of emissions that the City's community can influence or control.

To develop the CAP, a GHG inventory of community emissions for calendar year 2008 and a forecasted future-year community emissions inventory for calendar year 2020, was prepared. For a detailed description of the city's GHG inventory, see Appendix A. Simultaneous with the inventory development work, the City began reviewing the measures listed within the TOP Final EIR. Upon further research of feasible measures and refinements, a listing of candidate measures was selected and analyzed in greater detail. Based on each measure's reduction effectiveness and feasibility to reduce emissions, the draft list of measures was developed for inclusion in this CAP.

City of Ontario Community Greenhouse Gas Emissions

The City of Ontario has committed to preparing both a community climate action plan and a municipal climate action plan. Emissions generated by the City's municipal operations are encapsulated in the overall community emissions inventory (i.e., most municipal emissions are a small subset of the larger community emissions).

The 2008 inventory of community GHG emissions was calculated for sectors identified by AB 32. This 2008 inventory is a baseline from which to forecast future-year (2020) emissions and establish GHG reduction targets. The 2020 emissions estimate, or forecast, represents *business as usual* (BAU) emissions and does not take into account any new reduction measures. The GHG emissions inventory was developed using methods and procedures approved by the state and local air quality management agencies. The primary protocols consulted for the analysis were as follows:

- Local Governments Operations Protocol (LGOP) for the quantification and reporting of greenhouse gas emissions inventories (California Air Resources Board 2010b).
- 2006 Intergovernmental Panel on Climate Change (IPCC) Guidelines for National Greenhouse Gas Inventories (IPCC 2006).
- 2009 General Reporting Protocol (Version 3.1) for reporting entity-wide GHG emissions (California Climate Action Registry 2009).
- 2012 ICLEI U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions (ICLEI 2012).

As is the standard practice, the GHG inventory is presented in metric tons (MT) of CO_2 equivalent (CO_2e) in all figures and tables, unless otherwise denoted. Presenting inventories in CO_2e allows one to characterize the complex mixture of GHG as a single unit, taking into account that each GHG has a different global warming potential (GWP).

GHG emissions can be defined as either direct (emissions that occur at the end use location, such as natural gas combustion for building heating) or indirect (emissions that result from consumption at the end use location but occur at another location, such as emissions that occur at the power plant itself but result from residential electricity use of in-home appliances or other uses). This report addresses both types of emissions.

In 2008, the City's community activities resulted in the release of approximately 2.5 million MT CO_2e—roughly equivalent to the amount of GHGs released by the consumption of more than 280 million gallons of gasoline. In 2008, the largest source of emissions, representing 38% of the inventory, was emissions associated with on-road transportation (~940,000 MT CO_2e). The second largest source of emissions was from building energy use (~930,000 MT CO_2e; 37%).

Under business-as-usual conditions, emissions associated with community activities are projected to increase to 3.1 million MT CO_2e by 2020—an increase of approximately 25% over 2008 levels. On-road transportation and building energy use are expected to remain the largest sources of emissions in 2020 (Table ES-1).

Table ES-1. City of Ontario Community GHG Inventories: 2008 Baseline and 2020 BAU Forecast (MT CO2e)[a]

	2008		2020	
Emissions Sector	**MT CO_2**	**% of Total**	**MT CO_2**	**% of Total**
Building Energy Use	928,409	37%	1,237,006	40%
On-Road Transportation	942,020	38%	1,219,767	39%
Off-Road Equipment	176,314	7%	229,069	7%
Agriculture	356,131	14%	323,390	10%
Solid Waste Management	60,000	2%	64,326	2%
Wastewater Treatment	6,587	0.3%	8,781	0.3%
Water Transport, Distribution, and Treatment	29,044	1%	38,575	1%
SF_6 from Electricity Consumption[b]	5,310	0.2%	7,072	0.2%
Total Emissions	**2,503,816**	**100%**	**3,127,987**	**100%**
Excluded Emissions[c]				
Stationary Sources	405,195	N/A	511,548	N/A
Airport-Related Traffic	28,736	N/A	75,976	N/A
Subtotal Excluded Emissions	**433,932**	**N/A**	**587,525**	**N/A**

Values may not sum due to rounding. For a detailed description of the city's 2008 GHG inventory and 2020 forecast, see Appendix A.

[a] The calculations presented above contain a certain amount of uncertainty. Quantitative error analyses are complicated, require detailed statistical equations, and are outside the scope of the consultant's work. The U.S. Environmental Protection Agency (EPA) estimates an error range of -1% to 6% for the 2009 national inventory. Given that the City's 2008 inventory employed similar methods and analysis factors, a similar level of error can be expected, yielding an emissions range of 2,478,778 MT CO_2e to 2,654,045 MT CO_2e. The uncertainty associated with the 2020 forecast is likely higher due to the assumptions associated with future socioeconomic data.

[b] SF_6 = sulfur hexafluoride

[c] The City elected not to include these emissions in its inventory. Amounts are provided for informational purposes only and were not used to develop the CAP reduction goal.

City of Ontario Greenhouse Gas Reduction Plan

The City of Ontario has committed to a greenhouse gas emissions reduction target of 30% below business-as-usual 2020 levels, through the development of a Community Climate Action Plan (CAP). The measures described in this CAP would, if fully implemented, result in 2020 emissions of 30% below 2020 business-as-usual levels, with reductions of approximately 942,000 MT CO_2e.

The City's Community CAP includes existing state measures and existing and proposed local measures that would result in GHG emissions reductions from 2008-2020.[2] Existing programs that affected emissions in 2008 were already incorporated into the GHG inventory and forecast. Any reductions from existing or planned programs in the CAP come from actions not implemented yet in 2008. State mandates do not require additional local legislative or administrative action (e.g., approving any new or additional regulations), but would result in local GHG reductions and would often require local effort to implement state mandates. To supplement statewide initiatives, the City has identified a series of reduction measures that are either currently being implemented or would be implemented by the City before 2020. The reduction measures are grouped into nine broad sectors that would affect emissions throughout community activities. The measures include programs that improve building energy efficiency, increase use of renewable energy, reduce water consumption, reduce waste, and other measures. A summary of the community GHG reduction measures selected for inclusion in the Community CAP are presented in Table ES-2. This table presents the measure name and a simple definition of each. The definition is based on the practical application of each measure, and indicates the action necessary in order to achieve each measure. The official measure descriptions are presented in Chapter 3. For a detailed description of the City's GHG reduction measures, including quantification methods, sources and assumptions, see Appendix C.

Approximately 64% of the reductions needed to achieve the City's GHG reduction goal are achieved through state- and county-level programs, and 36% through City-level programs. The largest GHG reductions are identified in the areas of building energy (both energy efficiency and renewable energy), agriculture, and transportation (Table ES-2 and Figure ES-2).

The measures described in this Community CAP outline a path for reducing community emissions in conjunction with planned state actions. When combined with state efforts, the GHG reduction measures described in the City's Community CAP would enable the City to reduce its GHG emissions by an estimated 942,000 MT CO2e, which meets the emissions reduction target of 30% below 2020 levels. Actions not currently quantified, as well as local effects of the state's cap-and-trade program,[3] will likely contribute additional reductions to the City's goal.

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[2] Currently, the only federal mandate that would specifically reduce GHG emissions in Ontario are the Corporate Average Fuel Economy (CAFE) standards. These standards were adopted to be consistent with previously passed California vehicle efficiency standards per AB 1493 (Pavley). As a result, these standards are subsumed in the state regulations.

[3] The effects of California's cap-and-trade system, which took effect in 2013, are not included in the analysis in this CAP. However, it is expected that by 2020, the cap-and-trade system will result in additional reductions in the building energy and transportation sectors due to changes in energy prices directly (at the consumer level) or indirectly (at the producer level). It has been estimated that the cap-and-trade system might result in the following energy price changes by 2020: electricity increase of 1 to 3%, natural gas increase of 7 to 16%, gasoline increase of 4 to 8%, and diesel increase of 2 to 4% (California Air Resources Board 2010b). Consumer response to these changes in energy prices might result in additional reductions in building energy and transportation fuel consumption beyond those included in estimates of the state and local measures included in this CAP, but are not estimated at this time.

Table ES-2. Summary of Community GHG Reduction Measures

Measure Name	Measure Description
Performance Standard For New Development	
PS-1	**Performance Standard for New Development**: New projects emitting more than 3,000 MT CO_2e per year need to reduce emissions by 25%.
BMP-1	**Performance Standard for New Development; Best Management Practices**: New projects emitting less than 3,000 MT CO_2e per year to exceed Title 24 Energy Efficiency Standards by at least 5%, or equivalent level of GHG emission reduction.
Building Energy	
Energy-1	**CAP Consistency:** Ensure that the City's local Climate Action, Land Use, Housing, and Transportation Plans are aligned with, support, and enhance any regional plans that have been developed consistent with state guidance to achieve reductions in GHG emissions.
Energy-2	**Regional Cooperation:** Coordinate with special districts, nonprofits, and other public organizations to share resources, achieve economies of scale, and develop green building policies and programs that are optimized on a regional scale.
Energy-3	**Energy Efficiency Funding for Existing Low-Income Residents**: Partner with community services agencies to fund energy efficiency projects, including heating, ventilation, air conditioning, lighting, water heating equipment, insulation, and weatherization, for low income residents. Provide permitting-related and other incentives for energy efficient building project.
Energy-4	**Energy Efficiency Incentives and Programs to Promote Retrofits for Existing Residential Buildings:** Incentivize, or otherwise support, voluntary energy efficiency retrofits of existing residential buildings to achieve reductions in natural gas and electricity usage. Adopt standards and/or promote voluntary programs that retrofit indoor lights, electric clothes dryers, energy-star thermostats, window seals, duct sealing, air sealing, and attic insulation.
Energy-5	**Energy Efficiency Incentives and Programs to Promote Retrofits for Existing Non-Residential Buildings:** Voluntary programs for existing non-residential facilities improve building-wide energy efficiency by 20% by 2020.
Energy-6	**Streetlights**: Adopt outdoor lighting standards to reduce electricity consumption. Require 40% reduction in energy use from traffic signals and streetlights by 2020.
Renewable Energy	
Renewable Energy-1	**Solar Installation for Existing Non-Residential for Major Rehabilitations or Expansions:** Install solar photovoltaic panels on nonresidential buildings greater or equal to 25,000 square feet in size requiring discretionary permits for major rehabilitations or expansions (additions of 25,000 square feet of office retail/commercial or 100,000 square feet of industrial/warehouse floor area).
Renewable Energy-2	**Solar Installation in Existing Single Family Housing:** Install solar panels on 22% of existing single-family homes by 2020.
Renewable Energy-3	**Solar Installation in Existing Nonresidential Buildings:** Install solar panels on 32% of existing nonresidential buildings by 2020.

Measure Name	Measure Description
Wastewater Treatment	
Wastewater-1	**Recycled Water:** Require 50% of all water used for non-potable sources to be recycled water by 2020. Require all new parks and schools to use 100% recycled water for non-potable outdoor uses, as feasible. Develop public educational materials that support and encourage the use of recycled water. Adopt a City Municipal facility goal of 50% use of recycled water for non-potable sources.
Wastewater-2	**Waste-to-energy/Methane Recovery:** Encourage Inland Empire Utilities Agency (IEUA) to implement waste-to-energy projects at the IEUA RP-1 wastewater treatment plant by 2020, and to utilize collected gas to fuel onsite stationary sources.
Solid Waste Management	
Waste-1	**Waste Diversion:** Divert 75% of city-generated waste from landfills.
Waste-2	**Construction and Demolition Waste Recovery Ordinance:** Implement an ordinance requiring building projects to recycle or reuse at least 50% of unused or leftover building materials.
On-Road Transportation	
Trans-1	**Expand Public Transportation Infrastructure:** Work with appropriate agencies to create an interconnected transportation system that allows a shift in travel from private passenger vehicles to alternative modes, including public transit, ride sharing, car-sharing, bicycling, and walking.
Trans-2	**Transit Frequency and Speed:** To the extent feasible, support shorter transit passenger travel time through reduced headways and increased speed. Support regional transit operator to reduce average fleet travel time by 5 minutes.
Trans-3	**"Smart Bus" Technology**: Collaborate with LA Metro, Metrolink, and Omnitrans to implement "Smart Bus" technology.
Trans-4	**Expand Public Transportation Participation:** Collaborate with regional transit operator on programs to increase use of the City's public transportation system.
Trans-5	**Low- and Zero-Emission Vehicles:** Support and promote the use of low-and zero-emission vehicles in the City.
Trans-6	**Vehicle Idling**: Prohibit idling of Heavy Duty Trucks (greater than 26,000 gross vehicle weight) for longer than 3 minutes.
Trans-7	**Parking Policy:** Adopt a comprehensive parking policy that encourages carpooling and the use of alternative transportation, including providing parking spaces for car-share vehicles at convenient locations accessible by public transportation. Consider requirements for the following to reduce vehicle miles traveled (VMT) within the City by 2%. Designate 5% of downtown parking spaces for ride-sharing vehicles.
Trans-8	**Event Parking:** Consider establishing policies and programs to reduce onsite parking demand and promote ride-sharing during events at the Ontario Convention Center and other event venues. Consider a goal to reduce VMT at major events by 2%.
Trans-9	**Roadway Management:** Implement traffic and roadway management strategies to improve mobility and efficiency, and reduce associated emissions. Consider a goal to reduce community vehicle fuel consumption by 2%.

Measure Name	Measure Description
Trans-10	**Signal Synchronization:** Evaluate potential efficiency gains from further signal synchronization. Synchronize traffic signals throughout the City and with adjoining cities while allowing free flow of mass transit systems. Require continuous maintenance of the synchronization system. Consider a goal to reduce City-wide vehicle fuel consumption by 2%.
Trans-11	**School Transit Plan:** Encourage local school districts to develop school transit plans to substantially reduce automobile trips to, and congestion surrounding, schools. (According to some estimates, parents driving their children to school account for 20–25% of the morning commute.) Plans may address, e.g., necessary infrastructure improvements and potential funding sources, replacing older diesel buses with low or zero-emission vehicles, mitigation fees to expand school bus service, Safe Routes to School programs, and other formal efforts to increase walking and biking by students. Although this measure is not within the City's authority, Ontario can work with local school districts to develop these plans.
Trans-12	**Ridesharing Programs:** Coordinate with local agencies to promote ride sharing programs in Ontario (CAPCOA 2010). Although the City does not have the legal authority to impose trip demand management programs on project applicants or employers, Ontario can work with local agencies to develop these programs. Consider a goal to reduce City-wide VMT by 2% through mode-shifts from single-occupancy vehicles to carpools. Facilitate employment opportunities that minimize the need for private vehicle trips. The City could also work with the County to participate in their rideshare measure, which includes exploring financial programs for the purchase or lease of rideshare vehicles, encouraging community car sharing through city employers, and encouraging creation of community rideshare incentives (gas cards, commuter-tax benefits, guaranteed ride home programs, etc.).
Trans-13	**Bicycle and Pedestrian Infrastructure Plan:** Adopt a comprehensive bicycle and pedestrian infrastructure plan to expand the City's bicycle and pedestrian network. This plan would encourage residents and employees to use bicycles and walking as a method of transportation. Consider a goal to reduce City-wide VMT by 2% through mode-shifts from single-occupancy vehicles to bicycles.
Trans-14	**Development Standards for Bicycles:** Establish standards for new development and redevelopment projects to support bicycle use. Consider a goal to reduce VMT resulting from new development by 4% through mode-shifts from single-occupancy vehicles to bicycles.
Trans-15	**Smart Growth and Infill:** Encourage high-density, mixed-use, infill development and creative reuse of brownfield, under-utilized and/or defunct properties within the urban core. Consider a goal to reduce VMT resulting from new development by 5%.
Trans-16	**Transit-Oriented Development:** Identify transit centers appropriate for mixed-use development, and promote transit-oriented, mixed-use development within these targeted areas. Consider a goal to reduce VMT resulting from new development by 2%.
Off-Road Equipment	
Off Road-1	**Idling Ordinance:** Prohibit idling of heavy duty off-road construction vehicles to no more than 3 minutes.
Off Road-2	**Landscaping Equipment:** Support landscape equipment replacement programs to replace 75% of all landscaping equipment with electric equipment (945 total pieces of landscaping equipment replaced).

Measure Name	Measure Description
Agriculture	
Agriculture-1	**Methane Emissions Reduction for Animal Operations:** Support dairies (and other animal operations) to consider existing and new technologies and methods to control emissions from enteric fermentation and manure management and assess the feasibility and cost effectiveness of these technologies. Animal operations should strive to capture as much methane from manure management as feasible. Captured biogas can also be used in place of natural gas for heating, converted to vehicle fuel, used to replace gasoline and diesel, or combusted in a generator to produce renewable electricity.
Water Transport, Distribution, and Treatment	
Water-1	**Water Conservation for Existing Buildings:** Implement a program to renovate existing buildings to a higher level of water efficiency. Require 25% of existing buildings within the community to achieve a 25% reduction in water use. This measure will reduce both indoor and outdoor water use.
Water-2	**Irrigation Monitoring and Management System (Outdoor):** Install water monitoring and management systems (Smart controllers, etc.) across the community to reduce irrigation water needs and reduce the City's total community-wide water consumption by 10% by 2020. This measure will reduce outdoor water use.
Water-3	**Water System Efficiency:** Maximize efficiency at drinking water treatment, pumping, and distribution facilities, including development of off-peak demand schedules for heavy commercial and industrial users. Design and implement peak load management and demand response programs for water supply, treatment, and distribution, including interface with existing automated systems for building energy management and supervisory control and data acquisition (SCADA) systems.
Water-4	**SB X7:** Urban water agencies throughout California are required to increase water conservation to achieve a statewide goal of a 20% reduction in urban per capita use by 2020 per SB X7. The Ontario 2010 Urban Water Management Plan outlines the approaches to achieving that reduction.
Miscellaneous	
Misc-1	**Climate Change Awareness:** Utilize a variety of media outlets to promote climate change awareness and GHG reduction.
Misc-2	**Carbon Sequestration:** Establish a City-wide carbon sequestration project and sequestration goal of 1,000 metric tons of CO_2 per year.
Misc-3	**Shade Tree Planting:** Plant 1,000 trees per year from 2012–2020 for a total of 9,000 trees by 2020.
Misc-4	**Refrigeration and Air Conditioning Disposal:** Institute an ordinance requiring residences, businesses, and city facilities to practice responsible appliance disposal (RAD) for all decommissioned units, including refrigerators/freezers, window air-conditioning units, and dehumidifiers.
Misc-5	**Pervious Paving:** Promote the use of pervious concrete for pavement projects. Explore grant funding opportunities for pervious concrete.
Misc-6	**Infiltration:** Promote onsite infiltration, as required by the National Pollutant Discharge Elimination System (NPDES) Permit. Promote the use of pervious concrete and asphalt for pavement and parking lot projects.

Table ES-3. Summary of GHG Reductions—Sector View

GHG Emissions Sector	GHG Emission Reductions ($MT\ CO_2e$)	Percent Reduction in Sector
Building and Renewable Energy[a]	393,300	31.8%
On-Road Transportation[b]	365,212	29.9%
Off-Road Equipment[b]	28,166	12.3%
Solid Waste Management[c]	26,265	40.8%
Wastewater[d]	649	7.4%
Water Transport, Distribution, and Treatment[e]	6,511	16.9%
Agriculture	80,352	24.8%
SF_6 From Electricity Consumption[f]	1,678	23.7%
Performance Standard for New Development[g]	39,769	N/A
Projected Measure Reduction 2020 Totals	**941,902**	**N/A**
30% Reduction Target	***938,396***	
Exceeds Reduction Target	***3,506***	
% Below Projected Levels	***30.1%***	

For a detailed description of the City's GHG reduction measures, including quantification methods, sources and assumptions, see Appendix C.

[a] Includes GHG benefits from the Renewables Portfolio Standard (state), energy conservation measures, increased use of renewable power sources, shade tree planting, and reductions in building energy use related to wastewater treatment measures (increased wastewater treatment operational efficiency) and water conservation measures. When water consumption in buildings is reduced, and much of that water would have been heated (dishwashing, clothes washing, sinks, showers, etc.) using natural gas or electric heaters, building energy use is reduced at the same time.

[b] Includes GHG benefits from the Low Carbon Fuel Standard.

[c] Includes GHG benefits from San Bernardino County Landfill Methane Capture Systems (County-1).

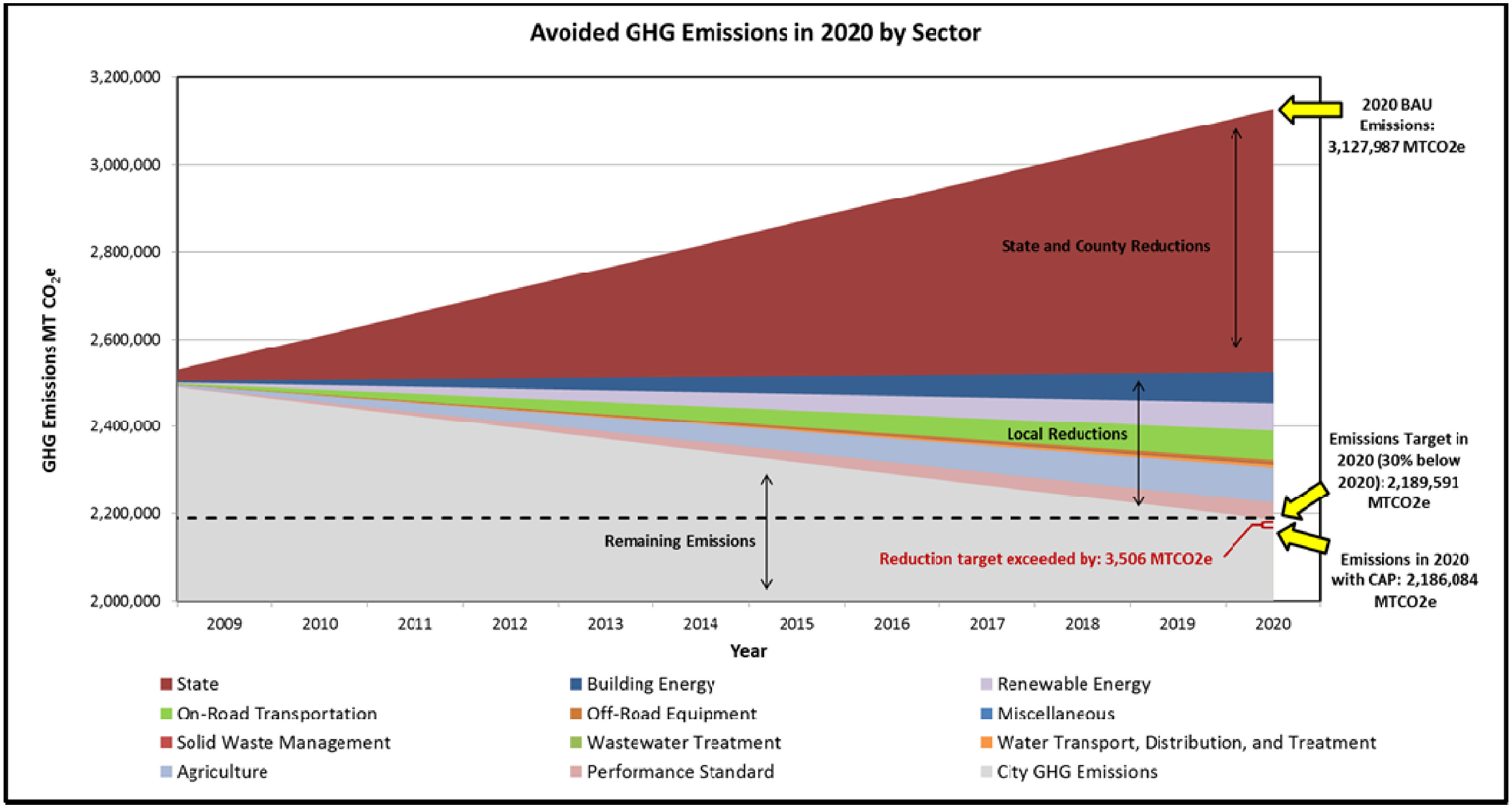
[d] Includes reductions in wastewater treatment fugitive emissions only.

[e] Includes GHG benefits from embedded energy savings from water transport, distribution, and treatment.

[f] Includes reductions in SF_6 due to any measure that reduces grid electricity.

[g] Not a sector of the inventory.

Figure ES-2. Summary of GHG Emissions Reductions by Sector (MT CO_2e)



Relationship to the City's Municipal Climate Action Plan

The primary purpose of the City's Municipal Climate Action Plan (MCAP) was to design a feasible strategy to reduce GHG emissions generated by the City's municipal operations (e.g., City-owned facilities, vehicle fleets) consistent with the goal of a 30% reduction of GHG emissions by year 2020. The MCAP includes a GHG inventory of municipal emissions for calendar year 2008 and a forecasted future-year municipal emissions inventory for calendar year 2020. Simultaneous with the inventory development work, the City selected candidate measures based on each measure's reduction effectiveness and feasibility. When combined with state efforts, the GHG reduction measures described in the City's MCAP would enable the City to reduce its municipal GHG emissions by an estimated 10,000 MT CO_2e, which exceeds the emissions reduction target of 30% below 2020 levels or approximately 8,500 MT CO_2e.

The majority of emissions generated by the City's municipal operations are encapsulated in the overall community emissions inventory detailed in this Community CAP (i.e., municipal emissions are a small subset of the larger community emissions). While those reduction measures detailed in the MCAP would solely address municipal emissions, the measures detailed in this Community CAP would address community-wide activities (those activities occurring in association with the land uses and activities within the City's jurisdictional boundary).

Relationship to California Environmental Quality Act

In order to comply with the California Environmental Quality Act (CEQA), the environmental impacts of this Community CAP must be analyzed, and any potentially significant impacts must be reduced to the extent feasible. The City of Ontario has adopted The Ontario Plan FEIR that includes a programmatic GHG analysis of mitigation measures set forth under Mitigation Measures 6-1 through 6-6. Consistent with CEQA (Public Resources Code section 21000 et seq.) and the State CEQA Guidelines (Title 14 of the California Code of Regulations section 15000 et seq.) Ontario proposes to tier the environmental review of this Community CAP from the previously adopted TOP FEIR. The previously adopted TOP FEIR addressed development impacts in Ontario comprehensively and a review of the potential secondary environmental impacts of implementation of the Community CAP does not indicate that it would result in any new significant environmental impacts or substantially more severe environmental impacts than already disclosed in the adopted TOP FEIR.

Future projects within the City limits must also comply with CEQA. However, once this Community CAP is adopted, analysis of environmental impacts associated with greenhouse gas emissions must simply prove project compliance with the Community CAP, rather than produce the traditional analysis of all GHG emissions associated with the proposed project and project compliance with all relevant policies and regulations. This approach is allowed per CEQA Guidelines Section 15183.5, which specifically set forth the requirements for comprehensive greenhouse gas reduction plans and tiering of analysis for project CEQA compliance.

Implementing the Plan

The success of the Community CAP will depend on cooperation, commitment, and participation by stakeholders and all City departments. To that end, the City has developed an implementation plan that creates an infrastructure for ensuring the goals of the Community CAP are achieved.

In January 2011, the Climate Action Plan Technical Advisory Committee (CAPTAC) was formed. The 16-member CAPTAC is composed of department directors and managers designated by the heads of each City agency and responsible for development and implementation of the Community CAP. The CAPTAC is charged with assessing and refining the measures identified in the Community CAP.

In addition to formation of the CAPTAC, the City identified the need for a sustainability position to coordinate City efforts and the development of the Community CAP. The City appointed a Sustainability Program Manager in July 2010 to coordinate and implement the Community CAP efforts and sustainability programs.

The City recognizes that implementation of the Community CAP will require interagency collaboration coupled with strategic public funding by the City, regional government agencies, and the state for capital projects and outreach and education efforts. The City has committed to engaging in such collaboration and will continue to seek funding for those implementation measures not yet funded.

Regular monitoring is important to ensure programs are functioning as they were originally intended. The CAPTAC will be responsible for developing monitoring procedures and amending the Community CAP as opportunities arise. Each department will be responsible for specific Community CAP measure monitoring and will provide regular reports that track GHG emission reductions to the CAPTAC.

Consistent with the 2010 Certified EIR for TOP, the City will conduct periodic comprehensive reviews of the Community CAP on a 3-year schedule that will involve an appropriate level of re-inventorying of emission sources in order to obtain a more complete understanding of GHG conditions and results of Community CAP measure progress. The City shall update this Community CAP every three years, to incorporate improved methods, better data, and more accurate tools and methods, and to assess progress. If the City is not on-schedule to achieve the GHG reduction targets of the Community CAP, additional measures shall be implemented.

Community Climate Action Plan

Chapter 1: Overview

Chapter 1
Overview

1.1 Background

This document is the City of Ontario Community Climate Action Plan (CAP) for reducing greenhouse gas (GHG) emissions associated with community activities to a level that is 30% below projected 2020 levels. This CAP demonstrates that the City of Ontario (City) is doing its fair share to assist the state of California in reaching its GHG reduction goals by 2020 as set forth in State regulations (Assembly Bill [AB] 32). This CAP includes the following.

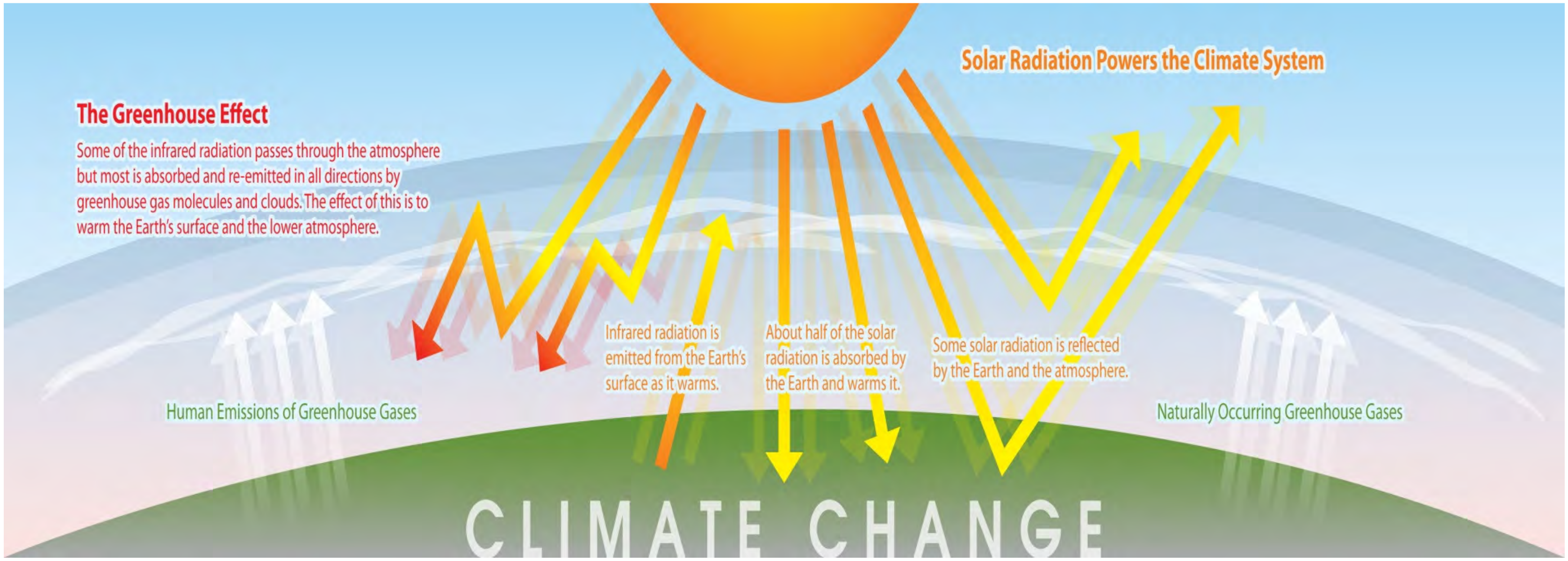
- Basic information about the science of climate change and a summary of state and federal level regulatory activity related to GHG emissions.
- An inventory of all GHG emissions that result from community activities in the City in 2008 (the baseline year).
- A projection of the GHG emissions that would result from community activities in the City in 2020 if the City or the state took no additional action to reduce emissions (the *business as usual* [BAU] forecast).
- A list of measures/programs that will likely be taken by the state and the City that will result in lower GHG emissions in 2020 than were projected.
- A prioritization of measures/programs that the City can pursue in order to reduce its emissions such that the CAP can be used as a decision-making tool.
- Recommendations for implementation, next steps, and future updates to this CAP.

1.1.1 Description of Greenhouse Gases

The temperature on Earth is regulated by a system commonly known as the "greenhouse effect," a natural process through which heat is retained in the troposphere. Greenhouse gases present in the Earth's lower atmosphere play a critical role in maintaining the Earth's temperature as they trap some of the long wave infrared radiation emitted from the Earth's surface that would otherwise escape to space, as shown in Figure 1-1. The Intergovernmental Panel on Climate Change (IPCC), state of California AB 32, and California Environmental Quality Act (CEQA) Guidelines define the following six GHGs in order of most abundance: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (NO_2), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). Water vapor, although the most abundant GHG, is not included in this list because natural concentrations and fluctuations far outweigh anthropogenic influences. The sources and sinks[4] of each of these gases are discussed in detail below. Generally, GHG emissions are quantified in terms of metric tons (MT) of carbon dioxide equivalents (CO_2e) emitted per year.

[4] A sink removes and stores GHGs in another form. For example, vegetation is a sink because it removes atmospheric CO2 during respiration and stores the gas as a chemical compound in its tissues.

Figure 1-1. The Greenhouse Effect



To simplify reporting and analysis, methods have been set forth to describe emissions of GHGs in terms of a single gas, CO_2. GHGs are compared in terms of their respective global warming potentials (GWP), relative to that of CO_2 (which has a GWP standardized to 1). The GWP is used to compare GHGs based on their potential to trap heat and remain in the atmosphere, as shown in Table 1-1. Some gases, like methane, can absorb more heat than others, and thus have a greater impact related to greenhouse effects. When developing actions to reduce GHGs, it is therefore important to not only consider the abundance of a gas, but also its GWP (Intergovernmental Panel on Climate Change 2007).

Table 1-1. Lifetimes, Global Warming Potentials, and Abundances of Several Significant Greenhouse Gases

Gas	Global Warming Potential (100 years)	Lifetime (years)	Atmospheric Abundance
CO_2	1	50–200	393 ppm
CH_4	21	9–15	1,758-1,874 ppb
N_2O	310	120	323-324 ppb
HFC-23	11,700	264	18 ppt
HFC-134a	1,300	14.6	35 ppt
HFC-152a	140	1.5	3.9 ppt
CF_4	6,500	50,000	74 ppt[a]
C_2F_6	9,200	10,000	2.9 ppt[a]
SF_6	23,900	3,200	7.1-7.5 ppt

Sources: Intergovernmental Panel on Climate Change 1996, 2007; Carbon Dioxide Information Analysis Center 2013; National Oceanic & Atmospheric Administration 2013.

[a] CF_4 and C_2F_6 are PFCs. The GWP values presented above are based on the IPCC Second Assessment Report (SAR) and United Nations Framework Convention on Climate Change (UNFCCC) reporting guidelines (IPCC 1996, UNFCCC 2003). Although the IPCC Fourth Assessment Report (AR4) presents different GWP estimates, the current inventory standard relies on SAR GWPs to comply with reporting standards and consistency with regional and national inventories.

N_2O = nitrous oxide; C_2F_6 = hexafluoroethane; ppm = parts per million; ppb = parts per billion; ppt = parts per thousand.

GHGs are both naturally occurring and anthropogenic (i.e., human-made). Below are descriptions of the greenhouse gases.

CO_2 is the most important anthropogenic GHG and accounts for more than 75% of all GHG emissions caused by humans. Its long atmospheric lifetime ensures that atmospheric concentrations of CO_2 will remain elevated for decades even after mitigation efforts to reduce GHG concentrations are promulgated (Intergovernmental Panel on Climate Change 2007). Primary sources of anthropogenic CO_2 in the atmosphere are the burning of fossil fuels (including motor vehicles), gas flaring, cement production, land use changes, and deforestation.

CH_4, the main component of natural gas, is the second most abundant GHG, and has a GWP of 21 (Intergovernmental Panel on Climate Change 1996). Sources of anthropogenic emissions of CH_4 include agricultural practices, combusting natural gas, and landfill outgassing.

N_2O is a powerful GHG, with a GWP of 310 (Intergovernmental Panel on Climate Change 1996). Anthropogenic sources of N_2O include agricultural processes, nylon production, fuel-fired power plants, nitric acid production, and vehicle emissions. In the United States more than 70% of N_2O emissions are related to agricultural soil management practices, particularly fertilizer application.

HFCs are anthropogenic chemicals used in commercial, industrial, and consumer products and have high GWPs (U.S. Environmental Protection Agency 2006). HFCs are generally used as substitutes for ozone-depleting substances (ODS) in automobile air conditioners and refrigerants. The most abundant HFCs, in descending order, are HFC-134a, HFC-23, and HFC-152a (Table 1-1).

PFCs are anthropogenic chemicals emitted largely from aluminum production and semiconductor manufacturing processes. PFCs are extremely stable compounds that are destroyed only by very high-energy ultraviolet rays, which results in their very long lifetimes.

SF_6, another anthropogenic chemical, is used as an electrical insulating fluid for power distribution equipment, in the magnesium industry, and in semiconductor manufacturing; and also as a trace chemical for the study of oceanic and atmospheric processes (U.S. Environmental Protection Agency 2006).

1.1.2 Emissions Sources in the United States and California

In the United States, 84% of GHG emissions are in the form of carbon dioxide, 9% are methane, and 5% are nitrous oxide; all are the result of the burning of fossil fuels. The remaining 2% of emissions are fluorinated gases (U.S. Environmental Protection Agency 2013). Fossil fuels are burned to create electricity that powers homes and commercial buildings, to create heat, and to power vehicles. In the United States, vehicle emissions represent approximately 28% of all emissions in 2011 (U.S. Environmental Protection Agency 2013). Vehicle emissions represented approximately 38% of all GHGs emitted by Californians in 2011. Energy used to power buildings is the other primary source of GHGs in the United States and California. Other sources of GHG emissions include agriculture, land clearing, the landfilling of waste, refrigerants, and certain industrial processes.

1.1.3 Impacts of Climate Change on the City of Ontario

Increases in the globally averaged atmospheric concentration of GHGs will cause the lower atmosphere to warm, in turn inducing a myriad of changes to the global climate system. These large-scale changes will have unique and potentially severe impacts in the western United States, California, and the region surrounding the City. Current research efforts coordinated through the California Air Resources Board (ARB), California Energy Commission (CEC), California Environmental Protection Agency (Cal-EPA), University of California (UC) system, and others are examining the specific changes to California's climate that will occur as the Earth's surface warms.

Existing evidence indicates that climate change could affect the natural environment in the City in the following ways, among others. It is important to note that these impacts are predictions based on the best available evidence and are not definitive, as there are uncertainties associated with utilizing research on global and regional climate change to predict local effects.

- Extreme heat conditions, such as heat waves and very high temperatures, which could last longer and become more frequent.
- An increase in heat-related human deaths, infectious diseases, and a higher risk of respiratory problems caused by deteriorating air quality.
- Reduced water supplies for all end uses.

- Potential increase in the severity of winter storms, affecting peak stream flows and flooding.
- Changes in growing season conditions that could affect agriculture, causing variations in crop quality and yield.
- Changes in distribution of plant and wildlife species due to changes in temperature, competition from colonizing species, changes in hydrologic cycles, changes in sea levels, and other climate-related effects.
- Decreased Sierra Nevada snowpack and altered timing and amount of snowmelt; effects on California water supplies and water management (California Energy Commission 2005).

1.2 Climate Change Regulation

1.2.1 Federal and State Legislation

Although there is currently no federal overarching law or policy related to climate change or the regulation of GHGs, recent activity indicates that the U.S. Environmental Protection Agency (EPA) will take a lead role in regulating certain sources. Foremost among recent developments has been the EPA's progress in developing GHG regulations pursuant to its authority under the Clean Air Act which is further described in Table 1-2. The federal government has already adopted aggressive vehicle mileage standards. Regulation of stationary sources (such as refineries and electricity generation plants) while being pursued by the current administration remains somewhat uncertain, and will likely be subject to legal appeal on its road to implementation.

The State of California has adopted legislation, and regulatory agencies have enacted policies, addressing various aspects of climate change and GHG emissions mitigation. Much of this legislation and policy activity is not directed at citizens or jurisdictions but rather establishes a broad framework for the State's long-term GHG mitigation and climate change adaptation program. The prior and current Governor has also issued several executive orders related to the State's evolving climate change policy. Of particular importance to local governments is the direction in the AB 32 Scoping Plan that recommends local governments reduce their GHG emissions by a level consistent with state goals (i.e., 15% below current levels, since adjusted to between 10 to 11%).

Summaries of key policies, legal cases, regulations and legislation at the federal and state levels that are relevant to the City are provided in Table 1-2. Figure 1-2 displays a timeline of key state and federal regulatory activity.

Table 1-2. Summary of Federal and State Legislation

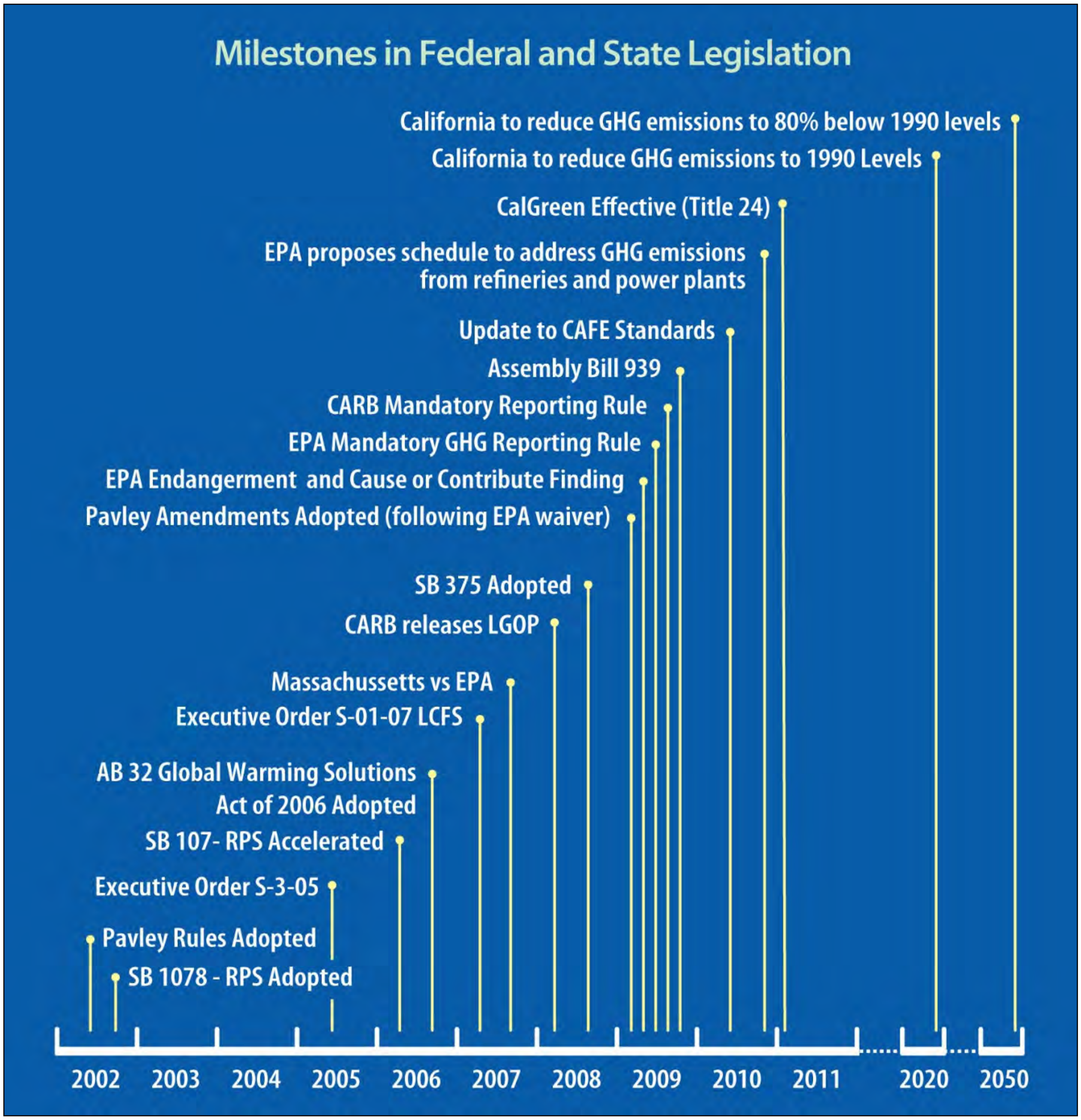
Legislation	Description
Federal	
Massachusetts et al. v. U.S. Environmental Protection Agency (2007)	Twelve U.S. states and cities including California, in conjunction with several environmental organizations, sued to force EPA to regulate GHGs as a pollutant pursuant to the Clean Air Act (CAA) in *Massachusetts et al. v. Environmental Protection Agency* (549 US 497) (2007). The court ruled that the plaintiffs had standing to sue, GHGs fit within the CAA's definition of a pollutant, and the EPA's reasons for not regulating GHGs were insufficiently grounded in the CAA.
U.S. Environmental Protection Agency Endangerment Finding (2009)	In its "Endangerment Finding," the Administrator of the EPA found that GHGs, as described above, threaten the public health and welfare of current and future generations. The Administrator also found that the combined emissions of these well-mixed GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution that threatens public health and welfare. Although the Finding of Endangerment does not place requirements on industry, it is an important step in EPA's process to develop regulation. This measure was a prerequisite to finalizing EPA's proposed GHG emission standards for light-duty vehicles (U.S. Environmental Protection Agency 2010).
U.S. Environmental Protection Agency Cause or Contribute Finding (2010)	In its "Cause or Contribute Finding" the EPA Administrator found that the combined emissions of these well-mixed GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution that threatens public health and welfare (U.S. Environmental Protection Agency 2010).
U.S. Environmental Protection Agency Mandatory Reporting Rule for GHGs (2009)	Under the rule, suppliers of fossil fuels or industrial GHGs, manufacturers of vehicles and engines, and facilities that emit 25,000 MT or more per year of GHGs are required to report annual emissions to the EPA. The first annual reports for the largest emitting facilities, covering calendar year 2010, were submitted to the EPA in 2011. The mandatory reporting rule does not limit GHG emissions but establishes a standard framework for emissions reporting and tracking of large emitters (U.S. Environmental Protection Agency 2010).
U.S. Environmental Protection Agency regulation of Stationary Sources under the Clean Air Act	Pursuant to its authority under the Clean Air Act, the EPA has been developing regulations for new stationary sources such as power plants, refineries, and other large sources of emissions. Pursuant to the President's 2013 Climate Action Plan, the EPA has also been directed to also develop regulations for existing stationary sources.

Legislation	Description
Update to Corporate Average Fuel Economy Standards (2009)	The new Corporate Average Fuel Economy (CAFE) standards incorporate stricter fuel economy standards promulgated by the State of California into one uniform standard. Additionally, automakers are required to cut GHG emissions in new vehicles by roughly 25% by 2016. EPA, National Highway Traffic Safety Administration (NHTSA), and ARB have established GHG emissions standards for 2017 to 2025 model year passenger vehicles, which require an industry-wide average of 54.5 miles per gallon in 2025 (U.S. Environmental Protection Agency et al. 2011a). The rule was finalized by the NHTSA in 2012 (National Highway Traffic Safety Administration 2012).
State	
Executive Order S-03-05 (2005)	Executive Order (EO) S-03-05 established the following GHG emission reduction targets for California's state agencies. • By 2010, reduce GHG emissions to 2000 levels. • By 2020, reduce GHG emissions to 1990 levels. • By 2050, reduce GHG emissions to 80% below 1990 levels. Executive orders are binding only on state agencies. Accordingly, EO S-03-05 will guide state agencies' efforts to control and regulate GHG emissions but will have no direct binding effect on local efforts. The Secretary of Cal-EPA is required to report to the Governor and state legislature biannually on the impacts of global warming on California, mitigation and adaptation plans, and progress made toward reducing GHG emissions to meet the targets established in this executive order.
Assembly Bill 1493 – Pavley Rules (2002, amendments 2009)	Known as "Pavley I," AB 1493 standards were the nation's first GHG standards for automobiles. AB 1493 requires ARB to adopt vehicle standards that will lower GHG emissions from new light-duty automobiles to the maximum extent feasible beginning in 2009. Additional strengthening of the Pavley standards (Pavley II/Advanced Clean Cars) has been proposed for vehicle model years 2017–2025. Together, the two standards are expected to increase average fuel economy to roughly 43 miles per gallon (mpg) by 2020 and reduce GHG emissions from the transportation sector in California by approximately 14%. The new federal CAFE standards, described above, are the analogous national policy. EPA and ARB have adopted a joint rulemaking to establish GHG emissions standards for 2017 to 2025 model-year passenger vehicles. The Interim Joint Technical Assessment Report for the standards evaluated four potential future standards ranging from 47 to 62 miles per gallon in 2025. The standards were approved by ARB and NHTSA in 2012 (California Air Resources Board 2012, National Highway Traffic Safety Administration 2012).

Legislation	Description
Senate Bills 1078 (2002), 107 (2006) and X1-2 (2011) and Executive Order S-21-09 - Renewable Portfolio Standard	Senate Bills (SBs) 1078, 107, California's Renewable Portfolio Standard (RPS), obligates investor-owned utilities (IOUs), energy service providers (ESPs), and Community Choice Aggregations (CCAs) to procure an additional 1% of retail sales per year from eligible renewable sources until 20% is reached, no later than 2010. Senate Bill 2 (2011) set forth a longer range target of procuring 33% of retail sales by 2020. Executive Order S-21-09, signed by California's Governor in September 2009, requires the ARB to adopt a renewable energy program requiring 33% renewable energy by 2020.
Assembly Bill 32 – California Global Warming Solutions Act (2006)	AB 32 codified the State's GHG emissions target by requiring that the state's global warming emissions be reduced to 1990 levels by 2020. Since being adopted, the ARB, CEC, the California Public Utilities Commission (CPUC), and Building Standards Commission have been developing regulations that will help meet the goals of AB 32 and EO S-03-05. The Scoping Plan for AB 32 identifies specific measures to reduce GHG emissions to 1990 levels by 2020, and requires ARB and other state agencies to develop and enforce regulations and other initiatives for reducing GHGs. On February 10, 2014, the ARB released the Draft Proposed First Update to the Scoping Plan. This update builds upon the initial Scoping Plan. It identifies new funding sources, defines ARB's climate change priorities for the next five years, highlights California's progress toward the 2020 goal, and sets the groundwork to reach longer-term goals beyond 2020.
Executive Order S-01-07 – Low Carbon Fuel Standard (2007)	EO S-01-07 mandates: (1) that a statewide goal be established to reduce the carbon intensity of California's transportation fuels by at least 10% by 2020, and (2) that a Low Carbon Fuel Standard (LCFS) for transportation fuels be established in California.
Assembly Bill 939, title 27 (2009) – Landfill Methane Regulation	In 2009 ARB approved regulations for methane emissions from municipal solid waste landfills. This regulation will reduce methane emissions from landfills primarily by requiring owners and operators of certain uncontrolled landfills to install gas collection and control systems, and by requiring existing and newly installed gas collection and control systems to operate optimally.

Legislation	Description
Senate Bill 375 – Sustainable Communities Strategy (2008)	SB 375 provides for a new planning process that coordinates land use planning, regional transportation plans, and funding priorities in order to help California meet the GHG reduction goals established in AB 32. SB 375 requires regional transportation plans, developed by metropolitan planning organizations (MPOs) to incorporate a "sustainable communities strategy" (SCS) in their Regional Transportation Plans (RTPs). The goal of the SCS is to reduce regional vehicle miles traveled (VMT) through land use planning and consequent transportation patterns. ARB set regional GHG reduction targets that will focus each SCS. SB 375 also includes provisions for streamlined CEQA review for some infill projects such as transit-oriented development. The SCS for the Southern California region was adopted by the Southern California Associated governments (SCAG) in 2012.
ARB GHG Mandatory Reporting Rule Title 17 – 2009	In December 2007, ARB approved a rule requiring mandatory reporting of GHG emissions from certain sources, pursuant to AB 32. Facilities subject to the mandatory reporting rule must report their emissions from the calendar year 2009 and have those emissions verified by a third party in 2010. In general, the rule applies to facilities emitting more than 25,000 MT CO_2e in any given calendar year or electricity-generating facilities with a nameplate generating capacity greater than 1 megawatt (MW) and/or emitting more than 2,500 MT CO_2e per year. Additional requirements also apply to cement plants and entities that buy and sell electricity in the state.
Senate Bill X7 – The Water Conservation Act of 2009 (2009)	SB X7 was enacted in November 2009 and requires urban water agencies throughout California to increase conservation to achieve a statewide goal of a 20% reduction in urban per capita use (compared to nominal 2005 levels) by December 31, 2020 (referred to as the "20X2020 goal"). Each urban water retailer in the county subject to the law has established a 2020 per-capita urban water use target to meet this goal.

Figure 1-2. Key Milestones in Federal and State Climate Legislation



1.2.2 Local Governments

The AB 32 Scoping Plan lays out California's plan for achieving the GHG reductions required by AB 32. Specifically, the Scoping Plan describes a list of measures that the state will undertake, and the expected GHG reductions associated with these measures that will be realized before 2020. Because the state does not have jurisdictional control over many of the activities that produce GHG emissions in California, the AB 32 Scoping Plan articulates a unique role for local governments in achieving the state's GHG reduction goals. The AB 32 Scoping Plan recommends that local governments reduce

GHG emissions from both their municipal operations and the community at large to a level that is 15% below current levels. The 15% recommendation was based on CARB's estimate of 2005–2008 emissions at the time of the scoping plan because at that time CARB had not yet completed actual inventories for those years. In subsequent years, CARB completed the inventories for the 2005–2011 years. In order to meet the AB 32 target of 1990 levels, the state would have to reduce its emissions by 10 to 11% below 2005–2008 levels. Based on the latest GHG inventories for 2009-2011, the state would have to reduce its emissions by 3 to 5% below 2009–2011 levels. The reason for the decline in the percent reduction in recent years is because statewide emissions dropped significantly in 2009 (largely due to the economic recession). The scoping plan update recommends that local governments should chart a reduction trajectory that is consistent with, or exceeds, the trajectory created by statewide goals.

The AB 32 scoping plan is a roadmap for achieving AB 32 goals. Reducing statewide emissions to 1990 levels by 2020 is equivalent to cutting annual per capita emissions by 4 tons per person. The AB 32 Scoping Plan identifies the following eight key sectors for meeting this challenge.

- **Cap-and-Trade:** Limit GHG emissions from certain sectors.
- **Electricity and Energy:** Improve energy efficiency and use of renewable power.
- **High Global Warming Potential GHGs:** Enhance capture technology and reduce refrigerant use.
- **Agriculture:** Increase equipment efficiency and enhance methane capture at dairies.
- **Transportation:** Improve engine efficiency, reduce carbon content of fuels, and improve the transportation network.
- **Industry:** Target the largest emitters through audits and restrictions.
- **Forestry:** Provide sequestration credits.
- **Waste and Recycling:** Reduce waste and increase recycling.

Together, strategies outlined in the AB 32 Scoping Plan will help transform California's economy into one that is more sustainable and less reliant on fossil fuels (California Air Resources Board 2010c).

In response to the directive of the AB 32 Scoping Plan, many jurisdictions across California have completed a GHG Inventory and Reduction Plan, commonly called a Climate Action Plan (CAP). These plans generally address two types of emissions.

- The community inventory and reduction plan, or Community CAP—emissions that arise from the community at large (residents, businesses, and their associated activities within the jurisdictional boundary).
- The municipal inventory and reduction plan, or Municipal CAP—emissions that arise from the City/City's operations only (City/City buildings, vehicle fleet, activities required to provide services to the jurisdiction).

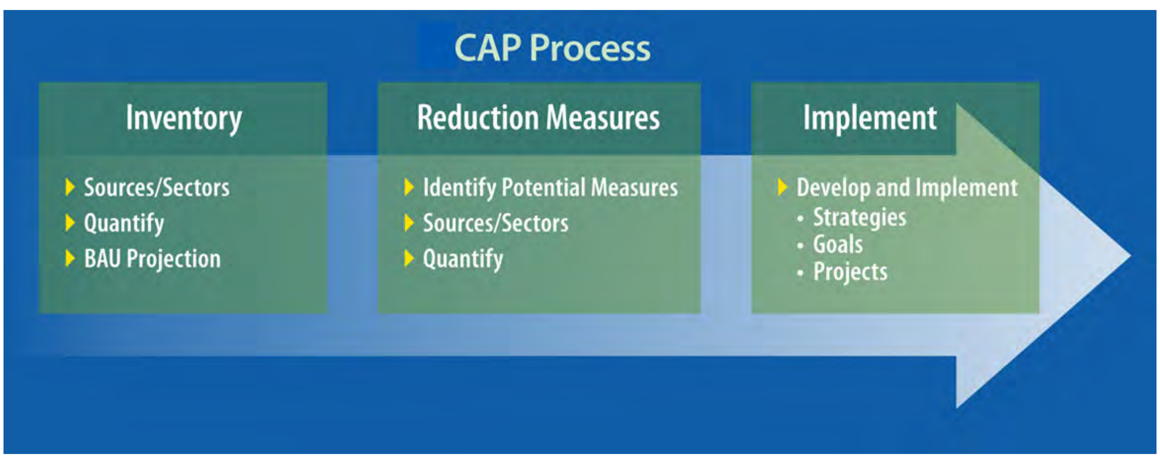
This plan is a Community CAP. It presents an inventory of GHG emissions from the City's community at large and details a strategy to reduce those emissions before 2020. More than 50 jurisdictions in Southern California have completed a CAP, a Community CAP, or both, including the City and County of San Bernardino and the cities of Los Angeles, Anaheim, Beverly Hills, Pasadena and many others.

1.3 Community Climate Action Planning Overview

The Community CAP planning process includes the following three main steps (Figure 1-3).

1. **Inventory Current and Project Future GHG Emissions.** The first step in developing a GHG reduction plan is to establish the amount of GHGs currently being emitted on a yearly basis within the boundary of interest (i.e., by all community activities within the City limits). Because GHG planning in California is driven by the state's 2020 goal, GHG inventories include not only an inventory of all GHG emissions in the baseline (current) year, but also a projection of what GHG emissions will likely be in 2020 when accounting for growth (i.e., the increased level of service and number of employees).
2. **Select and Quantify GHG Reduction Measures.** The second step is to identify measures that can be taken to reduce GHG emissions. Once selected, the amount of GHG emissions that will be avoided in 2020 (if the measures are implemented) are calculated. The final list of GHG reduction measures, when fully implemented, would result in a reduction of GHG emissions that meet AB 32 requirements.
3. **Implement GHG Reduction Measures.** The final step is to implement GHG reduction measures identified in Step 2 above. Reduction measures usually take the form of policies or programs that the City can implement and are usually tailored to complement existing programs. Implementation includes identification of responsible parties for each measure, identification of funding sources, scheduling and ongoing monitoring, and progress reporting.

Figure 1-3. The CAP Planning Process



CITY OF ONTARIO

Community Climate Action Plan

Chapter 2: Greenhouse Gas Emissions Inventory and Reduction Plan

Chapter 2
Greenhouse Gas Emissions Inventory and Reduction Plan

2.1 Emissions Inventory and Forecast

Beginning in 2011, the City conducted a detailed inventory of all GHG emissions for calendar year 2008, associated with community activities. The inventory was organized by these sectors.

- Building Energy (residential and commercial electricity and natural gas)
- On-Road Transportation (light-medium duty and heavy-duty vehicles)
- Off-Road Equipment
- Agriculture
- Solid Waste Management
- Wastewater Treatment
- Water Transport, Distribution, and Treatment
- SF_6 from Electricity Consumption

The following sectors were quantified and listed for informational purposes, but were excluded from the CAP inventory.

- Stationary Sources
- Airport-related traffic

Stationary sources were excluded to avoid duplication of state and federal regulatory efforts, such as the California Cap and Trade system, which will particularly affect large stationary sources. The stationary sources excluded from the inventory include fuel combustion other than natural gas for sources such as oil and gas production, manufacturing and industry, and food and agricultural processing. The vast majority of stationary source emissions in Ontario are from large industrial, commercial, and agricultural fuel combustion (please refer to Appendix A for a complete description of stationary sources including emissions broken down by major source category). These sources are generally subject to the California Cap and Trade regulations, and were therefore excluded from the CAP inventory to avoid duplication of state efforts to reduce these emissions. Airport-related traffic was excluded because the City has little or no influence over airport operations and passenger traffic patterns. Direct emissions associated with natural gas and indirect emissions related to electricity generation are included in the City inventory under the building energy sector.

The City also completed a projection of expected GHG emissions in 2020 accounting for a growing city population. The City is anticipated to grow from 2008 to 2020, increasing housing by 37% and total jobs by 32% (Minjares pers. comm.). Community activities will increase as the population in the City grows. GHG emissions from vehicle use, building energy use, and wastewater treatment will therefore increase by 2020 as the City's population grows. For a detailed description of the city's 2008 GHG inventory and 2020 forecast, see Appendix A[5].

2.1.1 City of Ontario GHG Emissions in 2008

In 2008, community activities in the City resulted in the release of approximately 2.5 million MT CO_2e—roughly equivalent to the amount of GHGs released by the consumption of more than 280 million gallons of gasoline. GHG emissions in 2008 and projected emissions in 2020 are shown in Table 2-1 and Figure 2-1. As indicated, the largest source of community emissions for the City was on-road transportation, which represented 38% of total community emissions for 2008. Transportation emissions are often one of the largest sources of emissions in community inventories, and Ontario is no exception. The second largest source of emissions was from building energy use, which accounted for 37% of total community emissions for 2008. This sector includes emissions associated with natural gas combustion and electricity consumption in residential, commercial, and industrial buildings in Ontario. The third largest source was agriculture, with a contribution of 14% of the total 2008 emissions. The remaining sources in order of greatest contributions were off-road equipment (7%), solid waste management (2%), water transport, distribution, and treatment (1%), wastewater treatment (0.3%), and SF_6 from electricity consumption (0.2%). Table 2-1 and Figure 2-1 present all GHG emissions for the City for 2008.

2.1.2 City of Ontario Projected GHG Emissions in 2020

In 2020, community activities are projected to result in the release of 3.1 million MT CO_2e—an increase of approximately 25% over 2008 levels. The increase from 2008 to 2020 will occur primarily because of an increase in VMT and building energy use. As the population and employment in Ontario grow, transportation activity and energy consumption will increase. Emissions from all other sectors will increase under the BAU scenario by 2020 because of growth in the City across all economic sectors. The 2020 GHG emissions projection represents the BAU scenario, which assumes that the City and its residents and businesses will continue to utilize the same types of energy at the same rate as they do now. The BAU forecast also assumes that the United States, the state, or the City will take no action to curb emissions.

Building energy use (40%), on-road transportation (39%), and agriculture (10%) are still expected to be the largest sources of emissions in 2020. The only sector of the inventory for which emissions will not increase from 2008 to 2020 is agriculture (which will decrease by 9% due to decreased availability of agricultural land). GHG emissions from individual sectors are discussed in more detail, together with the measures that the City will take to curb them in Chapter 3, *Individual Sector Summaries*.

[5] The percentages in Appendix A do not match precisely the percentages listed in Table 2-1 because stationary sources and airport emissions are not included in Table 2-1 but are included in Appendix A.

Table 2-1. City of Ontario Community GHG Inventories: 2008 Baseline and 2020 BAU Forecast ($MT\ CO_2e$)[a]

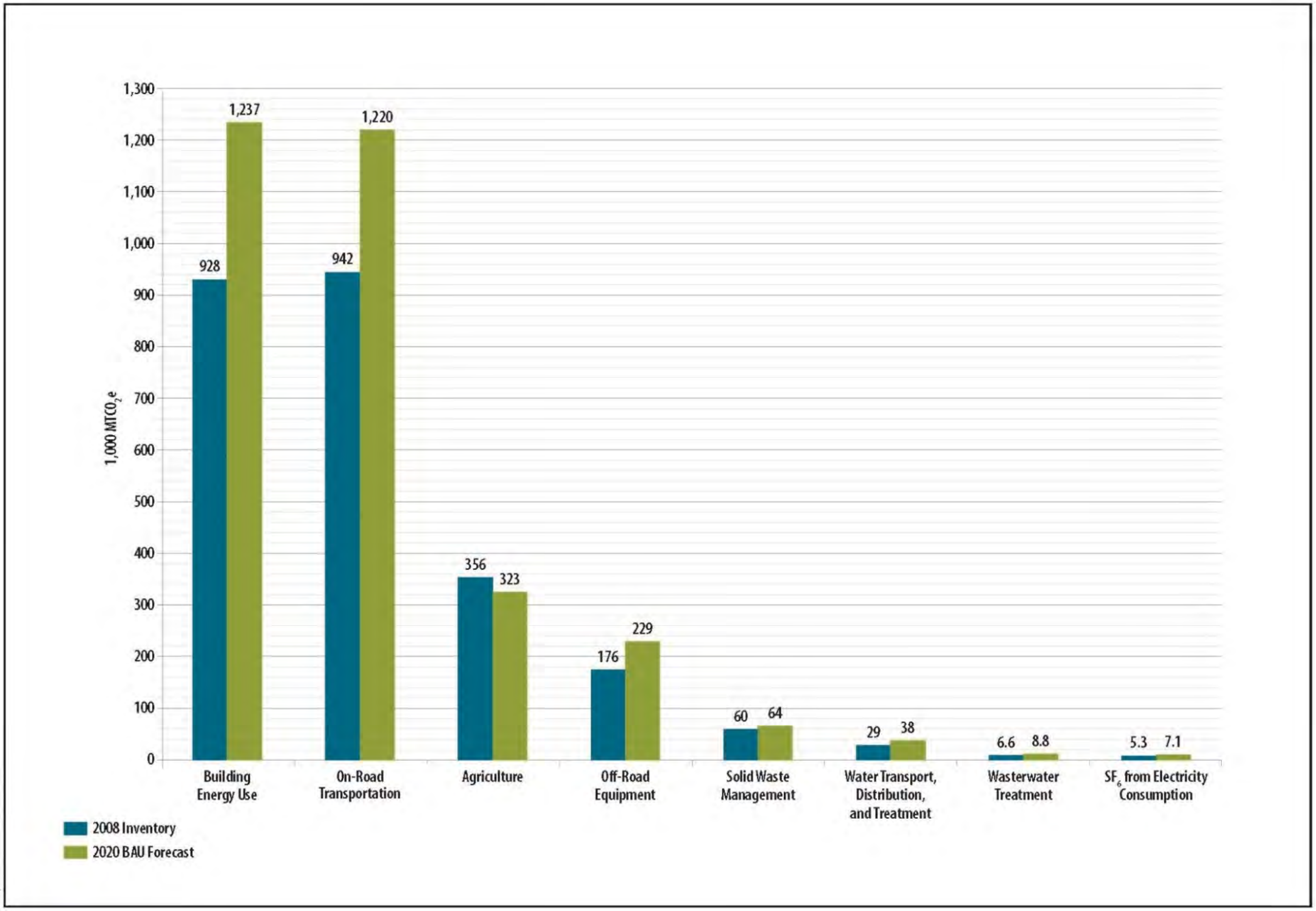
	2008		2020	
Emissions Sector	**MT CO_2**	**% of Total**	**MT CO_2**	**% of Total**
Building Energy Use	928,409	37%	1,237,006	40%
On-Road Transportation	942,020	38%	1,219,767	39%
Off-Road Equipment	176,314	7%	229,069	7%
Agriculture	356,131	14%	323,390	10%
Solid Waste Management	60,000	2%	64,326	2%
Wastewater Treatment	6,587	0.3%	8,781	0.3%
Water Transport, Distribution, and Treatment	29,044	1%	38,575	1%
SF_6 from Electricity Consumption	5,310	0.2%	7,072	0.2%
Total Emissions	**2,503,816**	**100 %**	**3,127,987**	**100%**
Excluded Emissions[b]				
Stationary Sources	405,195	N/A	511,548	N/A
Airport-Related Traffic	28,736	N/A	75,976	N/A
Subtotal Excluded Emissions	**433,932**	**N/A**	**587,525**	**N/A**

Values may not sum due to rounding. For a detailed description of the city's 2008 GHG inventory and 2020 forecast, see Appendix A

[a] The calculations presented above contain a certain amount of uncertainty. Quantitative error analyses are complicated, require detailed statistical equations, and are outside the scope of the consultant's work. The EPA estimates an error range of -1 to 6% for the 2009 national inventory. Given that the City's 2008 inventory employed similar methods and analysis factors, a similar level of error can be expected, yielding an emissions range of 2,507,227 MT CO_2e to 2,380,599 MT CO_2e. The uncertainty associated with the 2020 forecast is likely higher due to the assumptions associated with future socioeconomic data.

[b] As stated above, the City elected not to include these emissions in its CAP inventory. Amounts are provided for informational purposes only, and were not used to develop the CAP reduction goal.

Figure 2-1. 2008 GHG Emissions and Projected Emissions in 2020 by Sector



2.2 City of Ontario's Emissions Reduction Target

The City's GHG emissions in 2008 were approximately 2.5 million MT CO_2e. Reducing emissions to 30% below 2020 levels would result in emissions of approximately 2.2 million MT CO_2e in 2020. In 2020, the City's GHG emissions are projected to be approximately 3.1 million MT CO_2e in the absence of any measures by either the State of California or the City. The reductions needed to reach the target are approximately 940,000 MT CO_2e (Table 2-2).

Table 2-2. How is the City of Ontario's GHG Reduction Target Calculated?

GHG Emissions		MT CO_2e
A	Projected in 2020 (based on projected growth from 2008 baseline)	3,127,987
B	Target for 2020—30% below 2020 levels	2,189,591
	Total Reductions Needed to Reach Target (A minus B)	**938,369**

To achieve the desired emissions reduction target, the City has selected 44 local mitigation measures in addition to those that will be implemented at the state level. Of the 44 measures, 21 have been quantified for GHG reductions. The remaining measures were not quantified due to insufficient data needed to quantify reductions. These measures were chosen based on the pattern of existing and future emissions sources, the suite of ongoing City efficiency and environmental programs, and areas where opportunities for significant GHG reductions overlapped favorably with the City jurisdictional control and financial concerns. Chapter 3, *Individual Sector Summaries*, discusses the individual measures by sector.

2.3 Reduction Measure Selection Process

The City reviewed a comprehensive list of potential measures, or candidate measures that could be taken to reduce GHG emissions from the City's community activities. This initial list drew from federal and state resources, recommendations from the attorney general, CAPs throughout California, and the City's current and proposed efficiency and environmental programs. From this initial list, the City identified measures or groups of measures as being feasible to pursue in order to reduce GHG emissions by 2020. These measures were then compared and tailored to be consistent with existing and planned City departmental programs. The City already had in place or was planning to initiate many programs that, although designed for a different purpose, would result in significant energy and GHG savings for the City in 2020. Examples of these programs include workforce development, water supply and demand management, and grants for waste reduction. Existing programs that already influenced activity and emissions in the community in 2008 were not counted toward the CAP reductions. Because these programs already influenced activity in 2008, such as by reducing energy use, water use, and waste generation, the 2008 activity data used to prepare the GHG inventory already accounted for any reductions achieved by 2008. Also, because the forecast uses the same carbon intensity values as the 2008 inventory without the influence of any additional state or local measures past 2008, the impact of existing local measures past 2008 were not counted in the BAU forecast. Reductions in the CAP for existing programs are only associated with actions occurring from 2008 to2020, and these actions are not already counted in the BAU forecast as discussed above.

Finally, the GHG reductions associated with all of the selected measures were quantified in addition to GHG reductions expected from state-level programs whose actions will be implemented regardless of local action taken by the City. For a detailed description of the City's GHG reduction measures, including quantification methods, sources and assumptions, see Appendix C.

2.4 City of Ontario's Reduction Plan

The measures described in this Community CAP would, if fully implemented, result in 2020 emissions approximately 30.1% below 2020 levels, or approximately 2.2 million MT CO_2e, as shown in Table 2-3.

Table 2-3. Reaching the Target—Sector View

GHG Emissions		**(MT CO_2e)**
A	Projected in 2020 (BAU)	3,127,987
B	Target for 2020—30% below 2020 levels	2,189,591
	Reductions Needed to Reach Target (A minus B)	**938,369**
City Emissions Reductions By Sector		
	Building and Renewable Energy[a]	393,300
	On-Road Transportation[b]	365,212
	Off-Road Equipment[b]	28,166
	Solid Waste Management[c]	26,265
	Wastewater Treatment[d]	649
	Water Transport, Distribution, and Treatment[e]	6,511
	Agriculture	80,352
	SF_6 from Electricity Consumption[f]	1,678
	Performance Standard for New Development[g]	39,769
Total Reductions		**941,902**
	Exceeds Reduction Target by	**3,506**
	GHG Emissions in 2020 with Community CAP (all measures)	**2,186,084**
	% Below Projected Levels	**30.1%**

For a detailed description of the City's GHG reduction measures, including quantification methods, sources and assumptions, see Appendix C.

[a] Includes GHG benefits from the Renewables Portfolio Standard (state), energy conservation measures, increased use of renewable power sources, shade tree planting, and reductions in building energy use related to wastewater treatment measures (increased wastewater treatment operational efficiency) and water conservation measures. When water consumption in buildings is reduced, and much of that water would have been heated (dishwashing, clothes washing, sinks, showers, etc.) using natural gas or electric heaters, building energy use is reduced at the same time.

[b] Includes GHG benefits from the Low Carbon Fuel Standard.

[c] Includes GHG benefits from San Bernardino County Landfill Methane Capture Systems (County-1).

[d] Includes reductions in wastewater treatment fugitive emissions only.

[e] Includes GHG benefits from embedded energy savings from water transport, distribution, and treatment.

[f] Includes reductions in SF_6 due to any measure which reduces grid electricity.

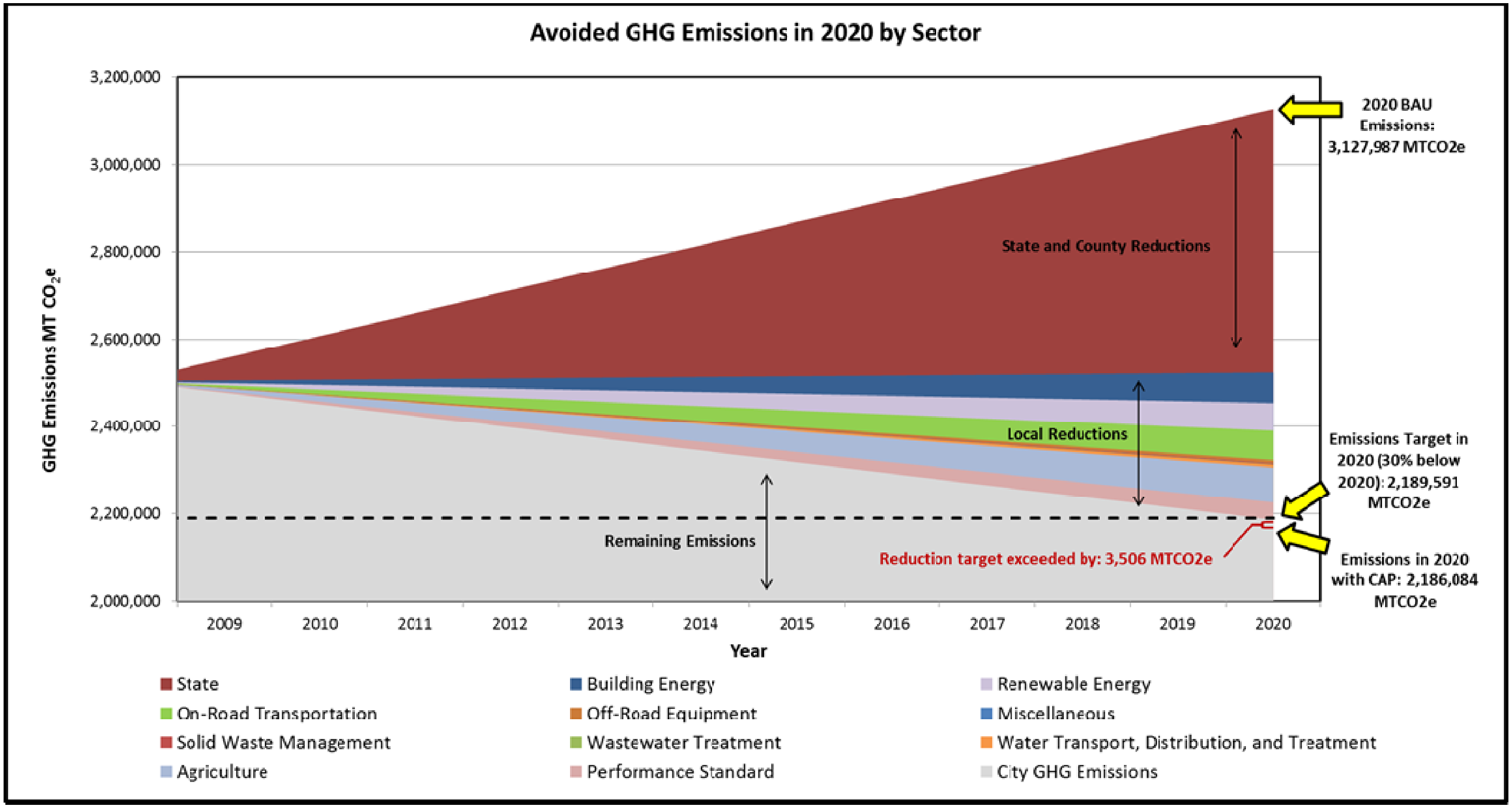
[g] Not a sector of the inventory.

Table 2-3 and Figure 2-2 show that the largest percentage of GHG reductions in the City's plan comes from reductions in building energy use and increased use of renewable energy (42% or approximately 393,000 MT CO_2e), reductions in emissions associated with transportation (39% or 365,000 MT CO_2e), and reductions in emissions associated with agriculture (9% or 80,000 MT CO_2e). Off-road equipment, solid waste management, wastewater treatment, water, and performance standard measures also contribute to overall GHG reductions achieved through City measures. Chapter 3, *Individual Sector Summaries*, provides a detailed description of avoided GHG emissions in each sector.

2.5 Other Measures to Reduce GHGs

The City's Community CAP includes many measures that do not have an associated absolute number of MT CO_2e; therefore, MT CO_2e could not be quantified and counted toward the reduction goal. However, these measures likely result in GHG savings and are listed as Non-Quantifiable (NQ) in the sector summaries in Chapter 3. Many of these measures have already been implemented or are currently planned to be implemented, and are considered best management practices (BMPs) for a particular sector. Data necessary to estimate the GHG emissions avoided by these practices or analytical methods to estimate the avoided GHG emissions are currently unknown.

Figure 2-2. Reaching the Target: Sector View



CITY OF ONTARIO

Community Climate Action Plan

Chapter 3: Individual Sector Summaries

Chapter 3
Individual Sector Summaries

The City's Community CAP sets forth a framework for reducing 2020 community emissions that is consistent with AB 32. Successful implementation of the Community CAP would require commitment and action throughout the City's buildings and operations. Based on the City's GHG emissions inventory, the CAP targets the following eleven sectors.

- Performance Standard for New Development
- Building Energy
- Renewable Energy
- Wastewater Treatment
- Solid Waste Management
- On-Road Transportation
- Off-Road Equipment
- Agriculture
- Water Transport, Distribution, and Treatment
- SF_6 from Electricity Consumption
- Miscellaneous

Not all of these are specific sectors of the inventory, but are rather refined CAP measures organized to more logically categorize the measures. For example, renewable energy is not a sector of the inventory; renewable energy measures were separated from building energy measures to show a distinction between these two types of measures. Both building energy measures and renewable energy measures reduce emissions in the building energy sector.

The following sector discussions describe how implementation of the Community CAP results in avoided GHG emissions. A detailed table provides a listing of sector measures and categorizes them as state measures (e.g. State-1), municipal measures (e.g. Muni-1)[6], and local sector-specific measures (e.g. Energy-1). Each table also includes brief measure descriptions and associated emissions reductions that will be achieved by 2020. Those measures that could not be quantified due to unavailable data, overlap with other measures, or have already been implemented are identified as non-quantifiable (NQ); however, they are supportive measures.

[6] Municipal measures were developed in the City of Ontario Municipal Climate Action Plan. Some of these measures will not overlap with community measures, and were included in the CCAP because they contribute additional GHG reductions beyond community measures.

3.1 Performance Standard for New Development

New development in the City has the potential to be an important contributor to the City's GHG emissions reductions efforts. Through ensuring quantification of GHG emissions associated with new projects and the development of reduction measures to reduce these emissions, the Performance Standard for New Development would result in reductions in GHG emissions in 2020 of approximately 40,000 MT CO_2e (Table 3-1).

Table 3-1. GHG Reduction Measures from the Performance Standard for New Development

GHG Reduction Measures		Simple Definition	GHG Reductions Achieved by 2020 (MT CO_2e)
PS-1	**Performance Standard for New Development**: The City's Performance Standard for New Development (PS) would provide a streamlined and flexible program for new residential and nonresidential projects to reduce their emissions. The PS would include performance standards for new private developments as part of the discretionary approval process under CEQA. Under the PS new projects would be required to quantify project-generated GHG emissions and adopt feasible reduction measures to reduce project emissions to 25% below 2020 BAU project emissions. The PS does not require that project applicants implement a predetermined set of measures. Rather, project applicants are encouraged to choose the most appropriate measures for achieving the percent reduction goal, while taking into consideration cost, environmental or economic benefits, schedule, and other project requirements. The PS applies to all projects emitting more than 3,000 MT CO_2e per year, which is roughly equivalent to 90% of projects. Projects emitting less than this amount must implement a suite of BMPs. Refer to Appendix C for more information.	New projects emitting more than 3,000 MT CO_2e per year need to reduce emissions by 25%.	**39,295**
BMP-1	**Performance Standard for Smaller New Development Projects: Best Management Practices. Exceed Title 24 Energy-Efficiency Standards for New Buildings by 5% by 2020**: All new residential and nonresidential buildings emitting less than 3,000 MT CO_2e per year, which is roughly equivalent to 10% of projects, must exceed the Energy Efficiency Standards under Title 24 by at least 5%, or equivalent level of GHG emission reduction	New projects emitting less than 3,000 MT CO_2e per year to exceed Title 24 Energy Efficiency Standards by 5%, or equivalent level of GHG emission reduction	**474**
Total GHG Reductions for the Performance Standard in 2020			**39,769**

3.2 Building Energy

The City is committed to reducing the GHG emissions associated with residential and nonresidential buildings through retrofits, planting shade trees to reduce building electricity use, and implementing water conservation measures to reduce the need for energy to heat water inside homes and businesses. Table 3-2 lists all building energy measures and identifies them as state measures, municipal measures, or local community measures. Because the Building Energy (BE) sector represented a significant percentage (37%) of total emissions in 2008 and projected emissions for 2020, the potential for GHG benefits in this sector is large. The GHG savings in the building energy sector is approximately 191,000 MT CO_2e.

Table 3-2. GHG Reduction Measures in the Building Energy Sector

GHG Reduction Measures		Simple Definition	GHG Reductions Achieved by 2020 (MT CO_2e)
State-1	**Title 24 Standards for Residential and Non-Residential Buildings (CALGreen):** Requires that building shells and building components be designed to conserve energy and water. Mandatory and voluntary measures became effective on January 1, 2011, and the guidelines will be periodically updated.	N/A	**80,199**
State-2	**AB 1109 (Huffman) Lighting Efficiency and Toxics Reduction Act:** Structured to reduce statewide electricity consumption in the following ways: (1) at least 50% reduction from 2007 levels for indoor residential lighting, and (2) at least 25% reduction from 2007 levels for indoor commercial and outdoor lighting, by 2018.	N/A	**31,942**
State-3	**AB 1470 (Huffman):** This measure would reduce natural gas use for residential and non-residential water heating by installing 200,000 solar water heaters by 2020 (measure was quantified for residential only).	N/A	**506**
State-4	**Industrial Boiler Efficiency:** This measure, evaluated by ARB, would require one or more of the following: annual tuning of all boilers, the installation of an oxygen trim system, and/or a non-condensing economizer to maximize boiler efficiency. A source could also replace an existing boiler with a new one that is equipped with these systems. This measure, although not part of the recommendation in the AB 32 GHG emissions reduction program, was used as a surrogate for the cap-and-trade program in the economic modeling.	N/A	**10,806**
Muni-1	**Municipal Energy Measures**: Implement measures that contribute toward community	N/A	**1,861**

GHG Reduction Measures		Simple Definition	GHG Reductions Achieved by 2020 (MT CO_2e)
	reductions and do not overlap with other community measures. The MCAP measures include *PM Energy-1* through *PM Energy-11*, *PM ST-1*, and *Water and Sewage-1*.[a]		
Energy-1	**CAP Consistency**: Ensure that the City's local Climate Action, Land Use, Housing, and Transportation Plans are aligned with, support, and enhance any regional plans that have been developed consistent with state guidance to achieve reductions in GHG emissions.	N/A	**NQ**
Energy-2	**Regional Cooperation**: Coordinate with special districts, nonprofits, and other public organizations to share resources, achieve economies of scale, and develop green building policies and programs that are optimized on a regional scale.	N/A	**NQ**
Energy-3	**Energy Efficiency Funding for Existing Low-Income Residents**: Partner with community services agencies to fund energy efficiency projects, including heating, ventilation, air conditioning, lighting, water heating equipment, insulation, and weatherization, for low income residents. Provide permitting-related and other incentives for energy efficient building project.	Retrofit 4,903 existing single-family and multi-family low income homes to save 2,632,164 kilowatt hours (kWh) and 23,216 therms (537 kWh and 5 therms per home). This represents a 27% penetration rate for low income homes.[b]	**711**
Energy-4	**Energy Efficiency Incentives and Programs to Promote Retrofits for Existing Residential Buildings:** Incentivize, or otherwise support, voluntary energy efficiency retrofits of existing residential buildings to achieve reductions in natural gas and electricity usage. Adopt standards and/or promote voluntary programs that retrofit indoor lights, electric clothes dryers, energy-star thermostats, window seals, duct sealing, air sealing, and attic insulation.	Retrofit 7,684 single-family homes and 5,322 multi-family homes: [b] 1) all homes replace incandescent lights with Compact Fluorescent Light bulbs (CFLs) and seal air leaks; 2) 2,305 single-family homes and 1,597 multi-family homes also install programmable thermostats and double-paned windows; 3) 1,537 single-family homes and 1,064 multi-family homes also insulate their attics, install natural gas clothes dryers, and install ENERGY STAR furnaces.	**14,408**
Energy-5	**Energy Efficiency Incentives and Programs to Promote Retrofits for Existing Non-Residential Buildings:** Voluntary programs for existing non-residential facilities improve building-wide energy efficiency by 20% by 2020.	Retrofit 27% of existing non-residential buildings. These buildings to reduce energy use by 20% per building to save 52.7 million kWh and 3.3 million therms.	**29,576**
Energy-6	**Streetlights**: Adopt outdoor lighting	Reduce streetlight and traffic	**3,199**

GHG Reduction Measures		Simple Definition	GHG Reductions Achieved by 2020 (MT CO_2e)
	standards to reduce electricity consumption. Require 40% reduction in energy use from traffic signals and streetlights by 2020.	signal electricity use by 40% to save 14.3 million kWh.	
Misc-3 (BE)	**Shade Tree Planting**: Promote the planting of shade trees and establish shade tree guidelines and specifications.	Plant 1,000 trees per year from 2012–2020 for a total of 9,000 trees by 2020.	**57**
Water-1 (BE)	**Water Conservation for Existing Buildings**: Implement a program to renovate existing buildings to require a higher level of water efficiency. Require 25% of existing buildings within the community to achieve a 25% reduction in water use. This measure will reduce both indoor and outdoor water use.	15,282 existing residential units to reduce total water use (indoor + outdoor) by 25% for a total savings of 459 MG (30,000 gallons/home). 25% of existing non-residential units to reduce total water use (indoor + outdoor) by 25% for a total savings of 698 MG.	**8,823**
Water-4 (BE)	**SB X7**: SB X7was enacted in November 2009 and requires urban water agencies throughout California to increase water conservation to achieve a statewide goal of a 20% reduction in urban per capita use by December 31, 2020.	Reduce City-wide water use by 936 MG under the direction of the City of Ontario 2010 Urban Water Management Plan.	**6,011**
Wastewater-2 (BE)	**Wastewater System Efficiency**: Encourage IEUA to upgrade and replace wastewater treatment and pumping equipment with more energy efficient equipment at the IEUA Regional Water Recycling Plant No. 1 (RP-1) wastewater treatment plant by 2020. Recommend that all pumping and treatment equipment be 25% more energy efficient. Utilize BMPs for the treatment of waste.	N/A	**2,832**
Total GHG Reductions in Building Energy in 2020			**190,931**

Note: Measures in italics result in GHG reductions in multiple sectors. For example, Water-1 reduces the amount of water consumed in the city, which reduces emissions for conveying that water (water transport, distribution, and treatment sector), the energy needed to heat that water (building energy sector), and the energy required to treat the associated wastewater (wastewater treatment sector). The abbreviations are: (BE) = Building Energy; (WT) = Wastewater Treatment; (WC)= Water Conveyance

[a] For a complete description of the MCAP measures, please see the City of Ontario Municipal Climate Action Plan.

[b] There are a number of existing energy retrofit programs which are available in the City of Ontario, including SCE programs, CPUC programs, the Home Energy Renovation Opportunity (HERO) program, and Southern California Gas Company (SCG) programs. Since October 2013, the HERO program has approved 4,693 projects and funded 3,070 projects in the San Bernardino Associated Governments (SANBAG) region, saving 23 GWh of electricity annually. CPUC programs have saved 502 GWh of electricity and 4.3 million therms of natural gas in San Bernardino County in 2010. In 2012, total electricity savings in the SCE service area for all energy efficiency programs were 1,744 GWh, 593 GWh in the residential sector alone (California Public Utilities Commission 2014). This is nearly 2% of total residential electricity consumption in the state (California Energy Commission 2014). In 2013, total energy savings in the SCE service area were 1,145 GWh of electricity, 335 GWh in the residential sector.

3.3 Renewable Energy

The City is committed to increasing use of renewable energy through solar panel installation. The increased use of renewable energy in the City is expected to reduce emissions by approximately 202,000 MT CO_2e of GHG emissions in 2020.

Table 3-3 lists all renewable energy measures and also includes brief measure descriptions and associated emissions reductions.

Table 3-3. GHG Reduction Measures in the Renewable Energy Sector

GHG Reduction Measures		Simple Definition	GHG Reductions Achieved by 2020 (MT CO_2e)
State-5	**Statewide Renewable Portfolio Standard (RPS):** Obligates IOUs, ESPs, and CCAs to procure 20% of retail sales from eligible renewable sources by 2013, and 25% by 2016. EO S-14-08 also sets forth a longer range target of procuring 33% of retail sales by 2020 (see http://www.energy.ca.gov/portfolio/).	N/A	**138,133**
Muni-2	**Municipal Renewable Energy Measures:** Implement measures that contribute toward community reductions and do not overlap with other community measures. These MCAP measures include *PM Renewable Energy-1* through *PM Renewable Energy-3*.[a]	N/A	**406**
Renewable Energy-1	**Solar Installation for Existing Non-Residential for Major Rehabilitations or Expansions:** Install solar photovoltaic panels on nonresidential buildings greater or equal to 25,000 square feet in size requiring discretionary permits for major rehabilitations or expansions (additions of 25,000 square feet of office retail/commercial or 100,000 square feet of industrial/warehouse floor area).	Install solar panels on the roofs of 4.1 million square feet of existing commercial buildings and 1.5 million square feet of existing industrial/warehouse buildings undertaking major rehabilitations or expansions (additions of 25,000 square feet of office retail/commercial or 100,000 square feet of industrial/warehouse floor area). 24 megawatts (MW) solar total.	**7,844**
Renewable Energy-2	**Solar Installation in Existing Single Family Housing:** Install solar panels on 22% of existing single-family homes by 2020.	Install solar panels on 6,261 existing single-family residences, for a total of 32 MW of solar.	**10,736**
Renewable Energy-3	**Solar Installation in Existing Nonresidential Buildings:** Install solar panels on 32% of existing nonresidential buildings by 2020.	Install solar panels on the roofs of 12.8 million square feet of existing commercial and 8.6 million square feet of existing industrial/warehouse buildings, for a total of 137 MW of solar.	**45,251**
Total GHG Reductions in Building Energy in 2020			**202,370**

[a] For a complete description of the MCAP measures, please see the City of Ontario Municipal Climate Action Plan.

3.4 Wastewater Treatment

Energy use associated with the treatment of wastewater (WT) is a significant contributor of GHG emissions. Implementation of water conservation and wastewater recycling measures will result in a reduction of approximately 650 MT CO_2e in 2020 (Table 3-4).

Table 3-4. GHG Reduction Measures in the Wastewater Treatment Sector

GHG Reduction Measures		**GHG Reductions Achieved by 2020 (MT CO_2e)**
Wastewater-1	**Recycled Water:** Require 50% of all water used for non-potable sources to be recycled water by 2020. Require all new parks and schools to use 100% recycled water for non-potable outdoor uses, as feasible. Develop public educational materials that support and encourage the use of recycled water. Adopt a City Municipal facility goal of 50% use of recycled water for non-potable sources.	**NQ**
Wastewater-2	**Waste-to-energy/Methane Recovery**: Encourage IEUA to implement waste-to-energy projects at the IEUA RP-1 wastewater treatment plant by 2020 and to utilize collected gas to fuel onsite stationary sources.	**NQ**
Water-1 (WT)	**Water Conservation for Existing Buildings:** Implement a program to renovate existing buildings to require a higher level of water efficiency. Require 25% of existing buildings within the community to achieve a 25% reduction in water use. This measure will reduce both indoor and outdoor water use.	**494**
Water-4 (WT)	**SB X7:** SB X7was enacted in November 2009 and requires urban water agencies throughout California to increase water conservation to achieve a statewide goal of a 20% reduction in urban per capita use by December 31, 2020.	**155**
Total GHG Reductions in Wastewater Treatment in 2020		**649**

Note: Measures in italics result in GHG reductions in multiple sectors. For example, Water-1 reduces the amount of water consumed in the city, which reduces emissions for conveying that water (water transport, distribution, and treatment sector), the energy needed to heat that water (building energy sector), and the energy required to treat the associated wastewater (wastewater treatment sector). The abbreviations are: (BE)= Building Energy; (WT) = Wastewater Treatment; (WC)= Water Conveyance

3.5 Solid Waste Management

The City generates waste through daily activities and building operations. Some portion of this waste ultimately is placed in a landfill where it decays and releases methane. In 2008, GHG emissions related to waste generation were estimated at approximately 60,000 MT CO_2e. The potential to reduce GHG emissions in this sector is high, and will in large part be achieved through a methane capture system at nearby landfills. This commitment, along with several other measures, will result in a reduction of approximately 26,000 MT CO_2e in 2020 (Table 3-5).

e 3-5. GHG Reduction Measures in the Solid Waste Management Sector

GHG Reduction Measures		GHG Reductions Achieved by 2020 (MT CO_2e)
County-1	**San Bernardino County Landfill Methane Capture Systems:** The County of San Bernardino GHG Emissions Reduction Plan[7] specifies the following landfill methane controls at County Owned and Operated landfills that accept waste from the City: 95% capture at Mid-Valley landfill, 85% capture at Milliken and Colton landfills, and 75% capture at Barstow and Landers landfills.	**24,170**
Waste-1	**Waste Diversion:** Exceed the waste diversion goals recommended by AB 939 and CALGreen by adopting a waste diversion goal of at least 75% of waste.	**2,095**
Waste-2	**Construction and Demolition Waste Recovery Ordinance:** Implement an ordinance requiring building projects to recycle or reuse at least 50% of unused or leftover building materials.	**NQ**
Total GHG Reductions in Solid Waste Management in 2020		**26,265**

3.6 On-Road Transportation

Land use decisions, transportation system management, and vehicle technologies all play important roles in GHG emissions associated with the transportation sector. Increasing fuel efficiency while also reducing the number of automobile trips necessary for local residents can provide significant reductions in GHG emissions, as can more efficient management of the City's transportation infrastructure and practices. Measures designed to address the transportation sector will result in a reduction in emissions of approximately 365,000 in MT CO_2e in 2020 (Table 3-6).

Table 3-6. GHG Reduction Measures in the On-Road Transportation Sector

GHG Reduction Measures		GHG Reductions Achieved by 2020 (MT CO_2e)
State-6	**AB 1493 Pavley I and II:** Pavley I will reduce GHG emissions from automobiles and light duty trucks by 30% from 2002 levels by the year 2016. The regulations affect 2009 models and newer. Pavley II or Advanced Clean Cars will reduce GHG emissions from 2016 through to 2025.	**272,465**

[7] See: http://www.sbcounty.gov/Uploads/lus/Countywide/GreenhouseGas/Full-Vol-1.pdf

	Low Carbon Fuel Standard (LCFS): This measure reduces GHG emissions by requiring a low carbon intensity of transportation fuels sold in California by at least 10% by the year 2020. The low carbon fuel standard regulation is under development, and the reduction pathways are being analyzed.	
State-7	**AB 32 Transportation Reduction Strategies**: The AB 32 Scoping Plan includes vehicle efficiency measures (in addition to Pavley and LCFS) that focus on maintenance practices. The Tire Pressure Program will increase vehicle efficiency by assuring properly inflated automobile tires to reduce rolling resistance. The Low Friction Oils Program will increase vehicle efficiency by mandating the use of engine oils that meet certain low friction specifications. The Heavy-Duty Vehicle (related to weight class of vehicle) GHG Emission Reduction Program will increase heavy-duty vehicle (long-haul trucks) efficiency by requiring installation of best available technology and/or ARB-approved technology to reduce aerodynamic drag and rolling resistance.	**25,871**
State-8	**Sustainable Communities Strategy/Regional Blueprint Planning**: Participate with Southern California Association of Governments (SCAG) in developing a Sustainable Communities Strategy to meet the VMT reduction target developed by the ARB, as required by SB 375.	**60,002**
Muni-3	**Municipal Transportation Measures**: Implement measures that contribute toward community reductions and do not overlap with other community measures. These MCAP measures include *PM Vehicle Fleet-1* through *PM Vehicle Fleet-3* and *PM Employee Commute-1*. [a]	**884**
Trans-1	**Expand Public Transportation Infrastructure**: Work with appropriate agencies to create an interconnected transportation system that allows a shift in travel from private passenger vehicles to alternative modes, including public transit, ride sharing, car-sharing, bicycling, and walking.	**NQ**[a]
Trans-2	**Transit Frequency and Speed**: To the extent feasible, support shorter transit passenger travel time through reduced headways and increased speed. Support regional transit operator to reduce average fleet travel time by 5 minutes.	**NQ**[a]
Trans-3	**"Smart Bus" Technology**: Collaborate with LA Metro, Metrolink, and Omnitrans to implement "Smart Bus" technology, Global Positioning Systems (GPS), and electronic displays at all transit stops by 2020 to provide customers with "real-time" arrival and departure time information. Recent technological innovations have coupled GPS with electronic displays at transit stops to provide "real time" data to passengers. These tracking systems not only allow riders to know exactly when the next vehicle will be arriving, but also enables the system operator to track, schedule, and repair vehicles in service. Providing better information to passengers about scheduled arrivals can result in dramatic increases in passengers' perceptions of the service, even if the actual service provided is the same in terms of frequency and on-time arrivals.	**436**
Trans-4	**Expand Public Transportation Participation**: Collaborate with regional transit operator on programs to increase use of the City's public transportation system.	**NQ**[b]
Trans-5	**Low- and Zero-Emission Vehicles**: Support and promote the use of low-and zero-emission vehicles in the City.	**NQ**[b]
Trans-6	**Vehicle Idling**: Limit idling of Heavy Duty Trucks (greater than 26,000 gross vehicle weight) to 3 minutes (California law currently limits idling time to 5 minutes). Support the South Coast Air Quality Management District (SCAMQD) and ARB anti-idling requirements and provide signage in key areas where idling that is not consistent with SCAMQD or ARB requirements might occur.	**5,555**
Trans-7	**Parking Policy**: Adopt a comprehensive parking policy that encourages carpooling and the use of alternative transportation, including providing parking spaces for car-share vehicles at convenient locations accessible by public transportation. Consider requirements for the following to reduce VMT within the City by 2%. Designate 5% of downtown parking spaces for ride-sharing vehicles.	**NQ**[b]
Trans-8	**Event Parking:** Consider establishing policies and programs to reduce onsite	**NQ**[b]

	parking demand and promote ride-sharing during events at the Ontario Convention Center and other event venues. Consider a goal to reduce VMT at major events by 2%.	
Trans-9	**Roadway Management**: Implement traffic and roadway management strategies to improve mobility and efficiency, and reduce associated emissions. Consider a goal to reduce community vehicle fuel consumption by 2%.	**NQ[b]**
Trans-10	**Signal Synchronization**: Evaluate potential efficiency gains from further signal synchronization. Synchronize traffic signals throughout the City and with adjoining cities while allowing free flow of mass transit systems. Require continuous maintenance of the synchronization system. Consider a goal to reduce City-wide vehicle fuel consumption by 2%.	**NQ[b]**
Trans-11	**School Transit Plan**: Encourage local school districts to develop school transit plans to substantially reduce automobile trips to, and congestion surrounding, schools. (According to some estimates, parents driving their children to school account for 20–25% of the morning commute.) Plans may address, e.g., necessary infrastructure improvements and potential funding sources; replacing older diesel buses with low or zero-emission vehicles; mitigation fees to expand school bus service; Safe Routes to School programs, and; other formal efforts to increase walking and biking by students. Although this measure is not within the City's authority, Ontario can work with local school districts to develop these plans.	**NQ[b]**
Trans-12	**Ridesharing Programs**: The City will coordinate with local agencies to promote ride sharing programs in Ontario. Although the City does not have the legal authority to impose trip demand management programs on project applicants or employers, Ontario can work with local agencies to develop these programs. Consider a goal to reduce City-wide VMT by 2% through mode-shifts from single-occupancy vehicles to carpools. Facilitate employment opportunities that minimize the need for private vehicle trips. The City could also work with the County to participate in their rideshare measure, which includes exploring financial programs for the purchase or lease of rideshare vehicles, encouraging community car sharing through city employers, and encouraging creation of community rideshare incentives (gas cards, commuter-tax benefits, guaranteed ride home programs, etc.).	**NQ[b]**
Trans-13	**Bicycle and Pedestrian Infrastructure Plan**: Adopt a comprehensive bicycle and pedestrian infrastructure plan to expand the City's bicycle and pedestrian network. This plan would encourage residents and employees to use bicycles and walking as a method of transportation. Consider a goal to reduce City-wide VMT by 2% through mode-shifts from single-occupancy vehicles to bicycles.	**NQ[b]**
Trans-14	**Development Standards for Bicycles**: Establish standards for new development and redevelopment projects to support bicycle use. Consider a goal to reduce VMT resulting from new development by 4% through mode-shifts from single-occupancy vehicles to bicycles.	**NQ[b]**
Trans-15	**Smart Growth and Infill**: Encourage high-density, mixed-use, infill development and creative reuse of brownfield, under-utilized and/or defunct properties within the urban core. Consider a goal to reduce VMT resulting from new development by 5%.	**NQ[b]**
Trans-16	**Transit-Oriented Development**: Identify transit centers appropriate for mixed-use development, and promote transit-oriented, mixed-use development within these targeted areas. Consider a goal to reduce VMT resulting from new development by 2%.	**NQ[b]**
Total GHG Reductions in On-Road Transportation in 2020		**365,212**

[a] For a complete description of the MCAP measures, please see the City of Ontario Municipal Climate Action Plan.

[b] These measures are likely already covered by *State-8 Sustainable Communities Strategy/Regional Blueprint Planning*. For this reason they were not quantified to avoid double-counting GHG reductions.

3.7

Off-Road Equipment

Construction and landscaping equipment produce GHG emissions, both during their use and when idling. Reducing the carbon content of the fuel, replacing conventional gasoline or diesel-fueled equipment with electric equipment, and reducing time spent idling, along with other strategies, can lead to emissions reductions. Reductions associated with the use of off-road vehicles will result in the reduction of approximately 28,000 MT CO_2e in 2020 (Table 3-7).

Table 3-7. GHG Reduction Measures in the Off-Road Equipment Sector

GHG Reduction Measures		**Simple Definition**	**GHG Reductions Achieved by 2020 (MT CO_2e)**
State-9	**Low Carbon Fuel Standard (LCFS):** This measure reduces GHG emissions by requiring a low carbon intensity of transportation fuels sold in California by at least 10% by the year 2020. The low carbon fuel standard regulation is under development, and the reduction pathways are being analyzed.	N/A	**20,465**
Muni-4	**Municipal Off Road Measures:** Implement measures that contribute toward community reductions and do not overlap with other community measures. These MCAP measures include *PM Vehicle Fleet-1* through *PM Vehicle Fleet-5*.[a]	N/A	**13**
Off Road-1	**Idling Ordinance:** Limit idling time for heavy-duty off-road construction equipment beyond ARB or local air district regulations and if not already required as part of CEQA mitigation. Recommended idling limit is 3 minutes.	Prohibit idling of heavy duty off-road construction vehicles to no more than 3 minutes.	**3,068**
Off Road-2	**Landscaping Equipment:** This measure supports reductions in gasoline-powered landscaping equipment use and/or reduces the number and operating time of such equipment community-wide. In addition, 75% of landscaping equipment in the City to be electric by 2020 and 100% by 2030.	Support landscape equipment replacement programs to replace 75% of all landscaping equipment with electric equipment (945 total pieces of landscaping equipment replaced). This measure saves approximately 532,000 gallons of gasoline.	**4,621**
Total GHG Reductions in Off-Road Equipment in 2020			**28,166**

[a] For a complete description of the MCAP measures, please see the City of Ontario Municipal Climate Action Plan.

3.8 Agriculture

Livestock emissions occur both due to enteric fermentation (livestock digestion) and manure management. This is a voluntary measure that encourages dairies and other livestock facilities in Ontario to reduce CH_4 and N_2O emissions and to promote methane reuse for energy, where feasible.

As a voluntary measure, the City would support dairies (and other animal operations) to consider existing and new technologies to control emissions from enteric fermentation and manure management and assess the feasibility of these technologies. Dairies would be encouraged to explore new technologies and implement feasible manure digestion projects based on their own local conditions and operations. The City would assist in seeking local, regional, state, and/or federal grants to help offset capital costs, linking dairies to new research opportunities, and working with local partners to help assess the feasibility of reduction projects.

The targets for reducing emissions under this measure are aspirational and voluntary, similar to the voluntary State measure for reducing agricultural emissions in California outlined in the Scoping Plan (measure A-1, *Methane Capture at Large Dairies*). Adoption of Agriculture-1 in the CCAP does not bind the City into making mandatory requirements for dairy operators. Just as in the scoping plan, given challenges of methane collection and digestion across the state, the GHG reductions presented below may or may not be feasible to achieve by 2020. Similar to the effort at the state level, the purpose of including this measure in the CCAP is to explore what can feasibly be done to reduce livestock emissions. If the reductions for this measure cannot be achieved due to technical, financial, economic or other reasons and the City is still short of its CAP target, the City would have to look at other means to meet the CAP target as part of the CAP update process (see Chapter 4 for more details on CAP updates).

The BAU forecast assumed a 9% decrease in the number of cattle from 2008 to 2020 (see Appendix A for a complete description of the Agriculture sector, including growth assumptions). This projection was based on the best available data at the time that the inventory and forecast was completed. It is possible that the actual number of cows will decrease by more than 9% by 2020 depending on market conditions and unanticipated development within the city. There may also be new dairies or animal operations coming into the city between now and 2020 that were not previously accounted for. As part of this measure, and as part of the CAP update process (which the city will conduct every 3 years), the City will reassess dairy and livestock emissions moving forward and work with the dairies that are present when this measure is implemented to consider existing and new technologies to control emissions from dairy cows and livestock and assess the feasibility of these technologies.

Methane capture from livestock could result in reductions in GHG emissions associated with agriculture in 2020 of approximately 80,000 MT CO_2e (Table 3-8). A discussion regarding technologies including manure management and enteric fermentation is provided below.

Table 3-8. GHG Reduction Measures in the Agriculture Sector

GHG Reduction Measures		GHG Reductions Achieved by 2020 (MT CO_2e)
Agriculture-1	**Methane Emissions Reduction for Animal Operations:** Support the dairy industry (and other animal operations) to consider existing and new technologies and methods to control emissions from enteric fermentation and manure management and assess the feasibility and cost effectiveness of these technologies. Animal operations should strive to capture as much methane from manure management as feasible. Captured biogas can also be used in place of natural gas for heating, converted to vehicle fuel, used to replace gasoline and diesel, or combusted in a generator to produce renewable electricity.	**80,352**
Total GHG Reductions in Agriculture in 2020		**80,352**

Manure Management

The most common technology for reducing GHG emissions from manure management is manure collection and processing in an anaerobic digester. Captured biogas from the digester can be used in place of natural gas for heating, converted to vehicle fuel, used to replace gasoline and diesel, or combusted in a generator to produce renewable electricity which can then be used onsite or sold to the local utility.

Successful manure digestion projects must consider how site-specific conditions influence the characteristics of the manure, including the solids content and biogas potential. A key factor in system design is the moisture content of the manure, which is influenced by the housing system, environmental conditions, and type of bedding. Manure collection and conveyance is also important, since the frequency of collection can affect the biogas content of manure.

The dairies in Ontario are primarily dry-lot dairies, where traditional anaerobic digestion of manure (which rely on daily flushing of manure from free-stall enclosures to centralized lagoons) can be challenging to implement. In Ontario, the high presence of solids in dry lot manure and the infrequency of manure collection are two barriers to successful manure digestion projects. Other barriers to implementation include air quality permitting of the digesters and combustion engines and the availability of water to improve the quality of the manure for digestion.

In 2006, the IEUA developed and implemented a manure anaerobic digestion demonstration project for the collection and treatment of dairy manure from 14 dairy farms in Chino Basin. A Modified Mix Plug Flow system was used for digestion and to generate electricity from the captured methane. The system reduced manure management emissions of CH4 by 21% and N2O by 95%, and overall GHG emissions by 58% (Bartram et. al. 2004). The system also generated 120,970 kWh of electricity per month, enough to cover 75% of the digester's power requirement and 50% of the electricity demands of a desalter that purifies groundwater for drinking (Dairy Herd Management 2002). With funding from the Dairy Power Production Program and additional grant funding, the simple payback period was estimated to be 6.6 years (Western United Resource Development, Inc. 2009). Although the system eventually shut down due to technological problems, this program demonstrates the feasibility of implementing digestion at dry lot dairies in the region. Long-term cost effectiveness in absence of grant funding has yet to be demonstrated.

Anaerobic digestion of manure also has other co-benefits besides reducing GHG emissions, such as improving water quality and reducing odor which can be quality of life improvements for Ontario.

Enteric Fermentation

Dairies and livestock operations are also encouraged to explore ways to reduce GHG emissions from enteric fermentation, which represents a large source of emissions in Ontario. Potential methods for reducing these emissions include manipulating animal diet to inhibit a rumen environment favorable to methanogens. A range of potential emission mitigation options include dietary oils (such as whole cottonseed oil, sunflower oil, coconut oil, and palm oil), the use of corn or legume silage in place of grass silage, use of concentrate feeds, nitrates, ionophores, tannins, and improving forage quality and the overall efficiency of dietary nutrient use (Historv et. al 2013: 5045; Center for Climate and Energy Solutions 2009). As one example, some studies have indicated that the use of dietary oils can reduce CH4 emissions by up to 6 to 22% (Center for Climate and Energy Solutions 2009). The long-term effects of many of these practices have not been well established and further research is needed, but a number of options exist for reducing GHG emissions from enteric fermentation.

Under this measure, the City would work with dairy and livestock operators to test potential feasible and cost-effective approaches suitable for application in Ontario. The City would help to identify grant sources of funding to help in piloting and demonstrating promising approaches with voluntary dairy/livestock operator participation.

3.9 Water Transport, Distribution, and Treatment

The transport and use of water by residents and businesses in the City utilizes significant amounts of energy, which in turn leads to GHG emissions. The City can take measures to both reduce the use of water and increase the efficiency of its water-related infrastructure. Measures to reduce water consumption and improve water transport efficiency would reduce emissions of GHGs by approximately 6,500 MT CO_2e in 2020 (Table 3-9).

Table 3-9. GHG Reduction Measures in the Water Transport, Distribution, and Treatment Sector

GHG Reduction Measures		**Simple Definition**	**GHG Reductions Achieved by 2020 (MT CO_2e)**
Muni-5	**Municipal Water Measures:** Implement measures that contribute toward community reductions and do not overlap with other community measures. This includes *PM Water-4*.	N/A	**272**
Water-1	**Water Conservation for Existing Buildings:** Implement a program to renovate existing buildings to a higher level of water efficiency. Require 25% of existing buildings within the community to achieve a 25% reduction in water use. This measure will reduce both indoor and outdoor water use.	15,282 existing residential units to reduce total water use (indoor + outdoor) by 25% for a total savings of 459 MG (30,000 gallons/home). 25% of existing non-residential units to reduce total water use (indoor + outdoor) by 25% for a total savings of 698 MG.	**2,038**
Water-2	**Outdoor Irrigation Monitoring and Management System:** Install a water monitoring and management system (Smart	Support programs to reduce residential outdoor water use by 867 MG and non-residential	**2,804**

GHG Reduction Measures		Simple Definition	GHG Reductions Achieved by 2020 (MT CO_2e)
	controllers, etc.) for all of the City's irrigation needs to reduce the City's outdoor water consumption by 10% by 2020.	outdoor water use by 1,455 MG.	
Water-3	**Water System Efficiency:** Maximize efficiency at drinking water treatment, pumping, and distribution facilities, including development of off-peak demand schedules for heavy commercial and industrial users. Design and implement peak load management and demand response programs for water supply, treatment, and distribution, including interface with existing automated systems for building energy management and SCADA systems.	N/A	**NQ**
Water-4	**SB X7:** SB X7 was enacted in November 2009 and requires urban water agencies throughout California to increase water conservation to achieve a statewide goal of a 20% reduction in urban per capita use by December 31, 2020.	Reduce City-wide water use by 936 MG under the direction of the City of Ontario 2010 Urban Water Management Plan.	**1,397**
Total GHG Reductions in Water Transport, Distribution, and Treatment in 2020			**6,511**

3.10 SF_6 from Electricity Consumption

By reducing overall demand for electricity in the City, SF_6 emission reductions from electricity transmission are also reduced. However, because these emissions are not associated with one particular measure, no measure number was assigned. SF_6 reductions would result in a decrease in GHG emissions of approximately 1,700 MT CO_2e.

Table 3-10. GHG Reduction Measures in SF_6 from Electricity Consumption

GHG Reduction Measures		GHG Reductions Achieved by 2020 (MT CO_2e)
2008 SF_6 from Electricity Consumption Emissions		5,310
N/A	These reductions represent SF_6 emission reductions from electricity transmission as a result of all measures that reduce the grid electricity demand in Ontario in 2020. These measures include those in the building energy, renewable energy, wastewater, and water categories. These reductions are not associated with one particular measure, and therefore no measure number is assigned.	**1,678**
Total GHG Reductions in SF_6 from Electricity Consumption in 2020		**1,678**

3.11 Miscellaneous

There are a variety of additional measures that can help reduce emissions above and beyond the amount quantified in this CAP. However, due to insufficient data, these reductions were not quantified. These measures could lead to GHG reductions in 2020, but the amount of reductions is unknown. Potentially beneficial but unquantifiable miscellaneous measures are described in Table 3-11.

Table 3-11. Miscellaneous GHG Reduction Measures

GHG Reduction Measures		**GHG Reductions Achieved by 2020 (MT CO_2e)**
Misc-1	**Climate Change Awareness:** Utilize a variety of media outlets to promote climate change awareness and GHG reduction.	**NQ**
Misc-2	**Carbon Sequestration:** Establish a City-wide carbon sequestration project and sequestration goal of 1,000 MT CO_2 per year.	**NQ**
Misc-3	**Shade Tree Planting:** Promote the planting of shade trees and establish shade tree guidelines and specifications. Plant 1,000 trees per year from 2012–2020 for a total of 9,000 trees by 2020.	**NQ**
Misc-4	**Refrigeration and Air Conditioning Disposal:** Institute an ordinance requiring residences, businesses, and City facilities to practice RAD for all decommissioned units, including refrigerators/freezers, window air-conditioning units, and dehumidifiers.	**NQ**
Misc-5	**Pervious Paving:** Promote the use of pervious concrete for pavement projects. Explore grant funding opportunities for pervious concrete.	**NQ**
Misc-6	**Infiltration**: Promote onsite infiltration, as required by the NPDES Permit. Promote the use of pervious concrete and asphalt for pavement and parking lot projects.	**NQ**
Total Miscellaneous GHG Reductions in 2020		**NQ**

Community Climate Action Plan

Chapter 4: Implementation of the CAP

Chapter 4
Implementation of the CAP

The success of the Community CAP will depend on cooperation, commitment, and participation by all City departments and employees. This section outlines key steps the City will follow in order to ensure that the measures presented in the Community CAP that are sufficient to meet the reduction target by 2020 are implemented, and that the City achieves GHG reductions.

Implementation of the Community CAP involves the following steps.

- Administration and Staffing.
- Financing and Budgeting.
- Scheduling.
- Coordination.
- Outreach and Education.
- Monitoring, Reporting, and Adaptive Management.
- Planning for 2020 and beyond.

The following sections describe the City's plan to implement the Community CAP programs. To meet the City's reduction target by 2020, Community CAP measures are to be implemented in a timely manner. Figure 4-1 demonstrates the major stages of Community CAP implementation. Specific actions associated with measure implementation are described in Section 4.3, *Scheduling*

4.1 Administration and Staffing

In January 2011, the Climate Action Plan Technical Advisory Committee (CAPTAC) was formed. The 16-member CAPTAC is composed of department directors and managers designated by the heads of each City agency and responsible for development and implementation of the Community CAP. The CAPTAC is charged with assessing and refining the measures identified in the Community CAP.

In addition to formation of the CAPTAC, the City identified the need for a sustainability position to coordinate City efforts and the development of the Community CAP. The City appointed a Sustainability Program Manager in July 2010 to coordinate and implement the Community CAP efforts and sustainability programs. This individual serves as the CAPTAC team leader and is responsible for the coordination of the CAPTAC, community outreach support, in addition to implementing the Community CAP. Additional responsibilities of the Sustainability Program Manager include the following.

- Establishing guidelines for reporting and documenting emission reduction progress.
- Developing the protocol for monitoring the effectiveness of the reduction measures.
- Investigating methods for utilizing existing resources and harnessing employee support to better streamline implementation of the Community CAP.
- Coordinating and assisting in securing long-term financing for reduction programs.

- Conducting periodic outreach efforts to inform and involve the employees and community of the City's community and municipal GHG reduction measures.
- Serving as the external communication hub to local and regional organizations related to climate change including the San Bernardino Associated Governments (SANBAG) and SCAG.

City staffing for the CAPTAC includes the Sustainability Program Manager and the following primary agency/departments.

- **Development Agency:** Planning, Building and Landscape Departments will provide expertise in evaluating and managing community impacts of the CAP. The Engineering Department, is responsible for implementation of streetlight and traffic signal measures.
- **Ontario Municipal Utilities Company:** Responsible for facilitating implementation of water efficiency and solid waste measures.
- **Community Services:** The Maintenance Department, located within Community Services, is responsible for implementation of energy/water efficiency measures for outdoor public facilities.
- **City Administration:** The Human Resources Department, located within City Administration, is responsible for providing expertise in ride-share activities and sub-regional coordination efforts.
- **Housing and Municipal Services:** Responsible for supporting implementation of energy/water efficiency measures for building facilities, vehicle fleet, and low income housing.
- **Administrative Services:** Provides expertise in evaluating and managing the economic impacts of selected measure implementation.

CAPTAC members may alternate or be added as needed to ensure coordinated and effective leadership.

4.2 Financing and Budgeting

Implementation of the Community CAP will require interagency collaboration from strategic public funding by the City, regional government agencies, to the state for capital projects coupled with local businesses, developers/builders, residential homeowner cooperation. One of the first priorities for implementing the Community CAP will be to assess the ongoing or planned activities currently anticipated within the City that make a direct or indirect contribution to GHG reduction. Funding sources have not been identified for all actions; however, numerous federal state, and regional sources may be available.

The cost of implementing the GHG reduction measures identified in the Community CAP will take into account the costs and anticipated staff time as well as the benefit and cost savings of the proposed implementation measure. The CAPTAC will pursue outside funding sources and/or programs that support the CAP measures to the extent feasible. A variety of federal, regional, state, and local funds should be considered for Community CAP financing. Several potential financing sources have been identified.

- Federal Tax Credits for Energy Efficiency
- Power purchase agreements
- Energy Efficient Mortgage
- California Department of Resources Recycling and Recovery
- California Air Resources Board
- Department of Water Resources recycled water, capital improvements, and onsite retrofits
- Air Quality Management District fleet grants related to natural gas
- Chino Basin Desalter Authority Joint Powers Authority
- Southern California Edison Energy-Efficient/Renewable Energy Incentives
- California Solar Initiative
- ARB Renewable Energy Credits
- Community Development Block Grant
- Resource Conservation Funds 2009
- California Integrated Waste Management Board grants and funds
- Clean Water State Revolving Funds
- Inland Empire Utility Agency
- Community Facilities District
- SANBAG HERO Program October 2013

Additional potential sources will be identified as new opportunities become available.

4.3 Scheduling

To ensure all reduction measures are implemented as seamlessly as possible, an implementation schedule has been developed. Figure 4-1 outlines the key priorities and anticipated timelines for the implementation phase, while Table 4-1 provides the phase in which each implementation measure will be initiated, along with potential funding sources and the department charged with implementing each measure. A simple definition of each measure is also provided.

Figure 4-1. Implementation Timeline

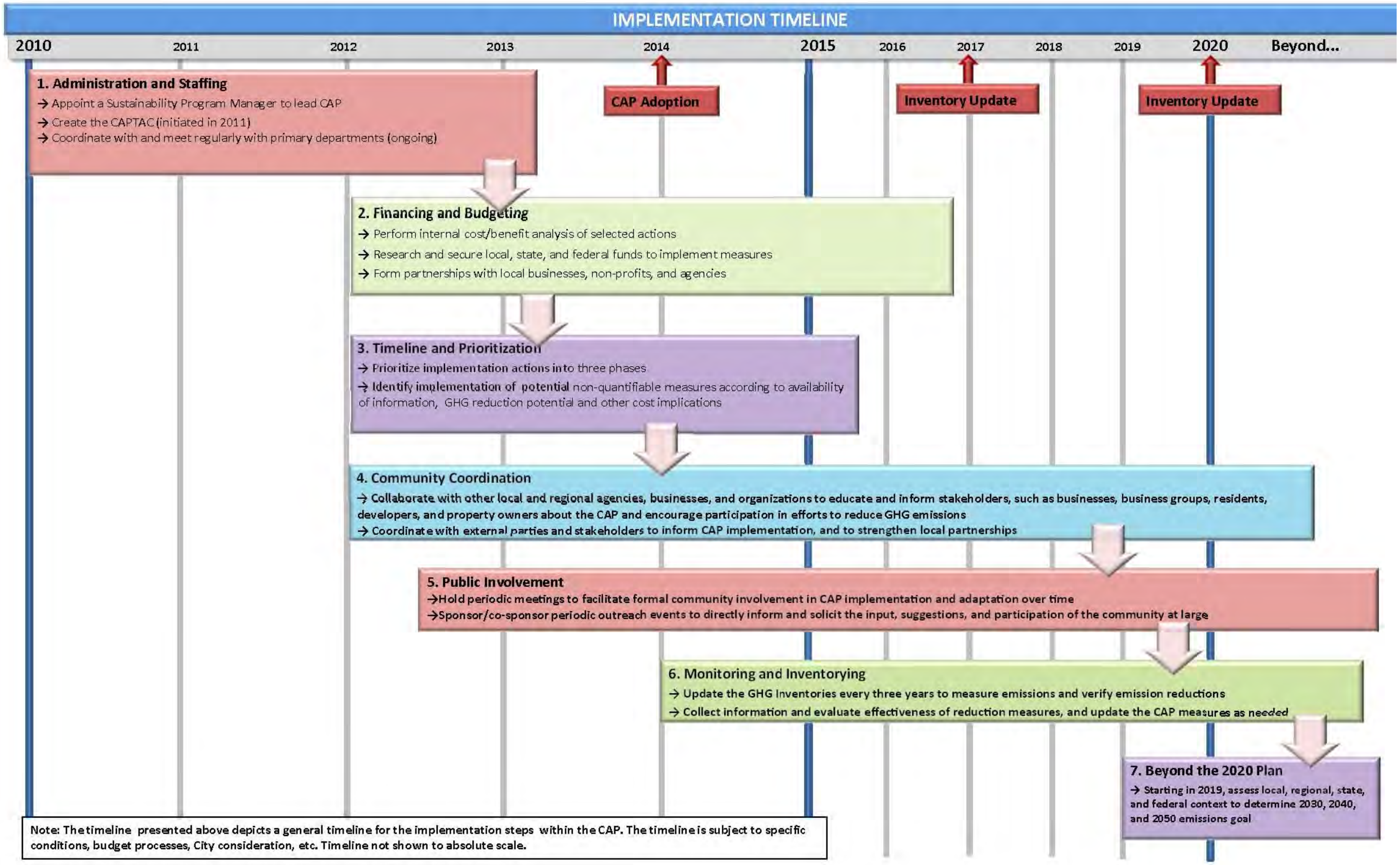


Table 4-1. Phasing, Lead Department, and Potential Funding for Implementation Measures

Measure Number and Description[a]	Phase of Initial Implementation	Potential Funding Source[b]	Lead Department[c]
Performance Standard For New Development			
PS-1: New projects emitting more than 3,000 MT CO_2e per year need to reduce emissions by 25%. Refer to Appendix C for more information.	2014–2020	Grants/ tax credits/ impact fees/ rebates/ private funding	DEV
BMP-1: New projects emitting less than 3,000 MT CO_2e per year to exceed Title 24 Energy Efficiency Standards by at least 5%, or equivalent level of GHG emission reduction	2014–2020	Grants/ tax credits/ private funding	DEV
Building Energy			
Energy-1: CAP Consistency: Ensure that the City's local Climate Action, Land Use, Housing, and Transportation Plans are aligned with, support, and enhance any regional plans that have been developed consistent with state guidance to achieve reductions in GHG emissions.	2014–2020	N/A	DEV, HMS
Energy-2: Regional Cooperation: Coordinate with special districts, nonprofits, and other public organizations to share resources, achieve economies of scale, and develop green building policies and programs that are optimized on a regional scale.	2014–2020	SANBAG	DEV, HMS
Energy-3: Energy Efficient Funding for Existing Low Income Residents: Partner with community services agencies to fund energy efficiency projects. Retrofit 4,903 existing single-family and multi-family low income homes to save 2,632,164 kWh and 23,216 therms (537 kWh and 5 therms per home). This represents a 27% penetration rate for low income homes.	2014–2020	Grants/ tax credits/ private equity	DEV, HMS

Measure Number and Description[a]	Phase of Initial Implementation	Potential Funding Source[b]	Lead Department[c]
Energy-4: Energy Efficient to Promote Retrofits for Existing Residential Buildings: Incentivize, or otherwise support, voluntary energy efficiency retrofits of existing residential buildings to achieve reductions in natural gas and electricity usage. Retrofit 7,684 single-family homes and 5,322 multi-family homes.	2014–2020	Grants/ tax credits/ private equity	DEV HMS
Energy-5: Energy Efficient to Promote Retrofits for Existing Non-Residential Buildings: Voluntary programs for existing non-residential facilities improve building-wide energy efficiency by 20% by 2020. Retrofit 27% of existing non-residential buildings to save 52.7 million kWh and 3.3 million therms.	2014–2020	Grants/ tax credits/ private equity	DEV
Energy-6: Streetlights: Adopt outdoor lighting standards to reduce electricity consumption. Require 40% reduction in energy use from traffic signals and streetlights by 2020. Reduce streetlight and traffic signal electricity use by 40% to save 14.3 million kWh.	2014–2020	Grants/CIP	DEV, HMS
Renewable Energy			
Renewable Energy-1: Solar Installation for Existing Non-Residential for Major Rehabilitations or Expansions: Install solar photovoltaic panels on nonresidential buildings greater or equal to 25,000 square feet in size requiring discretionary permits for major rehabilitations or expansions (additions of 25,000 square feet of office retail/commercial or 100,000 square feet of industrial/warehouse floor area). Install solar panels on the roofs of 4.1 million square feet of existing commercial buildings and 1.5 million square feet of existing industrial/warehouse buildings	2014–2020	Grants/ tax credits/ private funding	DEV
Renewable Energy-2: Solar Installation in Existing Single Family Housing: Install solar panels on 22% of existing single-family homes by 2020. Install solar panels on 6,261 existing single-family residences, for a total of 32 MW of solar.	2014–2020	Grants/ tax credits/ private funding	DEV

Measure Number and Description[a]	Phase of Initial Implementation	Potential Funding Source[b]	Lead Department[c]
Renewable Energy-3: Solar Installation in Existing Nonresidential Buildings: Install solar panels on 32% of existing nonresidential buildings by 2020. Install solar panels on the roofs of 12.8 million square feet of existing commercial and 8.6 million square feet of existing industrial/warehouse buildings, for a total of 137 MW of solar.	2014–2020	Grants/ tax credits/ private funding	DEV
Wastewater Treatment			
Wastewater-1: Recycled Water: Require 50% of all water used for non-potable sources to be recycled water by 2020. Require all new parks and schools to use 100% recycled water for non-potable outdoor uses, as feasible. Develop public educational materials that support and encourage the use of recycled water. Adopt a City Municipal facility goal of 50% use of recycled water for non-potable sources.	2015–2020	Public utility/ rate increase	OMUC
Wastewater-2: Waste-to-energy/Methane Recovery: Encourage IEUA to implement waste-to-energy projects at the IEUA RP-1 wastewater treatment plant by 2020, and to utilize collected gas to fuel onsite stationary sources.	2018–2020	Public utility/ rate increase	OMUC
Solid Waste Management			
Waste-1: Waste Diversion: Divert 75% of City-generated waste from landfills.	2014–2020	Grants/fees	OMUC
Waste-2: Construction and Demolition Waste Recovery Ordinance: Implement an ordinance requiring building projects to recycle or reuse at least 50% of unused or leftover building materials.	2015–2020	Grants/fees	OMUC
On-Road Transportation			
Trans-1: Expand Public Transportation Infrastructure: Work with appropriate agencies to create an interconnected transportation system that allows a shift in travel from private passenger vehicles to alternative modes, including public transit, ride sharing, car-sharing, bicycling and walking.	2014–2020	Grants/CIP/ fare increase/ private partnerships	DEV

Measure Number and Description[a]	Phase of Initial Implementation	Potential Funding Source[b]	Lead Department[c]
Trans-2: Transit Frequency and Speed: To the extent feasible, support shorter transit passenger travel time through reduced headways and increased speed. Support regional transit operator to reduce average fleet travel time by 5 minutes.	2015–2020	Grants/CIP/ fare increase/ private partnerships	DEV
Trans-3: "Smart Bus" Technology: Collaborate with LA Metro, Metrolink, and Omnitrans to implement "Smart Bus" technology.	2014–2020	Grants/CIP/fare increase/private partnerships	DEV
Trans-4: Expand Public Transportation Participation: Collaborate with regional transit operator on programs to increase use of the City's public transportation system.	2014–2020	Grants/CIP/fare increase/private partnerships	DEV
Trans-5: Low- and Zero-Emission Vehicles: Support and promote the use of low-and zero-emission vehicles in the City.	2014–2020	Grants/CIP/fare increase/private partnerships	DEV
Trans-6: Vehicle Idling: Prohibit idling of Heavy Duty Trucks (greater than 26,000 gross vehicle weight) for longer than 3 minutes.	2016–2020	Grants/CIP/fare increase/private partnerships	DEV
Trans-7: Parking Policy: Adopt a comprehensive parking policy that encourages carpooling and the use of alternative transportation, including providing parking spaces for car-share vehicles at convenient locations accessible by public transportation. Consider requirements for the following to reduce VMT within the City by 2%. Designate 5% of downtown parking spaces for ride-sharing vehicles.	2016–2020	Grants/CIP/ taxes	DEV
Trans-8: Event Parking: Consider establishing policies and programs to reduce onsite parking demand and promote ride-sharing during events at the Ontario Convention Center and other event venues. Consider a goal to reduce VMT at major events by 2%.	2014–2020	Parking fees/ taxes	DEV/AS
Trans-9: Roadway Management: Implement traffic and roadway management strategies to improve mobility and efficiency, and reduce associated emissions. Consider a goal to reduce community vehicle fuel consumption by 2%.	2015–2020	Grants/CIP	DEV

Measure Number and Description[a]	Phase of Initial Implementation	Potential Funding Source[b]	Lead Department[c]
Trans-10: Signal Synchronization: Evaluate potential efficiency gains from further signal synchronization. Synchronize traffic signals throughout the City and with adjoining cities while allowing free flow of mass transit systems. Require continuous maintenance of the synchronization system. Consider a goal to reduce City-wide vehicle fuel consumption by 2%.	2015–2020	Grants/CIP	DEV
Trans-11: School Transit Plan: Encourage local school districts to develop school transit plans to substantially reduce automobile trips to, and congestion surrounding, schools. (According to some estimates, parents driving their children to school account for 20–25% of the morning commute.) Plans may address, e.g., necessary infrastructure improvements and potential funding sources, replacing older diesel buses with low or zero-emission vehicles, mitigation fees to expand school bus service, Safe Routes to School programs, and other formal efforts to increase walking and biking by students. Although this measure is not within the City's authority, Ontario can work with local school districts to develop these plans.	2014–2020	Grants/CIP/ taxes	DEV
Trans-12: Ridesharing Programs: Coordinate with local agencies to promote ride sharing programs in Ontario (CAPCOA 2010). Although the City does not have the legal authority to impose trip demand management programs on project applicants or employers, Ontario can work with local agencies to develop these programs. Consider a goal to reduce City-wide VMT by 2% through mode-shifts from single-occupancy vehicles to carpools.	2014–2020	Grants/CIP/ fare increase/ private partnerships	DEV, AS
Trans-13: Bicycle and Pedestrian Infrastructure Plan: Adopt a comprehensive bicycle and pedestrian infrastructure plan to expand the City's bicycle and pedestrian network. This plan would encourage residents and employees to use bicycling and walking as a method of transportation. Consider a goal to reduce City-wide VMT by 2% through mode-shifts from single-occupancy vehicles to bicycles.	2014–2020	Grants/CIP/ taxes	DEV

Measure Number and Description[a]	Phase of Initial Implementation	Potential Funding Source[b]	Lead Department[c]
Trans-14: Development Standards for Bicycles: Establish standards for new development and redevelopment projects to support bicycle use. Consider a goal to reduce VMT resulting from new development by 4% through mode-shifts from single-occupancy vehicles to bicycles.	2014–2020	Grants/CIP/ taxes	DEV
Trans-15: Smart Growth and Infill: Encourage high-density, mixed-use, infill development and creative reuse of brownfield, under-utilized and/or defunct properties within the urban core. Consider a goal to reduce VMT resulting from new development by 5%.	2015–2020	Grants	DEV
Trans-16: Transit-Oriented Development: Identify transit centers appropriate for mixed-use development, and promote transit-oriented, mixed-use development within these targeted areas. Consider a goal to reduce VMT resulting from new development by 2%.	2015–2020	Grants/CIP	DEV
Off-Road Equipment			
Off Road-1: Heavy Duty Vehicle Idling Ordinance: Adopt an ordinance that requires idling of heavy duty off-road construction vehicles to no more than 3 minutes.	2015-2020	Grants/ private equity	DEV, HMS, CS
Off Road-2: Landscaping Equipment: Support landscape equipment replacement programs to replace 75% of all landscaping equipment with electric equipment (945 total pieces of landscaping equipment replaced). This measure saves approximately 532,000 gallons of gasoline.	2014-2020	Grants/ incentives/ private equity	DEV, HMS, CS
Agriculture			

Measure Number and Description[a]	Phase of Initial Implementation	Potential Funding Source[b]	Lead Department[c]
Agriculture-1: Methane Emissions Reduction for Animal Operations: Support dairies (and other animal operations) to consider existing and new technologies and methods to control emissions from enteric fermentation and manure management and assess the feasibility and cost effectiveness of these technologies. Animal operations should strive to capture as much methane from manure management as feasible. Captured biogas can also be used in place of natural gas for heating, converted to vehicle fuel, used to replace gasoline and diesel, or combusted in a generator to produce renewable electricity.	2018-2020	Grants/private	DEV
Water Transport, Distribution, and Treatment			
Water-1: Water Conservation for Existing Buildings (Indoor + Outdoor): Require 25% of existing buildings within the community to achieve a 25% reduction in water use. This measure will reduce both indoor and outdoor water use. A total of 15,282 existing residential units to reduce total water use (indoor + outdoor) by 25% for a total savings of 459 MG (30,000 gallons/home). 25% of existing non-residential units to reduce total water use (indoor + outdoor) by 25% for a total savings of 698 MG.	2016–2020	Grants/ rebates/ private equity	DEV, HMS, CS
Water-2: Irrigation Monitoring and Management System (Outdoor): Install a water monitoring and management system (Smart controllers, etc.) for all of the City's irrigation needs to reduce the City's water consumption by 10% by 2020.	2015–2020	Impact fees/grants	DEV, HMS,CS
Water-3: Water System Efficiency: Design and implement peak load management and demand response programs for water supply, treatment, and distribution, including interface with existing automated systems for building energy management and SCADA systems.	2015–2020	Public utilities/grants	OMUC
Water-4: SB X7: Urban water agencies throughout California are required to increase water conservation to achieve a statewide goal of a 20% reduction in urban per capita use by 2020 per SB X7. The Ontario 2010 Urban Water Management Plan outlines the approaches to achieving that reduction.	2014–2020	Grants/ rebates/ private equity	OMUC
Miscellaneous			

Measure Number and Description[a]	Phase of Initial Implementation	Potential Funding Source[b]	Lead Department[c]
Misc-1: Climate Change Awareness: Utilize a variety of media outlets to promote climate change awareness and GHG reduction.	2014–2020	Grants/CIP	DEV
Misc-2: Carbon Sequestration: Establish a City-wide carbon sequestration project and sequestration goal of 1,000 MT CO_2 per year.	2018–2020	Grants	DEV, CS
Misc-3: Shade Tree Planting: Promote the planting of shade trees and establish shade tree guidelines and specifications.	2014–2020	Grants/CIP	DEV,CS
Misc-4: Refrigeration and Air Conditioning Disposal: Institute an ordinance requiring residences, businesses, and city facilities to practice RAD for all decommissioned units, including refrigerators/freezers, window air-conditioning units, and dehumidifiers.	2015–2020	Grants/ businesses	OMUC
Misc-5: Pervious Paving: Promote the use of pervious concrete for pavement projects. Explore grant funding opportunities for pervious concrete.	2015–2020	Grants/CIP	HMS, CS, DEV
Misc-6: Infiltration: Promote onsite infiltration, as required by the NPDES Permit. Promote the use of pervious concrete and asphalt for pavement and parking lot projects.	2015–2020	CIP	DEV, CS

[a] Only local measures for which emissions could be quantified are listed here. Additional state measures and measures that could contribute to GHG emissions, but for which emissions could not be quantified, are detailed in Chapter 3.

[b] CIP funding sources may include any of the following; general fund, internal services fund and/or Enterprise fund.

[c] **Key:** AS = Administrative Services, DEV=Development Agency, HMS=Housing & Municipal Services Agency, OMUC = Ontario Municipal Utilities Company, CS=Community & Public Services Agency, IT=Information Technology Agency

4.4 Coordination and Outreach

The citizens and businesses within the City of Ontario are integral to the success of the CAP. Their involvement is essential, considering that several measures depend on the voluntary commitment, creativity, and participation of the community.

The City would collaborate with other local and regional agencies, businesses, and organizations to educate and inform stakeholders, such as businesses, business groups, residents, developers, and property owners about the CAP and encourage participation in efforts to reduce GHG emissions. The City would schedule periodic meetings to facilitate community involvement in CAP implementation and adaptation over time. These meetings would be targeted to stakeholder groups and provide information on CAP implementation progress. Stakeholders would be provided an opportunity to comment on potential improvements or changes to the CAP. The City, in partnership with other organizations, would also sponsor/co-sponsor periodic outreach events to directly inform and solicit the input, suggestions, and participation of the community at large.

4.5 Regional Involvement

There are substantial opportunities to enhance the effectiveness of the CAP through regional collaboration. The City is an active participant in SANBAG's efforts to leverage its role as a transportation planning agency and the regional scope of its authority to reduce GHG emissions in several emissions sectors in the region. As part of this partnership, several opportunities to explore the potential to leverage resources are provided to support implementation of the CAP. Potential opportunities and partners include the following.

- **San Bernardino Association of Governments (SANBAG)**
  - **San Bernardino County Regional Greenhouse Gas Reduction Plan**—The City of Ontario is one of 22 partnership cities participating in the development of a sub-regional GHG Reduction Plan that includes a current year (2008) GHG emissions inventory, future year (2020) GHG emissions forecast, City 2020 reduction goal, and GHG reduction measures. The intent is to develop consistent baseline information for jurisdictions to use for their development of community climate action plans.
  - **Municipal Regional Joint Solar Power Purchase Agreement Program**—The City of Ontario is one of the member cities participating in a Joint Procurement for Solar Photovoltaic Systems. The program brings together a number of cities and other government agencies to aggregate their solar sites, and then those that make technical and economic sense are bundled together and negotiate a power purchase agreement.
  - **Property Assessment Clean Energy (PACE) Program**—The City of Ontario is one of the member cities participating in the regional energy efficiency and water conservation improvements loan program as defined by AB 811 and AB 474 and commonly referred to as a PACE Program. SANBAG has completed the process and launched the HERO Program in October 2013.
- **Southern California Edison (SCE)**—SCE offers numerous incentives and rebate programs to encourage energy efficiency. Resources offered by SCE may reduce program implementation and administration costs. There may also be opportunities for cooperation on community-scale alternative energy installations (e.g., wind, solar).
- **Southern California Gas Company (SCGC)**—SCGC offers numerous incentives and rebate programs to encourage energy efficiency. Resources offered range from Energy Efficient Starter Kits to the High Efficiency Hot Water Distribution Program (Solar). There may also be opportunities for cooperation on community-scale energy efficiency programs and alternative energy installations (e.g., solar water heaters).
- **Inland Empire Utilities Agency (IEUA)**
  - **Residential Conservation Rebates**—the Inland Empire Utilities Agency (IEUA) offers rebates for the purchase of residential water conservation appliances and equipment including: high efficiency clothes washers, SmartTimer controllers for lawns, and high efficiency sprinkler nozzles. IEUA also offers free landscape evaluations and a high efficiency toilet installation co-pay program.
  - **Commercial Conservation Rebates—**IEUA offers rebates for the purchase of commercial water conservation appliances and equipment including: toilets and urinals, laminar flow

restrictors, connectionless food steamers, cooling towers, dry vacuum pumps, air cooled ice machines, smart controllers for irrigation, high efficiency sprinkler nozzles, large rotary nozzles for irrigation, and in-stem flow regulators. IEUA also offers free landscape evaluations and a high efficiency toilet installation co-pay program.

  - **Water Calculator**—Through IEUA's website, residents and businesses can calculate their annual water usage using the H_2O Conserve Water Calculator.
  - **Landscaping**—IEUA provides the following water conservation resource materials related to landscaping: how to use irrigation controllers and leading manufacturers of controllers; a guide to edible landscaping; a database of California friendly plants; a cost comparison for California native and drought-tolerant plants versus exotic plants from the East Coast; and other materials.

- **SANBAG Long Range Transportation**—In order to fully implement the transportation reduction measures that promote mixed-use development, continued coordination with regional transportation agencies would be necessary. With SB 375 and its linkage to transportation funding, it would also be crucial for the City and transportation agencies to develop a shared vision of how transportation and land use can be consistent with the next RTP and the required SCS.
- **CalRecycle**—Waste-1 includes the adoption of a 75% waste diversion goal. Coordination with the County to provide the facilities, programs, and incentives would help ensure this goal can be achieved by 2020.

4.6 Monitoring, Reporting, and Adaptive Management

Regular monitoring is important to ensure programs are functioning as they were originally intended. Early identification of effective strategies and potential issues will enable the City to make informed decisions on future priorities, funding, and scheduling. Moreover, monitoring provides concrete data to document the City's progress toward achieving its GHG emissions target. The Development Agency will be responsible for the monitoring procedures that encompass information gathering of specific CAPTAC sector measures, analyzing data and implementing monitoring tools currently being developed by SANBAG, and recommending adjustments to the CCAP. The CAPTAC will be responsible for developing the monitoring procedures for the Community CAP as opportunities arise.

The City will conduct periodic comprehensive reviews of the Community CAP on a 3-year cycle that will involve an appropriate level of re-inventorying of emission sources in order to obtain a more complete understanding of GHG conditions and results of Community CAP measure progress. The Sustainability Program Manager will compile monitoring results, and will be responsible for the coordination and development of each comprehensive update. Upon review of the Community CAP, additional measures or adjustments to existing measures will be addressed in order to continue to reduce GHG emissions.

4.7 Planning for 2020 and Beyond

While GHG management in California is currently focused on a 2020 target, Executive Order S-03-05 articulates a GHG reduction goal for California in 2050. Executive Order S-03-05 sets a goal that by 2050, California will reduce GHG emissions to a level that is 80% below the level of 1990. It is reasonably foreseeable that as California approaches its first milestone in 2020, focus will shift to the 2050 target. A detailed plan for how the state would meet this target is expected, and the City will monitor developments at the national and state levels to ensure it will continue to support efforts at all levels of government.

Beginning in 2018, the City would commence planning for the post-2020 period. At this point, the City would have implemented the first two phases of the Community CAP and would have a better understanding of the effectiveness and efficiency of different reduction strategies and approaches. The new post-2020 reduction plan would include a specific target for GHG reductions for 2030, 2040, and 2050. The targets would be consistent with broader state and federal reduction targets and with the scientific understanding of the needed reductions by 2050.

Community Climate Action Plan

Chapter 5: References

Chapter 5
References

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CITY OF ONTARIO

Community Climate Action Plan

Appendix A

City of Ontario 2008 Community Greenhouse Gas Emissions Inventory and 2020 Forecast

City of Ontario 2008 Community Greenhouse Gas Emissions Inventory and 2020 Forecast

April 2012

ICF Reference: 00649.10

Prepared for:

City of Ontario

Submitted by:

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Acronyms and Abbreviations

AB	Assembly Bill
BAU	business as usual
BOD	biochemical oxygen demand
CAPCOA	California Air Pollution Control Officer's Association
CARB	California Air Resources Board
CEC	California Energy Commission
CH_4	methane
CIWMB	California Integrated Waste Management Board
CO_2	carbon dioxide
County	San Bernardino County
DEIR	Draft Environmental Impact Report
EPA	U.S. Environmental Protection Agency
FMMP	Farmland Mapping and Monitoring Program
FOD	First Order Decay
GIS	Geographic Information Systems
GWP	global warming potential
GHG	greenhouse gas
GHG:ID	Greenhouse Gas Inventory Database
HCFCs	halogenated fluorocarbons
HFCs	hydrofluorocarbons
IEUA	Inland Empire Utilities Agency
IPCC	Intergovernmental Panel on Climate Change
k-value	first order decay rate constant for landfill methane equation (1/year)
kWh	kilowatt-hour

LMOP	Landfill Methane Outreach Program
LGOP	Local Governments Operations Protocol
$MTCO_2e$	metric tons of carbon dioxide equivalent
MG	million gallons
NMC	New Model Colony
N_2O	nitrous oxide
ODS	ozone depleting substances
PFCs	perfluorinated carbons
RTAC	Regional Target Advisory Committee
SANBAG	San Bernardino Associated Governments
SB	Senate Bill
SCAQMD	South Coast Air Quality Management District
SCAG	Southern California Association of Governments
SCE	Southern California Edison
SCG	Southern California Gas Company
SWP	State Water Project
TAZ	Traffic Analysis Zone
UNFCCC	United Nations Framework Convention on Climate Change
UWMP	Urban Water Management Plan
WIP	waste in place
WARM	Waste Reduction Model
WWTP	wastewater treatment plant
WER	water-energy relationship

1. Executive Summary

The City of Ontario (City) faces a demanding challenge to meet the targets established by the State of California to address global warming, through the requirements of Assembly Bill (AB) 32[1] and Senate Bill (SB) 375[2]. In response to these initiatives, the City is seeking to reduce greenhouse gas (GHG) emissions associated with its regional activities. In addition, the City is participating in a partnership with the San Bernardino Associated Governments (SANBAG) and many cities in San Bernardino County (County) to evaluate and achieve GHG emissions reductions in the County. The City has committed to undertake the following actions that will reduce GHG emissions associated with its community activities.

- Prepare a current year (2008) GHG emissions inventory for the City's community activities (Community Inventory).
- Prepare a future year (2020) GHG emissions estimate (or forecast) for the City's community activities.
- Adopt a GHG Emissions Reduction Plan that will include measures to reduce GHG emissions from community activities and that will seek to reduce emissions by at least 30% by 2020 "business as usual" (BAU) emissions[3].

In January 2010, the City approved The Ontario Plan, which provides a framework for the future community of Ontario (City of Ontario 2010). The Ontario Plan incorporates many policies and measures to improve the City's sustainability and reduce GHG emissions from City activities. The City also prepared a Draft Environmental Impact Report (DEIR) to evaluate the potential for implementation of The Ontario Plan to affect or be affected by global climate change (City of Ontario 2009). As part of the DEIR, the City conducted a community inventory for the year 2006. The Ontario Plan, DEIR, and a comparison of the 2006 inventory to the 2008 inventory are discussed in Section 2.1, *Inventory Background*.

This 2008 Community Greenhouse Gas Emissions Inventory summarizes emissions for the City of Ontario. Emissions were calculated for sectors as identified by AB 32 in the bullet above, as well as additional subsectors, including building energy use (natural gas and electricity in the residential, commercial, and industrial sectors), stationary fuel combustion (fuels besides natural gas, including industrial activities), light- and medium-duty vehicles, heavy-duty vehicles, off-road equipment, landfills and waste generation, wastewater treatment, water consumption, and agriculture (fugitive emissions from livestock and fertilizer). This 2008 inventory is a baseline from which to forecast future year 2020 emissions and establish GHG reduction targets. The 2020 emissions estimate, or forecast, represents BAU emissions. GHG reduction targets will be evaluated in subsequent documents, from which the City will develop GHG reduction goals and create a policy framework to support control and ultimate reduction of GHG emissions from the City's community activities.

[1] In 2006, California passed AB 32, the Global Warming Solutions Act of 2006. This law established a state goal of reducing GHG emissions statewide to 1990 levels by 2020. This effort is roughly equivalent to the reduction in emissions to a level 15% below current levels.

[2] SB 375 requires regional transportation plans, developed by metropolitan planning organizations (MPOs) to incorporate a "sustainable communities strategy" (SCS) in their regional transportation plans (RTPs).

[3] This plan must comply with the recommendations for local community emissions outlined in AB 32. The Plan must include climate action measures for the following sectors (as identified in AB 32): building energy, water, transportation, goods movement, waste, and stationary fuel combustion.

This report provides background information on GHG emissions in the City, the methodology used to prepare the inventory, and inventory results for each emissions sector listed above. GHGs in this inventory include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), sulfur hexafluoride (SF_6), hydrofluorocarbons (HFCs), and perfluorocarbons (PFCs).

1.1 Inventory Definitions

Community Inventory. The community inventory includes GHG emissions occurring within the City of Ontario's geographic or jurisdictional boundaries and generally consists of sources of emissions that the City's community can influence or control[4]. The boundaries of the community inventory are geographic; emissions included, or activities associated with emissions, must occur inside of the jurisdictional boundary of the City. The year 2008 was chosen for the current community inventory because it was the most recent year with the necessary data to perform a comprehensive inventory and because it is consistent with the subregional efforts. The 2020 emissions projection represents BAU emissions associated with the City's activities in 2020.

Municipal Inventory. The municipal inventory includes GHG emissions associated with the City's services and municipal operations. This inventory is not calculated or presented in this report but is under development.

Some emission sources are included in both inventories, as there are overlaps in the operational boundaries of the two inventories. For example, in the community inventory, light–medium-duty vehicle emissions include emissions from all light–medium-duty vehicles traveling in the City. The corresponding municipal inventory category is vehicle fleet emissions, which operate mostly in the City but also may operate outside City boundaries. The overlap between the community and municipal inventories for this sector involves those City vehicle emissions that occur in the City as these emissions are accounted for in the transportation modeling. Emissions from City vehicles traveling outside City boundaries are included in the municipal inventory but not the community inventory because they are under the City's municipal jurisdiction but are not included in the transportation modeling.

Unit of Measure. The unit of measure used throughout this GHG inventory is the metric ton (MT) of CO_2 equivalent (CO_2e) This is the international unit that combines the differing impacts of all GHGs into a single unit by multiplying each emitted gas by its global warming potential (GWP). GWP is the measure of how much a given mass of GHG contributes to global warming. GWP compares the relative warming effect of the GHG in question to CO_2.[5]

Emissions Type. GHG emissions can be defined as either *direct* (emissions that occur at the end use location, such as natural gas combustion for building heating) or *indirect* (emissions that result from *consumption* at the end use location but occur at *another* location, such as emissions from residential electricity use that occur at the

[4] The Ontario International Airport was not included in the inventory because Ontario and its community have little to no jurisdiction over operations at the airport.

[5] The GWP of CO_2 is, by definition, one (1). The GWP values used in this report are based on the Intergovernmental Panel on Climate Change (IPCC) Second Assessment Report (SAR) and United Nations Framework Convention on Climate Change (UNFCCC) reporting guidelines, and are as follows: CO2 = 1, CH4 = 21, N2O = 310, SF6 = 23,600 (Intergovernmental Panel on Climate Change 1996; United Nations Framework Convention on Climate Change 2006). Although the IPCC Fourth Assessment Report (AR4) presents different GWP estimates, the current inventory standard relies on SAR GWPs to comply with reporting standards and consistency with regional and national inventories (Intergovernmental Panel on Climate Change 2007; U.S. Environmental Protection Agency 2010a).

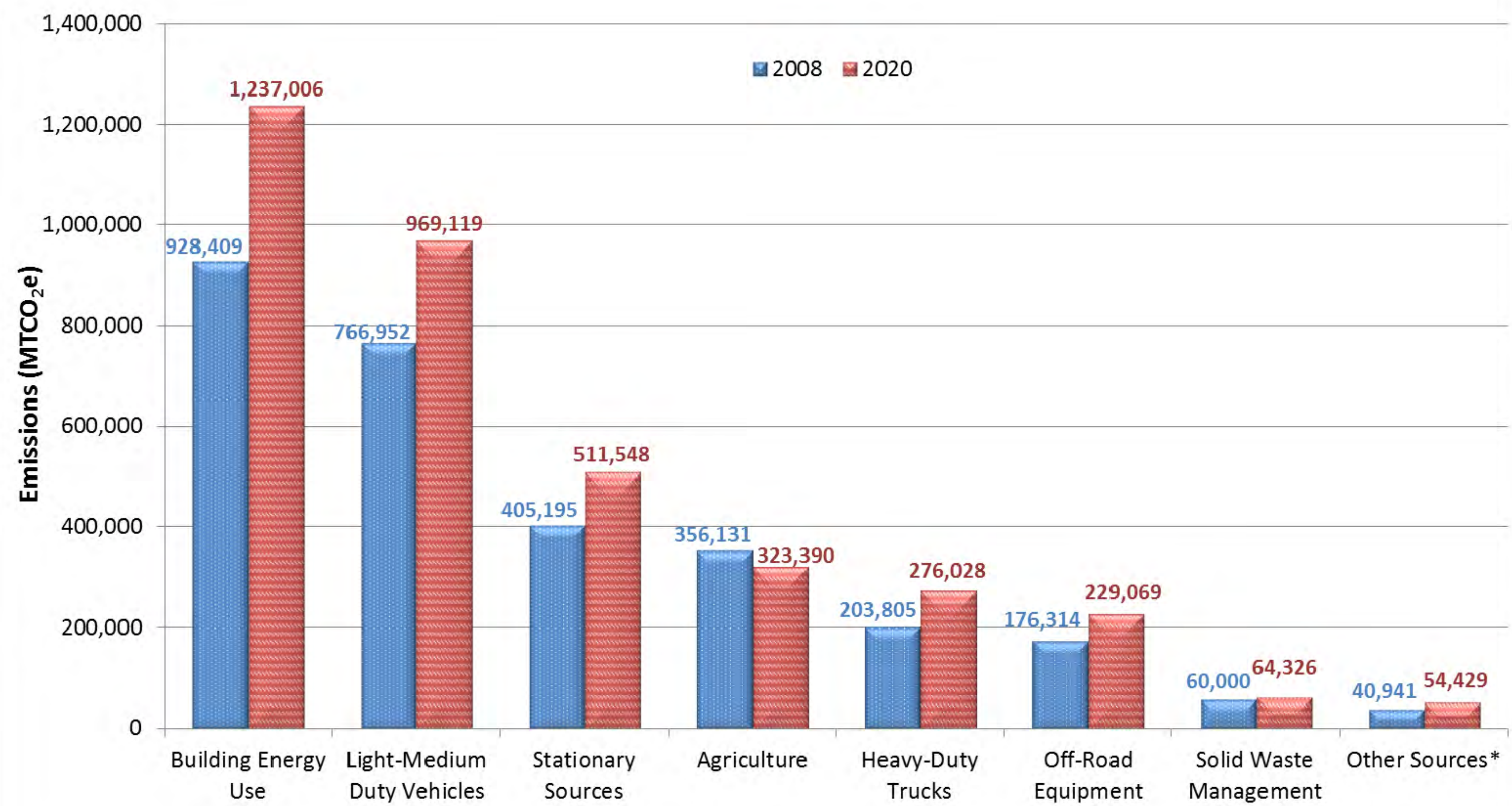
power plant itself but result from in-home appliance or other use). This report addresses both types of emissions. In addition, all references to emissions are referring to GHG emissions, not to emissions of air quality pollutants.

1.2 Inventory Results

In 2008, the largest source of community emissions for the City was building energy use, which represented 31.6% of total community emissions for 2008. This sector includes emissions associated with natural gas combustion and electricity consumption in residential, commercial, and industrial buildings in Ontario. Transportation emissions are often the largest source of emissions in community inventories, and Ontario is no exception. The second largest source of emissions was light–medium-duty vehicle emissions, which accounted for 26.1% of total community emissions for 2008. The third and fourth largest sources were stationary sources and agriculture, with a contribution of 13.8% and 12.1% of the total 2008 emissions, respectively. Stationary sources included combustion of fuels at industrial facilities and fugitive emissions from industrial processes. Agricultural emissions result from crop fertilizer use and from livestock. The remaining sources in order of greatest contribution were heavy-duty vehicles (6.9%), off-road equipment (6.0%), solid waste management (2.0%), water conveyance (1.0%), wastewater treatment (0.2%) and SF_6 emissions from electricity consumption (0.2%). Figures 1 and 2 present all GHG emissions for the City for 2008.

Community-wide, emissions are projected to increase by approximately 25% from 2008 to 2020. The increase from 2008 to 2020 will occur primarily because of an increase in building energy use, stationary source emissions, and vehicle miles traveled (VMT). As the population and employment in Ontario grow, energy consumption, industrial activity, and transportation increase. Emissions from all other sectors except agriculture will increase under the BAU scenario by 2020 because of growth in the City across all economic sectors (agricultural activity is expected to decline in the future). Emissions from individual sectors are discussed in more detail below. Figures 1 and 2 present the 2020 BAU forecast. Figure 3 presents a breakdown of minor GHG sources for 2008 and 2020, which are combined as *other sources* in Figure 1. Table 1 shows emissions for each sector and their contributions to the total inventory.

Figure 1. City of Ontario Community 2008 GHG Inventory and 2020 BAU Forecast – *By Sector*



** Other sources include Water Transport, Distribution, and Treatment; Wastewater Treatment; and SF6 from Electricity Consumption.*

ICF INTERNATIONAL

Figure 2. City of Ontario Community 2008 GHG Inventory and 2020 BAU Forecast – *Total Emissions*

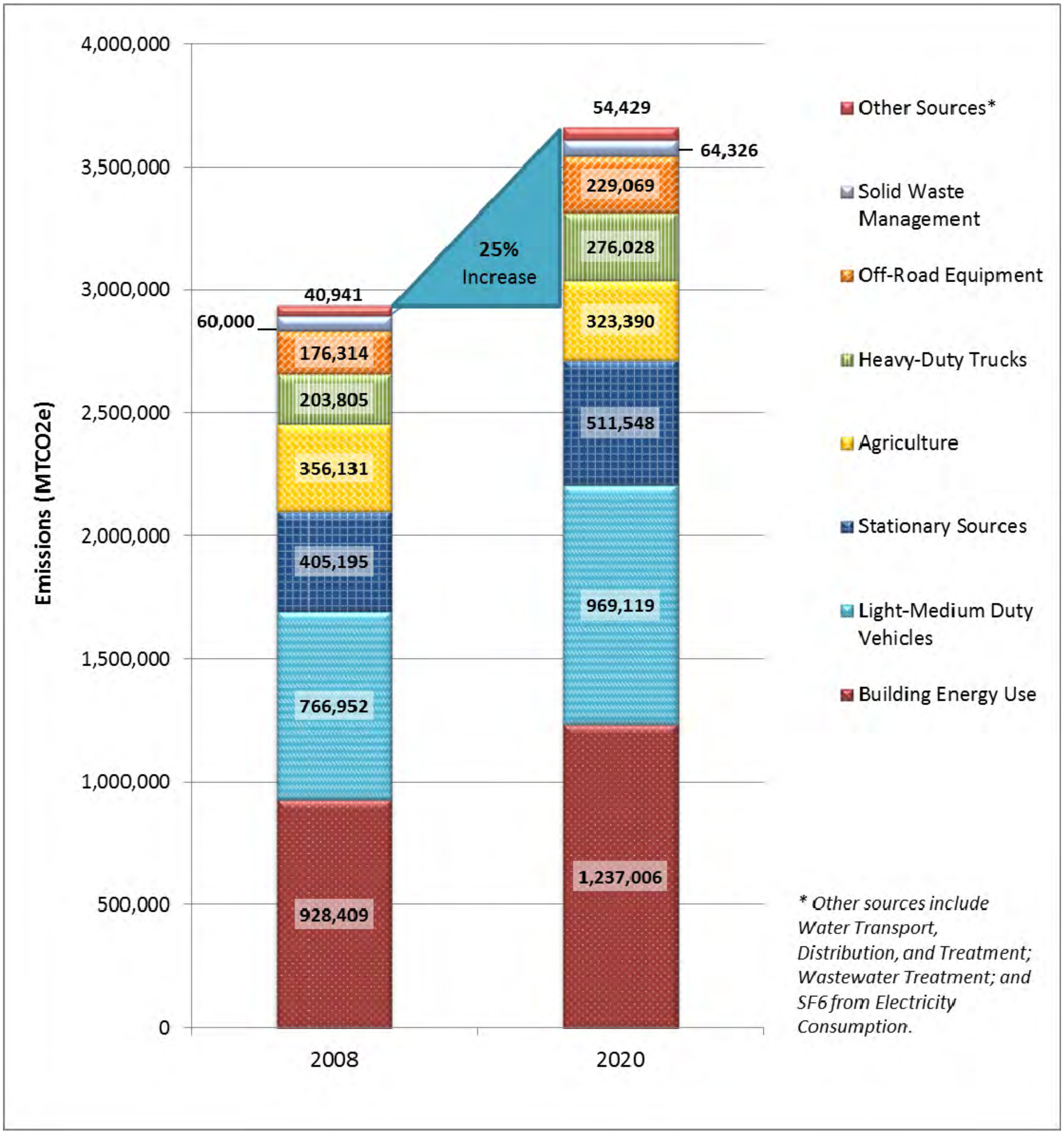


Figure 3. City of Ontario 2008 Community GHG Inventory and 2020 BAU Forecast – *Other Sources*

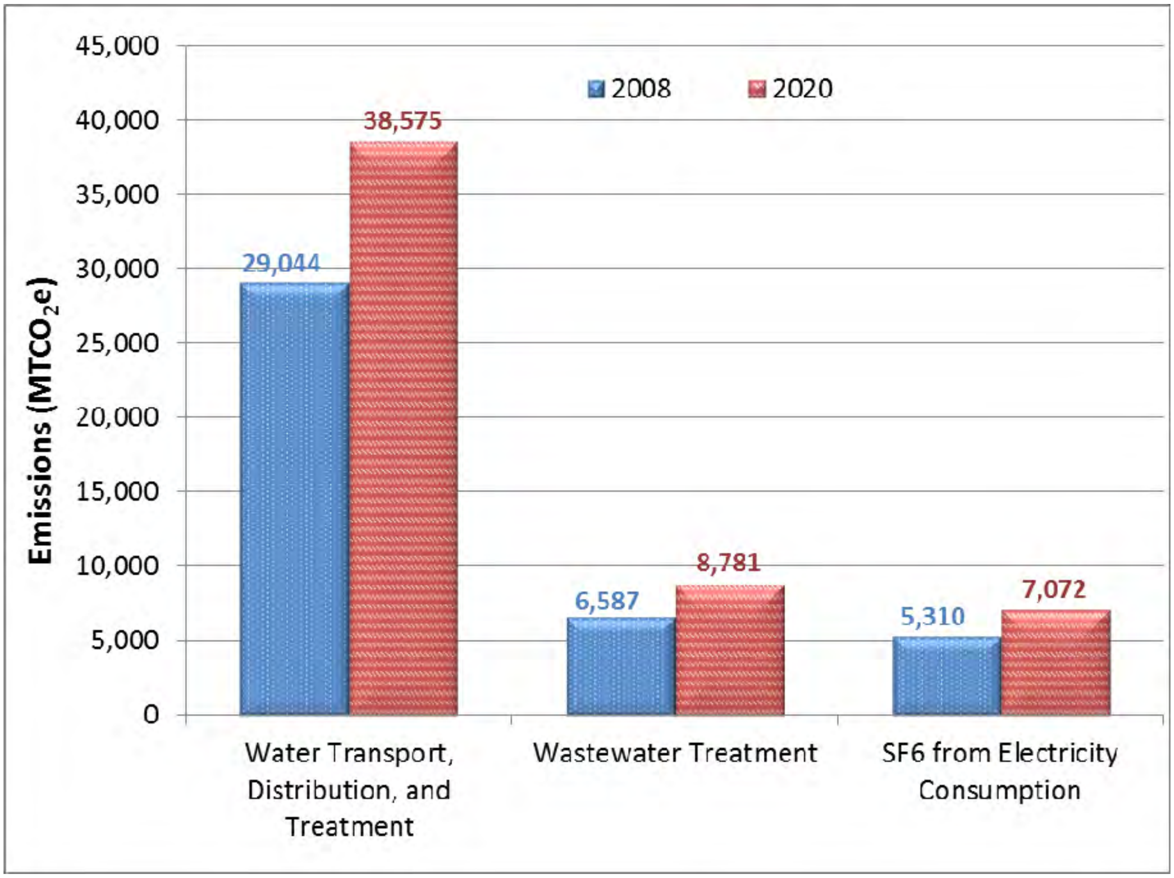


Table 1. City of Ontario 2008 Community GHG Inventory and 2020 BAU Forecast by Sector

Scope and Sector[1]	Description of Sector	2008 Inventory Emissions ($MTCO_2e$)	2008 Inventory Percent	2020 BAU Forecast Emissions ($MTCO_2e$)	2020 BAU Forecast Percent	Percent Increase from 2008 to 2020
Scope 1 Emissions	Direct Emissions					
Residential natural gas	Natural gas combustion	95,327	3.2%	130,539	3.6%	36.9%
Commercial/industrial natural gas	Natural gas combustion	368,456	12.5%	487,494	13.3%	32.3%
Stationary sources	Other fuels and processes	405,195	13.8%	511,548	14.0%	26.2%
Light and medium-duty vehicles	Vehicle fuel combustion	766,952	26.1%	969,119	26.4%	26.4%
Heavy-duty vehicles	Vehicle fuel combustion	203,805	6.9%	276,028	7.5%	35.4%
Off-road equipment	Off-road equipment	176,314	6.0%	229,069	6.3%	29.9%
Agriculture	Livestock and fertilizer	356,131	12.1%	323,390	8.8%	-9.2%
Subtotal Scope 1		2,372,180	80.7%	2,927,188	79.9%	15.3%
Scope 2 Emissions	Indirect Emissions					
Residential electricity	Electricity use	91,231	3.1%	124,930	3.4%	36.9%
Commercial/industrial electricity	Electricity use	373,395	12.7%	494,042	13.5%	32.3%
Solid waste management	Solid waste decomposition	60,000	2.0%	64,326	1.8%	7.2%
Wastewater treatment	Liquid waste treatment	6,587	0.2%	8,781	0.2%	33.3%
Water transport, distribution, and treatment	Electricity for water supply	29,044	1.0%	38,575	1.1%	32.8%
SF_6 from electricity consumption	Electrical transformers	5,310	0.2%	7,072	0.2%	33.2%
Subtotal Scope 2		565,568	19.3%	737,727	20.1%	30.4%
Total Scopes 1 and 2		2,937,747	100%	3,664,915	100%	24.8%

[1] Refer to Section 3.1, *Inventory Protocols* for a detailed discussion of scopes.

BAU = business as usual.

SF_6 = sulfur hexafluoride.

1.3 Inventory Limitations and Recommendations

This inventory serves as a baseline for emission reduction measures and as a starting point for future GHG emissions inventories. Future updates to the GHG emissions inventory presented in this report will be conducted every 3 years. Frequent inventory updates ensure that the inventory remains accurate and that data gaps are resolved in a timely manner, and enable efficient tracking of the effectiveness of any GHG reduction measures put in place to address these emission sources.

Although considerable efforts were made to obtain activity data from 2008, the inventory base year, in some cases these data were unavailable and data from another year were substituted (e.g., stationary source data for 2007 were scaled to 2008). Changes in emissions or activity from one year to the next are expected to be relatively minor, so any substitution in data will have a small effect on the inventory. In addition, data obtained for certain sectors were provided in an aggregated format. For example, building energy use data provided by the major utilities supplying electricity and natural gas to the City were aggregated by general sector (residential or commercial plus industrial) instead of by specific activity or entity. Commercial and industrial data had to be aggregated into one group to avoid confidentiality conflicts with large electricity users in the City. A greater level of detail and disaggregation would strengthen this inventory and greatly increase the potential for the City to identify, quantify, and monitor effective emission reduction actions. Specific data gaps and limitations are identified and discussed on a sector-by-sector basis below.

1.3.1 2020 Business as Usual Projection Limitations

Where possible, 2020 BAU projections were made using the best available information and estimates provided by City staff and experts on individual sectors. For many sectors (e.g., residential fuel combustion), projections were based on the future population estimate for the City using data provided by the Southern California Association of Governments (SCAG). This method assumes that emissions will remain proportionate to the current population, which may not be completely accurate. For example, per capita energy consumption may change over time as habits and technology change. For some sectors, especially where emissions are tied to infrastructure (e.g., stationary sources, agriculture) rather than population, estimates were made based on an anticipated maximum or buildout of infrastructure. It is possible that the ratio of certain emission sources (e.g., natural gas combustion in commercial buildings) to a quantity of infrastructure (e.g., commercial square feet) may change over time.

2. Introduction

The temperature on Earth is regulated by a system commonly known as the *greenhouse effect*. Greenhouse gases (GHGs) in the atmosphere absorb heat radiated from the earth's surface and reradiate that heat in all directions, including back to the surface. Without these gases, heat would escape the atmosphere and the temperature of the earth's surface would be much cooler. However, with too much of these gases, the amount of heat returning to the surface would continue to increase, leading to large-scale climatic changes. According to the U.S. Environmental Protection Agency (EPA), a GHG is any gas that absorbs infrared radiation in the atmosphere. Specifically, the following six GHGs are defined in Assembly Bill (AB) 32 and the California Environmental Quality Act (CEQA) guideline amendments: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), sulfur hexafluoride (SF_6), hydrofluorocarbons (HFCs), and perfluorocarbons (PFCs).

Once emitted, GHGs remain in the atmosphere for decades or centuries and therefore can mix globally. Innumerable direct and indirect sources, both natural and anthropogenic, cause increased atmospheric concentrations of GHGs. The most common natural sources of GHGs include decomposition of organic matter and wildfires. Many human activities add to the levels of naturally occurring gases. When solid waste, fossil fuels (oil, natural gas, and coal), and wood and wood products are burned, CO_2 is released to the atmosphere. Agricultural cultivation, industrial activities, and solid waste or fossil fuel combustion emit N_2O. CO_2 and N_2O are the two GHGs released in the greatest quantities from burning gasoline and diesel fuel in vehicles (mobile sources). CH_4, a highly potent GHG, results from off-gassing associated with agricultural practices and landfills, among other sources. The synthetic chemicals that form HFCs and PFCs are used to replace the ozone-depleting substances that are being phased out under the Montreal Protocol on Substances That Deplete the Ozone Layer (1987), an international agreement designed to protect the stratospheric ozone layer originally signed in 1987. Electric transmission and distribution systems emit SF_6, as do various industrial manufacturing processes.

As global, national, and state populations and economies have grown, anthropogenic emissions of GHGs have continued to increase. This increase is due primarily to the burning of fossil fuels for heating, cooking, and other consumer uses. The associated increases in atmospheric concentrations of GHGs are expected to cause a variety of adverse environmental impacts related to large-scale changes in the climate system. Climate change impacts of greatest concern for the state of California are sea-level rise, increased frequency and intensity of wildfires, decreased Sierra Nevada snowpack and associated consequences to water supply, changes in winter precipitation patterns and associated consequences to water supply, increased frequency and intensity of extreme heat events, and degradation in regional air quality as a result of warmer temperatures (California Energy Commission 2009; California Natural Resources Agency 2009).

2.1 Inventory Background

The City of Ontario (City) has committed to an in-depth review of emissions associated with activities in the community. The results of the community inventory for 2008 are presented in this report and define a baseline from which future emissions under business as usual (BAU) conditions can be projected. The 2020 emissions projection represents the BAU forecast and is based on anticipated growth in the City, specific to each inventory sector. The 2008 inventory is based on actual 2008 activity data and emission factors and includes all significant contributing sectors to GHG emissions, according to the guidelines of the California Air Resources Board

(CARB) Local Governments Operations Protocol (2010c), as stated below in Section 3.2, *Emission Factors*. This inventory was developed with detail sufficient to support identification of GHG reduction measures specific to the City's community emissions.

A BAU projection of community emissions was developed for the year 2020. This projection can be used to determine the magnitude of the reductions that need to be achieved by 2020 (relative to current emissions) to reach a particular emissions target. The BAU projections are based on current energy consumption and anticipated growth rates provided by the City, the Southern California Association of Governments (SCAG), CARB, the California Department of Finance, and other appropriate data sources as listed in this report. The BAU projections do not assume the implementation of any federal, state, or local reduction measures but project the future emissions based on current energy and carbon intensity in the existing economy, consistent with CARB's analysis conducted for AB 32. The specific assumptions associated with the sector growth rates are provided in Table 2 below.

In January 2010, the City approved The Ontario Plan, which provides a framework for the future community of Ontario (City of Ontario 2010). The Ontario Plan incorporates many policies and measures to improve the City's sustainability and reduce GHG emissions from City activities. The City also prepared a Draft Environmental Impact Report (DEIR) to evaluate the potential for implementation of The Ontario Plan to affect or be affected by global climate change (City of Ontario 2009). The DEIR provides a comprehensive comparative analysis of the measures published by the California Air Pollution Control Officer's Association (CAPCOA) and the Attorney General to the policies contained in The Ontario Plan and mitigation measures incorporated into the DEIR. The Ontario Plan and the DEIR provide a comprehensive foundation for climate action planning in the City. This inventory aims to strengthen this foundation by providing a framework for the City's Climate Action Plan (CAP) subsequent to The Ontario Plan.

As part of The Ontario Plan and the DEIR, the City conducted a community inventory for the year 2006. The 2008 inventory provides additional refinements to the 2006 inventory in various ways. The key differences and refinements are discussed briefly in Table 2. Table 3 presents a comparison of emissions from each sector of the inventories, including percent changes. Major differences between the two inventories occur in the building energy sector (the 2006 inventory used electricity use factors instead of actual utility data), the stationary source sector (the 2006 inventory did not include these emissions), the off-road equipment sector (the 2006 inventory did not include these emissions), and the on-road transportation sector, including light- and medium-duty vehicles and heavy-duty vehicles (the 2006 inventory used an older model with different trip apportionment methodology).

Table 2. Methodology Comparison of the 2006 and 2008 Community Inventories for the City of Ontario

Sector	2006 Inventory Method	2008 Inventory Method	Main Improvement
Building electricity (residential, commercial, and industrial)	Electricity usage factors and emission rates from the U.S. Energy Information Administration	Actual electricity consumption from the utilities, and utility-specific emission factors	Utility data and emission factors
Building natural gas (residential, commercial, and industrial)[1]	URBEMIS[2] average natural gas usage rates and emission factors	Actual natural gas consumption from the utilities, and California Climate Registry emission factors	Utility data
Stationary sources	N/A	South Coast Air Quality Management District 2007 Inventory	New sector
Light- and medium-duty vehicles	SCAG 2006 RTP Model; all trips, including those with trip starts and ends outside of the City, are included (not consistent with methods described by the SB 375 RTAC)	Draft 2012 RTP on-road modeling from SCAG; travel data and VMT associated with TAZ zones, incorporating origin-destination information (consistent with methodology described by the SB 375 RTAC)	New Model and RTAC methodology
Heavy-duty trucks	Same as light- and medium-duty vehicles	Same as light- and medium-duty vehicles	New sector
Off-road equipment	N/A	OFFROAD2007 model	New sector
Agriculture	Dairy cattle operations in the NMC from an estimate of existing livestock in the City	Livestock counts for cattle and dairy cows, provided for the City. Swine counts for the County, apportioned using farmland data for Ontario. Also includes N_2O emissions from fertilizer.	Additional livestock and fertilizer
Solid waste management	Projected waste disposal and EPA's Waste Reduction Model (WARM)	Projected waste disposal and CARB's FOD Model	Regional model
Wastewater treatment	N/A	Inland Empire Utilities Data and CARB emission factors	New sector
Water transport, distribution, and treatment	Projected water demand and southern California energy-intensity factors from the 2005 California Energy Commission report *California's Water-Energy Relationship* (WER) (12,700 kWh/MG)	Projected water demand and southern California energy-intensity factors from the 2006 California Energy Commission report *Refining Estimates of Water-Related Energy Use In California* (WER) (13,022 kWh/MG)	Updated energy-intensity factors
SF_6 from electricity consumption	N/A	CARB emission factors and utility data for electricity consumption	New sector

Source: City of Ontario 2009.

[1] Called *Area Sources* in the 2006 inventory.

[2] URBEMIS is a computer program that can be used to estimate emissions associated with land development projects in California such as residential neighborhoods, shopping centers, and office buildings; area sources such as gas appliances, wood stoves, fireplaces, and landscape maintenance equipment; and construction projects. URBEMIS stands for *Urban Emissions Model*.

CARB = California Air Resources Board.
EPA = U.S. Environmental Protection Agency.
FOD = First-Order Decay model.
kWh/MG = kilowatt hours per million gallons.
N_2O = nitrous oxide.
NMC = New Model Colony
RTAC = Regional Target Advisory Committee.
RTP = Regional Transportation Permit.
SB = Senate Bill.
SCAG = Southern California Association of Governments
TAZ = Traffic Analysis Zone
VMT = vehicle miles traveled.

Table 3. Emissions Comparison of the 2006 and 2008 Community Inventories for the City of Ontario

Scope and Sector	2006	2008	Percent Change
Scope 1 Emissions			
Electricity	855,221	464,626	-45.7%[1]
Natural gas	207,533	463,783	123.5%[1]
Stationary sources	0[2]	405,195	N/A
On-road transportation	2,522,251	970,757	-61.5%[3]
Off-road equipment	0[2]	176,314	N/A
Agriculture	356,533	356,131	0.1%
Subtotal Scope 1	3,941,538	2,836,806	-28.03%
Scope 2 Emissions			
Solid waste management	56,298	60,000	6.6%
Wastewater treatment	0[2]	6,587	N/A
Water conveyance	50,394	29,044	-42.4%[4]
Sf_6 from electricity consumption	0[2]	5,310	N/A
Subtotal Scope 2	106,692	100,942	-5.39%
Total Scope 1 and 2	4,048,230	2,937,747	-27.43%

[1] The large change is because the 2006 inventory used average energy usage factors and emission rates, while the 2008 inventory used actual energy consumption data from the utilities.

[2] The 2006 inventory did not include emissions from these sources.

[3] The large change is because the 2006 inventory incorporated vehicles trips with starts and ends outside the City, while the 2008 inventory includes 100% of trips that begin and end within the City and 50% of trips that begin in the City and end outside the City, and 50% of trips that end in the City and begin outside the City.

[4] The change is due to updated methodology for calculating water emissions.

2.1.1 Purpose of the Inventory

The purpose of the inventory is threefold. First, the 2008 inventory allows for a projection of BAU emissions for 2020 to identify the total reductions necessary to achieve AB 32 and Senate Bill (SB) 375 goals, as well as the City's more stringent goal of reducing GHG emissions from community activities by at least 30% by 2020. Second, City officials will be able to identify the major contributing sectors or emissions categories of the City's community emissions. Third, candidate measures for reducing emissions can be determined and will be used for the development of the community CAP.

2.2 City of Ontario Background

The City of Ontario covers more than 50 square miles and is home to the Ontario International Airport[6] and the Ontario Mills Mall, southern California's largest outlet shopping mall, entertainment center, and one of its largest tourist attractions. The City is the fourth most populous in San Bernardino County (County), behind the cities of San Bernardino, Fontana, and Rancho Cucamonga. The County itself is home to 24 incorporated cities and is the fifth most populous county in California. As of January 1, 2011, the California Department of Finance estimated the population of Ontario at 165,392 (California Department of Finance 2011). In 2008 (the baseline year for the inventories), the City's total population was 162,871 (Southern California Association of Governments 2012). The City is anticipated to grow dramatically from 2008 to 2020, increasing housing by 37%, retail jobs by 23%, and nonretail jobs by 44% (Southern California Association of Governments 2010). These growth rates account for the current economic recession.

This report describes the data sources and methods used to calculate community GHG emissions for the City as well as the actual emissions inventory. The boundaries of the inventory are defined as geographic (i.e., jurisdictional or city limits). Emissions for a particular source were included in the City's inventory if either the source of emissions occurs within the geographic boundaries of the City, or the emissions are a result of the City's community activity but occur outside of the City's geographic boundary (such as emissions occurring at distant power plants as a result of residential electricity consumption in the City).

[6] The Ontario International Airport was not included in the inventory because Ontario and its community have little to no jurisdiction over operations at the airport.

3. Methodology

This section presents the methodology used to prepare the GHG emissions inventory for the year 2008. This section discusses the inventory protocols, emission factors, inventory boundaries, and analysis methods.

3.1 Inventory Protocols

A number of widely accepted protocols for estimating GHG emissions were used to prepare the community inventory. The protocols used in the development of this inventory include those following.

- California Air Resources Board Local Governments Operations Protocol (2010c). This protocol is the standard for estimating emissions resulting from government buildings and facilities, government fleet vehicles, wastewater treatment and potable water treatment facilities, landfill and composting facilities, and other operations.
- California Climate Action Registry and General Reporting Protocol (2009a). This protocol provides guidance for preparing GHG inventories in California.
- California Air Resources Board Greenhouse Gas Inventory Data 1990–2006 (2010a). This documentation provides background methodology, activity data, protocols, and calculations used for California's statewide inventory.
- California Energy Commission Inventory of California Greenhouse Gas Emissions and Sinks: 1990 to 2004 (2006a). This inventory provides methodology and emission factors for statewide GHG emissions inventorying.
- U.S. Environmental Protection Agency Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2008 (2010a). This inventory provides methodology and emission factors for nationwide GHG emissions inventories, which are applied in absence of state or local methodology.
- Intergovernmental Panel on Climate Change Guidelines for National Greenhouse Gas Inventories (2006a). This document is the international standard for inventories and provides much of the baseline methodology used in the national and statewide emission inventories.

The Local Governments Operations Protocol categorizes local government emission sources as Scope 1 (direct), Scope 2 (indirect), and Scope 3 (other indirect). The protocol defines these emissions as follows (California Air Resources Board 2010a).

- Scope 1: All direct GHG emissions (with the exception of direct CO_2 emissions from biogenic sources).
- Scope 2: Indirect GHG emissions associated with the consumption of purchased or acquired electricity, steam, heating, or cooling.
- Scope 3: All other indirect emissions not covered in Scope 2 that are not under the control or influence of the local government, such as the emissions resulting from the extraction and production of purchased materials and fuels, and transport-related activities in vehicles not owned or controlled by the reporting entity.

Scope 1 and 2 emissions were quantified and included in the community inventory. For example, direct emissions associated with on-site natural gas use are included in Scope 1 because these emissions occur within the City and are subject to the community's influence or control. Indirect GHG emissions associated with electricity use are included in Scope 2 because these emissions can occur outside the City but are subject to the community's influence or control. Inclusion of Scope 3 emissions in the inventory is optional, and the City elected not to include them.

3.2 Emission Factors

Emission factors and references are summarized in Table 4. These emission factors were used to calculate GHG emissions from activity data, such as kilowatt-hours (kWh) of electricity consumed for lighting or gallons of gasoline fuel combusted for light- and medium-duty vehicle transportation.

Table 4. Greenhouse Gas Emission Factors

Source	Emission Factor	Reference
Energy and Stationary Fuels		
Electricity[1]	0.28617 kg CO_2/kWh[2]	CCAR 2009b (2007 data)
	0.309 kg CO_2/kWh[3]	EPA 2010b (2007 data)
	0.000013 kg CH_4/kWh	EPA 2010b (2007 data)
	0.000003 kg N_2O/kWh	EPA 2010b (2007 data)
Natural Gas[4]	53.3 kg CO_2/GJ	IPCC 2006a
	0.005 kg CH_4/GJ	IPCC 2006a
	0.0001 kg N_2O/GJ	IPCC 2006a
Vehicle Fuels		
Diesel[5]	10.15 kg CO_2/US gallon	CCAR 2009a
	0.00015 kg CH_4/US gallon	IPCC 2006a
	0.00015 kg N_2O/US gallon	IPCC 2006a
Gasoline[5]	8.78 kg CO_2/US gallon	CCAR 2009a
	0.00013 kg CH_4/US gallon	IPCC 2006a
	0.0002 kg N_2O/US gallon	IPCC 2006a
Propane[5]	5.79 kg CO_2/US gallon	CCAR 2009a
	0.000992 kg CH_4/US gallon	CCAR 2009a; NAFA 2010
	0.002631 kg N_2O/US gallon	CCAR 2009a; NAFA 2010
Compressed natural gas (CNG)[6]	1.906992 kg CO_2/m^3	IPCC 2006a
	0.011127 kg CH_4/m^3	IPCC 2006a
	0.00099kg N_2O/m^3	IPCC 2006a
Ethanol[5]	1.329026 kg CO_2/US gallon	EIA 2010
	0.000782 kg CH_4/US gallon	EPA 2010c; Cal EPA 2009
	0.000952 kg N_2O/US gallon	EPA 2010c; Cal EPA 2009
Water-Related Electricity Intensities for Southern California[7]		
Water supply and conveyance	9,727 kWh/MG	CEC 2006b
Water treatment	111 kWh/MG	CEC 2006b
Water distribution	1,272 kWh/MG	CEC 2006b

Source	Emission Factor	Reference

[1] Emission factors are presented in is kilograms (kg) of each GHG per kilowatt hour (kWh) of electricity.
[2] Emission factor applies to electricity delivered to Southern California Edison (SCE) customers.
[3] Emission factor applies to electricity delivered to all other utility customers.
[4] Emission factors are presented in is kilograms (kg) of each GHG per gigajoule (GJ) of natural gas.
[5] Emission factors are presented in is kilograms (kg) of each GHG per U.S. gallon of fuel.
[6] Emission factors are presented in is kilograms (kg) of each GHG per cubic meter (m^3) of CNG.
[7] Electricity intensities are presented in kilowatt hours (kWh) of electricity per million gallons (MG) of water.

Cal-EPA = California Environmental Protection Agency
CCAR = California Climate Action Registry.
CEC = California Energy Commission.
EIA = Energy Information Administration.
EPA = U.S. Environmental Protection Agency.
GJ = gigajoule.
IPCC = Intergovernmental Panel on Climate Change.
kg = kilogram
kWh = kilowatt hours
m^3 = cubic meters.
MG = million gallons
NAFA = National Association of Fleet Administrators.

3.3 Analysis Methods

The following emissions sectors are included in the inventory. These include the emissions sectors as identified by AB 32 in the Executive Summary above, as well as additional subsectors (e.g., residential is a subsector of building energy). The data source for each emission sector also is listed.

- Residential—Scopes 1 and 2: Natural gas and electricity consumption for the residential sector. Data provided by utilities.
- Commercial/Industrial—Scopes 1 and 2: Natural gas and electricity consumption for the commercial and industrial sector combined. Data provided by utilities.
- Stationary Sources—Scope 1: Fuel combustion, industrial process emissions etc. Data provided by the South Coast Air Quality Management District (SCAQMD) County-wide inventory for 2007 and 2020 and by CARB.
- Light- and Medium-Duty Vehicles—Scope 1: Fuel consumption for light- and medium-duty vehicles in the City. VMT data provided by SCAG and supplemented with vehicle data from CARB's EMFAC model.
- Heavy-Duty Vehicles—Scope 1: Fuel consumption for heavy-duty vehicles in the City. VMT data provided by SCAG and supplemented with vehicle data from CARB's EMFAC model.
- Off-Road Equipment—Scope 1: Fuel consumption for off-road vehicles and equipment in City. Data provided by the OFFROAD model.
- Agriculture—Scope 1: Enteric fermentation and manure management from agricultural operations as well as N_2O emissions from fertilizer application. Data provided by the Regional Water Quality Control Board, Santa Ana Region, and the Department of Food and Agriculture's Production Statistics.
- Solid Waste Management—Scope 2: CH_4 emissions from waste generated by the community and deposited in landfills. Data provided by CalRecycle.
- Wastewater Treatment—Scope 2: Fugitive emissions from domestic wastewater treatment. Data provided by the Inland Empire Utilities Agency (IEUA) and CARB.

- **Water Transport, Distribution, and Treatment—Scope 2:** Electricity consumption associated with water importation. Data provided by the Ontario 2005 Urban Water Management Plan and the California Energy Commission (CEC).
- **SF_6 from Electricity Consumption—Scope 2:** fugitive emissions of SF_6 from the transport of electricity to the City. Data provided by utilities and CARB.

The inventory was conducted primarily using ICF's proprietary Greenhouse Gas Inventory Database (GHG:ID) tool and supplemented with additional emissions calculations. The GHG:ID tool conforms to widely accepted protocol and provides a robust platform for emissions evaluation.

Table 5 presents the emissions sectors included in the community inventory; the data source for each emission sector; details on the methodology for scaling emissions to the City from County- or state-wide resources, as appropriate; and the methodology for projecting emissions to 2020. Population, housing, and employment data for both 2008 and 2020 are presented in Table 6.

Table 5. Community Inventory Data Sources and Methodology

Sector	Emission Sources	Source of Data (Data Level)	Scaling Methodology to City Level	Projection Methodology	Growth Factor
Stationary sources	Fuel combustion Industrial process emissions	SCAQMD (County-wide data)	City population and employment	Population and employment growth forecasts[1]	1.26
Residential	Electricity consumption Natural gas consumption Other fuel consumption by type (natural gas, liquefied petroleum gas, fuel oil, diesel, gasoline, etc.)	Electricity records from utilities (City-level data)[2] Gas records from utilities (City-level data)[3]	None	Growth in households	1.37
Commercial/industrial	Electricity consumption Natural gas consumption Other fuel consumption by type (natural gas, liquefied petroleum gas, fuel oil, diesel, gasoline, etc.)	Electricity records from utilities (City-level data)[2] Gas records from utilities (City-level data) [3]	None	Growth in total employment	1.32
Light- and medium-duty Vehicles	Fuel combustion in light- and medium-duty on-road vehicles	SCAG Draft 2012 RTP modeling	None	SCAG Draft 2012 RTP forecast	1.26
Heavy-duty vehicles	Fuel combustion heavy-duty vehicles	SCAG Draft 2012 RTP modeling		SCAG Draft 2012 RTP forecast	1.35
Off-road equipment	Off-road equipment fuel combustion	OFFROAD2008 (County-level data)	City population and employment	Population and employment growth forecasts[1]	1.30
Agricultural emissions	Enteric fermentation, manure management, and fertilizer application	Regional Water Quality Control Board livestock counts (City-level data) Department of Food and Agriculture's Production Statistics (County-level data)	Quantity of dairy, cattle, and swine; grazing land use	Linear projection of farmland acreage from 2008 to 2050.	0.91

Sector	Emission Sources	Source of Data (Data Level)	Scaling Methodology to City Level	Projection Methodology	Growth Factor
Solid waste management	Methane emissions from landfilled waste	City SWMD (City-level data) CalRecycle (City-level data) EPA Landfill Methane Outreach Program (LMOP) database (statewide data) CARB Landfill Emissions Report (statewide data)	None	Related to growth in population[4]	1.07
Domestic wastewater treatment and discharge	CH_4 and N_2O emissions from the treatment of wastewater from domestic sources (municipal sewage)	Inland Empire Utilities Agency (County-level data)	City population	Population forecast	1.33
Water transport, distribution, and treatment	Indirect electricity emissions for water supply, treatment, distribution, and wastewater treatment	California Energy Commission, Urban Water Management Plan (City-level data)	None	Urban Water Management Plan forecast	1.33
SF_6 from electricity consumption	Fugitive emissions of SF_6 from the transport of electricity to the City	Electricity records from utilities (City-level data)[2] California Energy Commission, Urban Water Management Plan (City-level data)	None	Varies based on source of electricity CARB emission factors	1.33

[1] Specific growth forecasts are based on individual emission sources within these sectors (e.g., for off-road, residential equipment emissions were projected based on population, while industrial equipment emissions were based on non-retail employment).

[2] The City's electric utility is Southern California Edison (SCE).

[3] The City's natural gas utility is Southern California Gas Company (SCG).

[4] Solid waste emissions are based on past waste generated by the City of Ontario, so the 2020 forecast accounts for past population growth in the City. See Section 4.7 for more detail.

Table 6. City of Ontario Population, Housing, and Employment Estimates and Forecasts

Category	2008	2020	Growth Factor
Population	162,871	215,765	1.32
Households	44,639	61,128	1.37
Single-Family Households	*26,395*	*36,026*	*1.36*
Multi-Family Households	*18,244*	*25,102*	*1.38*
Employment *(jobs)*	114,339	151,279	1.32
Retail Employment	*34,529*	*42,602*	*1.23*
Nonretail Employment	*79,810*	*108,677*	*1.36*
Growth projections were provided by SCAG and modified by the City of Ontario.			

Growth factors for 2008 through 2020 were calculated as the ratio of 2020 projections to year 2008 estimates. The 2008 emissions were multiplied by those growth factors to project 2020 emissions, as indicated in Table 5 and Table 6 above.

4. Inventory Results

This section presents the 2008 Community Greenhouse Gas Emissions Inventory, including the data collection and calculation methodology for each sector. The results of the community inventory for 2008 in MT of CO_2e are presented in Table 1 and Figures 1, 2, and 3. Each section below describes a different sector of the inventory. Introductory information for each sector is followed by data acquisition and sources, emission calculations and methodologies, data gaps, and emissions.

4.1 Building Energy Use

Building energy use from residential, commercial, and industrial buildings is a significant component of the community GHG inventory, accounting for 31.6% of the total regional emissions in 2008. Energy consumption includes electricity and natural gas usage. Electricity use can result in indirect emissions from the power plants that produce electricity outside of City boundaries; these are classified as Scope 2 emissions. Natural gas consumption results in direct emissions where the natural gas is combusted; these are classified as Scope 1 emissions.

4.1.1 Data Acquisition and Sources

The City obtains electricity from Southern California Edison (SCE). Electricity data were obtained from utility bills and aggregated into two major categories: residential and commercial/industrial. Commercial and industrial data had to be aggregated into one group to avoid confidentiality conflicts with large electricity users in the City.

Natural gas is supplied to the City by the Southern California Gas Company (SCG). SCG provided natural gas consumption data for single-family residences, multi-family residences, and commercial/industrial buildings. Similar to the electricity data, commercial and industrial consumption had to be grouped together to avoid confidentiality conflicts.

4.1.2 Emissions Calculations and Methodologies

Electricity and natural gas consumption quantities were multiplied by the emission factors presented in Table 2 to determine GHG emissions for 2008. Utility-specific emission factors were used to calculate emissions from electricity consumption for SCE (California Climate Action Registry 2009b). These factors represent all emissions related to electricity deliveries in 2007, including owned and purchased power.[7]

2020 BAU GHG emissions from natural gas and electricity consumption were estimated using City growth forecasts presented in Tables 5 and 6. For the residential sector, emissions were projected using the growth in

[7] The emission factor was only available for 2007 but was applied to the energy consumption in 2008. Also, the emission factor varies from year to year because of a variety of factors that influence a utility's ratio of owned to purchased power and the source of generation (natural gas, hydroelectric, coal, etc.). The emission factor is higher in years when a utility purchases more power to meet California electricity demand. Thus, the emission factor for any given year can vary and also varies widely by utility company (California Climate Action Registry 2009b).

households. For the commercial/industrial sector, emissions were projected using the growth in total employment.

4.1.3 Data Gaps

Commercial and industrial energy use data were grouped to avoid confidentiality conflicts. While disaggregation of these data would not change the overall City-wide inventory, it would help refine the inventory and aid in the CAP planning process. In addition, emission factors for electricity delivered by SCE for the year 2007 were used to calculate emissions for electricity consumed in 2008, because 2008 emission factors were not available.

4.1.4 Building Energy Use Emissions

Table 7 presents the 2008 and 2020 BAU emissions inventory for building energy use in the City of Ontario.

Table 7. 2008 and 2020 Business as Usual Forecast of Building Energy Use and Greenhouse Gas Emissions

	2008 Inventory			2020 BAU Forecast		
Sector	kWh	Therms	MT CO_2e	kWh	Therms	MT CO_2e
Residential	317,534,340	16,908,445	186,558	434,826,926	23,154,180	255,470
Commercial/Industrial	1,299,620,450	65,354,314	741,851	1,719,539,371	86,468,618	981,537
Total	1,617,154,790	82,262,759	928,409	2,154,366,297	109,622,797	1,237,006

4.2 Light- and Medium-Duty Vehicles

Light- and medium-duty vehicle emissions accounted for approximately 26.1% of the City's total community emissions in 2008. These emissions were direct Scope 1 emissions resulting from the vehicle fuel combustion.

This source includes emissions from on-road light- and medium-duty vehicles associated with activity within Ontario (i.e., trips that neither begin nor terminate within Ontario City limits are omitted from the inventory). Trips that have an origin, destination, or both within Ontario are counted. Emissions originate from the combustion of fossil fuels (such as diesel, gasoline, compressed natural gas, etc.) to power light- and medium-duty vehicles. These emissions are direct Scope 1 emissions and accounted for approximately 26.1% of the City's total emissions in 2008.

4.2.1 Data Acquisition and Sources

Data on trips and vehicle miles traveled (VMT) were obtained at the city level on an origin-destination basis from SCAG's 2012 regional travel demand[8] model for the years 2008 and 2020. The data were obtained for light- and medium-duty vehicles, which are defined by SCAG as all passenger cars, pick-up and single unit trucks, and recreational vehicles.

[8] Description and documentation for SCAG's 2012 model are available here: www.scag.ca.gov/modeling.

The 2008 data were based on the transportation network existing in 2008 and socioeconomic data (population and employment) for that year. The 2020 plan scenario was based on growth forecasts received from local jurisdictions and the planned network in that year. The VMT and trips data were obtained from SCAG for an average weekday and were multiplied by 347[9] to calculate the annual VMT. This is the factor used by SCAG to annualize the average weekday data.

For Ontario, SCAG provided VMT for trips that have an origin, destination, or both within the City. To allocate the VMT appropriately to the City, ICF used the methodology recommended by the SB 375 Regional Targets Advisory Committee (RTAC).[10] This methodology scales VMT to individual jurisdictions according to the following three accounting rules.

- VMT for vehicle trips that originate and terminate within the city are weighted by a factor of 1.
- VMT for vehicle trips that either originate or terminate (but not both) within the jurisdiction are weighted by a factor of 0.5.
- VMT for vehicle trips with neither originate nor terminate within the jurisdiction are weighted by a factor of 0. These trips are commonly called pass-through trips.

Essentially, ICF allocated to Ontario one half of the VMT for any trip with an origin or destination within the City. This method avoids apportioning through trips on freeways or major arterials to the cities containing them, while allocating emissions to the cities that can take responsibility for reducing them. The method was applied to both light- and medium-duty, and heavy-duty VMT.

In addition, at the county level, data on VMT by speed bin were obtained using a link-based analysis method based on traffic volumes on each link of the network, the distance traveled on each link, and speeds on each link in the County. If a link was split by the county boundary, a ratio was calculated by SCAG based on distance to determine the VMT falling within the County. The county-wide VMT by speed bin was used to estimate emissions for the City of Ontario.

4.2.2 Emissions Calculations and Methodologies

To quantify GHG emissions for 2008, ICF used the VMT and county-level average speed data from SCAG as inputs into CARB's EMFAC 2011 model to determine CO_2 emission factors for 2008 by speed bin and vehicle type for the South Coast Air Basin. Emission factors for CH_4 and N_2O were obtained from the 2012 Climate Registry. ICF weighted the emission factors by VMT (available in EMFAC) to obtain emission factors for the two required vehicle categories—light- and medium-duty vehicles, and heavy-duty vehicles. To calculate annual emissions, the VMT were multiplied by the appropriate emission factors for the City (by vehicle type) expressed in grams per mile.

A similar process was followed for the 2020 BAU analysis, using SCAG's VMT data from the 2020 Plan scenario and emission factors for that year.

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[9] This number conforms to the methodology CARB uses in the Pavley I and LCFS policies. 347 days is used to account for the reduced vehicle activity on weekends as compared to weekdays. (California Air Resources Board 2010d)

[10] The origin/destination modeling methodology provides a better accounting of VMT associated with land use jurisdiction than approaches that apportion VMT on the basis of population shares or on the basis of VMT that occurs within the boundaries of a jurisdiction.

Finally, the resulting GHG emissions were calculated for the City, expressed in terms of annual MT CO_2e[11] generated by on-road vehicles, using the appropriate GWP data for CH_4 and N_2O.[12]

4.2.3 Data Gaps

The VMT by speed bin data available from SCAG was at the county level and was not available at the city level. It would take significant data processing effort from SCAG to make this available. Therefore, ICF used the proportion of the County's VMT in each speed bin to disaggregate each city's VMT by speed bin in order to apply the appropriate emission factors to calculate emissions. This method assumes that the City of Ontario hase a VMT by speed distribution that is the same as the overall County. Although the impact on the inventory is not likely to be significant, if city-level VMT were available by speed bin, it would lead to a more accurate inventory.

4.2.4 Light- and Medium-Duty Vehicles Emissions

Table 8 presents light- and medium-duty vehicle emissions.

Table 8. 2008 and 2020 Business as Usual Forecast Light- and Medium-Duty Vehicles Emissions

Category	2008 Inventory	2020 BAU Forecast
VMT	1,765,679,554	2,263,186,052
GHG Emissions ($MTCO_2e$)		
CO_2	750,532	961,861
CH_4	45	41
N_2O	50	21
Total Emissions ($MTCO_2e$)	766,952	969,119

4.3 Heavy-Duty Vehicles

Truck emissions accounted for approximately 6.9% of the City's total community emissions in 2008. These emissions were direct Scope 1 emissions resulting from the vehicle fuel combustion.

This source includes emissions from on-road heavy-duty vehicles associated with activity within Ontario (i.e., trips that neither begin nor terminate within Ontario City limits are omitted from that city's inventory). Trips that

[11] This is the international unit that combines the differing impacts of all GHGs into a single unit, by multiplying each emitted gas by its GWP.

[12] GWP compares the relative global warming effect of the GHG in question to CO_2 and is a measure of how much a given mass of GHG contributes to global warming. The GWP of CO_2 is, by definition, 1. The GWP values used in this report are based on the Intergovernmental Panel on Climate Change (IPCC) Second Assessment Report (SAR) and United Nations Framework Convention on Climate Change (UNFCCC) reporting guidelines and are: CO_2 = 1, CH_4 = 21, N_2O = 310, SF_6 = 23,600 (Intergovernmental Panel on Climate Change 1996, United Nations Framework Convention on Climate Change 2006). Although the IPCC Fourth Assessment Report (AR4) presents different GWP estimates, the current inventory standard relies on SAR GWPs to comply with reporting standards and consistency with regional and national inventories (Intergovernmental Panel on Climate Change 2007; U.S. Environmental Protection Agency 2010a).

have an origin, destination, or both within Ontario are counted. Emissions originate from the combustion of fossil fuels (such as diesel, gasoline, compressed natural gas, etc.) to power light- and medium-duty vehicles. These emissions are direct Scope 1 emissions and accounted for approximately 6.9% of the City's total emissions in 2008.

4.3.1 Data Acquisition and Sources

Data on trips and VMT were obtained at the city level on an origin-destination basis from SCAG's 2012 regional travel demand[13] model for the years 2008 and 2020. The data were obtained for heavy-duty vehicles, which are defined by SCAG as trucks with gross vehicle weight greater than or equal to 8,500 pounds.

Aside from the definition of light-duty vehicles and because heavy-duty and light- and medium-duty vehicles have the same data sources, refer to Section 4.2.1 for additional explanation of data acquisition and sources for heavy-duty vehicles.

4.3.2 Emissions Calculations and Methodologies

Because the same methodologies and calculations are used for both heavy-duty and light- and medium-duty vehicles, refer to Section 4.2.2 for the discussion of the emissions calculations and methodologies for heavy-duty vehicles.

4.3.3 Data Gaps

Because heavy-duty and light- and medium-duty vehicles have the same data sources, refer to Section 4.2.3 for discussion of data gaps.

4.3.4 Heavy-Duty Vehicle Emissions

Table 9 presents heavy-duty vehicle emissions.

Table 9. 2008 and 2020 Business as Usual Forecast Heavy-Duty Vehicles Emissions

Category	2008 Inventory	2020 BAU Forecast
VMT	201,779,568	264,437,532
GHG Emissions ($MTCO_2e$)		
CO_2	201,988	274,789
CH_4	7	5
N_2O	5	4
Total Emissions ($MTCO_2e$)	203,805	276,028

[13] Description and documentation for SCAG's 2012 model are available here: <http://www.scag.ca.gov/modeling>.

4.4 Stationary Sources

This category includes emissions from fuel combustion (such as diesel, gasoline, and propane) and fugitive emissions of CH_4 and N_2O from industrial facilities in the City. Emissions from these sources accounted for approximately 13.8% of the total City emissions in 2008.

GHG emissions from stationary sources result from fuel use other than natural gas consumption, which is accounted for in the building energy category (Section 4.1). The following categories were included in this sector:

- oil and gas production (combustion)
- manufacturing and industry
- food and agricultural processing
- fuel combustion
- coatings and related processes
- cleaning and surface coatings
- petroleum production and marketing
- chemical production
- mineral processes
- industrial processes
- asphalt paving and roofing
- sewage treatment
- service and commercial (combustion)
- residential (combustion)
- and cooking

Emissions associated with electricity use were not included in this category as they were quantified as part of Ontario's commercial and industrial building energy emissions (Section 4.1).

4.4.1 Data Acquisition and Sources

County-wide GHG emissions for stationary sources were obtained from the 2007 SCAQMD inventory (South Coast Air Quality Management District 2007). Population and employment statistics provided by SCAQMD and SCAG were used to scale the 2007 inventory to 2008 and to apportion emissions to the City.

4.4.2 Emissions Calculations and Methodologies

The 2007 SCAQMD inventory includes emissions from natural gas combustion (Section 4.1). To avoid double counting, the percentage of emissions associated with natural gas consumption was subtracted from the SCAQMD total stationary source inventory. The resulting fuel combustion emissions therefore include only emissions associated with fuel use other than natural gas (e.g., propane, diesel, fuel oil).

Since the SCAQMD inventory represents emissions for the year 2007, it was necessary to scale these emissions by a growth factor to estimate emissions for the year 2008. To estimate stationary source emissions for 2008, all sectors within the 2007 SCAQMD inventory (except resident fuel combustion) were scaled by the change in County-wide employment from 2007 to 2008 (South Coast Air Quality Management District 2007). This metric was determined to be the most accurate for scaling nonresidential emissions because stationary fuel combustion likely trends with employment in the County. (Employment by specific economic sector was not available, so total employment was used.) Residential fuel combustion emissions in 2007 were scaled by the change in County-wide population because fuel combustion in the residential sector most likely trends with the number of residents in the County. To determine emissions for the City, the calculated County-wide 2008 emissions were scaled by the respective ratios for City-wide employment and population, as provided by SCAG (2012).

2020 BAU GHG emissions were estimated by using City growth forecasts presented in Tables 5 and 6. All emissions except residential fuel combustion were projected using the growth in total employment. Residential fuel combustion was projected using the growth in population.

4.4.3 Data Gaps

Stationary source data were obtained from SCAQMD as discussed above. Because these data were for 2007, emissions were scaled by the change in population and employment from 2007 to 2008. These data then were apportioned to the City using City-wide population and employment statistics, as indicated in the table below. This approach is based on the assumption that stationary sources can be reasonably approximated with population and employment. This is not necessarily the case because various stationary source emissions may not be equally represented in the City based on population and employment. Moreover, the approach assumes a linear relationship between population and employment change from 2007 and 2008 and stationary source emissions.

To improve this analysis, stationary source data for 2008 specifically for Ontario should be obtained. This will require greater coordination between stationary source facilities, the City, and the SCAQMD, as well as better tracking systems for residential fuel combustion quantities.

4.4.4 Stationary Source Emissions

Table 10 presents the City-wide 2008 and 2020 BAU emissions from stationary sources, a brief definition of each source, and the metric used to scale County-wide emissions to the City. Stationary source emissions have been grouped into the following major source categories: industrial, commercial, sewage treatment, residential, agricultural, and miscellaneous.

Table 10. 2008 and 2020 Business as Usual Forecast Stationary Source Emissions

Sector	Description	Scaling Metric	2008 Inventory ($MTCO_2e$)	2020 BAU Forecast ($MTCO_2e$)
Industrial	Industrial fuel combustion[1]	Total employment	154,891	199,292
Commercial	Commercial fuel combustion[1]	Total employment	133,906	180,090
Waste	Diesel oil and digester gas [2]	Total employment	19,913	26,346
Residential	Residential fuel combustion[1]	Population	3,293	4,363
Agricultural	Farming operations and waste burning[3]	Total employment	92,836	100,987
Miscellaneous	Charbroiling emissions from cooking and other emission sources	Total employment	355	470
Total Emissions ($MTCO_2e$)			405,195	511,548

[1] Does not include natural gas combustion as these emissions are accounted for in the building energy sector (refer to Section 4.1)

[2] Includes emissions from stationary fuels combusted as part of the sewage treatment process. Please refer to the wastewater sector (Section 4.8) for a discussion of CH_4 and N_2O associated with the treatment and breakdown of waste.

[3] Represents combustion emissions from heavy-duty agricultural equipment (e.g., tractors) and the burning of agricultural waste. Refer to the agricultural sector (Section 4.6) for a discussion of emissions associated with livestock activity and the application of fertilizer.

4.5 Off-Road Equipment

Off-road equipment emissions accounted for approximately 6.0% of the total regional emissions in 2008. These emissions are direct Scope 1 emissions resulting from equipment fuel combustion. Off-road equipment includes recreational boats and vehicles and equipment for industry, construction, lawn and garden maintenance, military activities, and agriculture.

4.5.1 Data Acquisition and Sources

The CARB OFFROAD 2007 air quality model was used to calculate off-road equipment GHG emissions. Because the model provides County-level data, it was run for the year 2008 to calculate overall fuel consumption (gasoline, diesel, and liquefied petroleum gas) for off-road equipment in San Bernardino County. Equipment categories were refined to include those activities relevant to Ontario. The following equipment categories, as defined by the OFFROAD model, were included in the model run: recreational, construction and mining, industrial, lawn and garden, agricultural, transportation refrigeration units, entertainment, pleasure craft[14], and other portable equipment. Fuel consumption estimates by equipment type were apportioned by population and employment statistics to obtain emissions for Ontario.

4.5.2 Emissions Calculations and Methodologies

To obtain emissions for Ontario, City-wide population and employment by economic sector statistics were used to apportion the OFFROAD fuel combustion data. Table 11 outlines the scaling factors used in this analysis to

[14] There are no major bodies of water within City boundaries. However, it was assumed that residents in Ontario would travel to nearby bodies of water for recreation.

apportion the County-wide emissions to Ontario. The table also provides a rationale as to why these factors were selected to represent each equipment category. Once fuel consumption estimates were appropriated, the data were multiplied by fuel emission factors (see Table 4) to calculate CO_2, CH_4, and N_2O.

Table 11. Off-Road Equipment and Scaling Factors

Off-Road Equipment	Scaling Factor	Rationale
Recreational	Population	Equipment assumed to be owned by households
Construction and mining	Industrial employment	Equipment use assumed to be correlated with industrial employment and activity
Industrial	Industrial employment	Equipment use assumed to be correlated with industrial employment
Lawn and garden	Population	Equipment assumed to be owned by households
Light commercial	Retail and non-retail employment	Equipment use assumed to be correlated with general commercial activity
Agricultural	Agriculture employment	Equipment use assumed to occur on agricultural fields
Transport refrigeration units	Total employment	Equipment use could not be appropriately matched with a specific employment sector and therefore was assumed to correlate with total employment
Entertainment	Population	Equipment assumed to be owned by households
Pleasure craft	Population	Equipment assumed to be owned by households
Other portable equipment	Total employment	Equipment could not be appropriately matched with a specific employment sector and therefore was assumed to correlate with total employment

Fuel combustion associated with railyard and airport ground equipment was not included in this inventory because the City and its community have little to no jurisdiction over these activities. Oil drilling equipment was not included in the inventory because there is no activity associated with this equipment within the City.

2020 BAU GHG emissions were estimated by using City growth forecasts in employment provided by SCAG presented in Table 6. Growth in retail and non-retail employment was used to project emissions from light commercial equipment. Growth in industrial employment was used to project industrial, construction, and mining equipment. Similarly, agricultural employment growth was used to project agricultural equipment. Emissions from pleasure craft and recreational, lawn and garden, and entertainment equipment were projected using the growth in population.

4.5.3 Data Gaps

Off-road emissions were estimated based on the County-wide fuel combustion estimated generated by the OFFROAD model. Because activity data are not readily available on a scale smaller than the County level, the OFFROAD outputs were scaled by population and employment statistics to determine emissions associated with activities in Ontario. This approach assumes that off-road equipment can be reasonably approximated with population and employment. This is not necessarily the case, because various equipment emissions may not be equally represented in the cities based on population and employment. Area-specific data for off-road equipment are required to estimate more precise emissions at the city level.

4.5.4 Off-Road Equipment Emissions

Table 12 presents the 2008 and 2020 BAU emissions inventory for off-road equipment for Ontario.

Table 12. 2008 and 2020 Business as Usual Projected Off-Road Equipment Emissions

GHG Emissions	2008 Inventory ($MTCO_2e$)	2020 BAU Forecast ($MTCO_2e$)
Recreational equipment	1,629	2,158
Construction and mining equipment	112,881	149,541
Industrial equipment	18,518	23,826
Lawn and garden equipment	3,417	4,527
Light commercial equipment	6,334	9,131
Agricultural equipment	11,272	10,236
Transport refrigeration units	7,830	10,531
Entertainment equipment	56	74
Pleasure craft	14,348	19,008
Other portable equipment	28	38
Total Emissions ($MTCO_2e$)	176,314	229,069

4.6 Agriculture

Agriculture emissions accounted for approximately 12.1% of the City's total emissions in 2008. These emissions are direct Scope 1 emissions resulting from livestock activity and the application of fertilizer. Emissions of CH_4 and N_2O can result from livestock production through enteric fermentation and manure management (Intergovernmental Panel on Climate Change 2006b). CARB and Intergovernmental Panel on Climate Change (IPCC) Tier 1 methodology were used to calculate emissions. Emissions of N_2O can result from anthropogenic inputs of nitrogen into soil through fertilizers by way of direct (directly from the soils to which the nitrogen is added or released) and indirect (following volatilization of ammonia and nitrogen oxides from managed soils) pathways (Intergovernmental Panel on Climate Change 2006b). Both direct and indirect emissions of N_2O were calculated.

The three general sources of agricultural emissions evaluated in this inventory are livestock enteric fermentation, livestock manure management, and N_2O emissions from the application of fertilizer.

4.6.1 Data Acquisition and Sources

Data from the California Department of Conservation, Division of Land Resource Protection Farmland Mapping and Monitoring Program (FMMP) and additional geographic information systems (GIS) analysis using City data were used to determine grazing land and farmland acreage within the City (California Department of Conservation, Division of Land Resource Protection 2008). Counts of City of Ontario livestock for the year 2008 were obtained through the state Department of Food and Agriculture's Agricultural Statistics (California Department of Food and Agriculture 2008) and the Regional Water Quality Control Board for the Santa Ana

Region (Kashak pers. comm.). Counts of City of Ontario swine were obtained from the U.S. Department of Agriculture's (USDA's) Census of Agriculture, using 2007 data as a proxy for the year 2008.

4.6.2 Emissions Calculations and Methodologies

All agriculture emissions were calculated using CARB and IPCC methodology (Intergovernmental Panel on Climate Change 2006b; California Air Resources Board 2010b). Livestock counts were provided for the City of Ontario. County swine counts were apportioned based on the percent of grazing land in the City, as determined by the FMMP data and the additional GIS analysis. A count of San Bernardino County chickens did not specify any activity for the City (Krygier pers. comm.).

Emissions of N_2O from inputs of nitrogen into soil through fertilizers were calculated using an average quantity of nitrogen applied in synthetic fertilizer for crops of 140 pounds per acre per year (Miyao pers. comm.). It was assumed that all crops in Ontario use the same rate of fertilizer application, and that all crops use synthetic fertilizer to be conservative (organic fertilizers produce much lower N_2O emissions). Crop acreage was determined through the 2007 FMMP report and additional GIS analysis by summing acreage under the categories labeled *Farmland*. The N_2O emissions from fertilizer application on farmland were calculated using the equations provided by CARB (California Air Resources Board 2010b).

The 2020 BAU GHG emissions were based on the City's estimate that all agricultural activities would be transitioned by 2050. A linear extrapolation of farmland and grazing land was used to forecast the amount of land available in 2020 for livestock activity and the application of fertilizer. This resulted in an annual decline rate of about 3% for all agriculture activities.

4.6.3 Data Gaps

Emission factors can vary depending on the specific type of livestock and manure management system. The emission factors used in the inventory were based on averages that were determined for CARB's statewide inventory. In addition, the actual quantity of nitrogen-based fertilizer applied to farmland within City boundaries, on a per-acre basis, would refine the estimate of N_2O emissions from fertilizer application.

4.6.4 Agriculture Emissions

Table 13 presents agriculture emissions for Ontario for enteric fermentation, manure management, and fertilizer application.

Table 13. 2008 and 2020 Business as Usual Projected Agriculture Emissions by Source

Category	2008 Inventory ($MTCO_2e$)	2020 BAU Forecast ($MTCO_2e$)
CH_4 (Enteric fermentation and manure management)	335,690	304,828
N_2O (Enteric fermentation, manure management, and fertilizer application)	20,441	18,562
Total Emissions ($MTCO_2e$)	356,131	323,390

4.7 Solid Waste Management

Total emissions from solid waste generated by the City of Ontario accounted for approximately 2.0% of the City's 2008 inventory. These emissions occur at numerous landfills throughout the state and are considered a Scope 2 emission source. The materials disposed of by the City are recycled, composted, or placed in a landfill. Landfill-related emissions from waste are primarily CH_4, which is released over time when waste decomposes in a landfill. Organic waste that is buried in landfills decomposes under anaerobic conditions to produce CH_4, which has a GWP that is 21 times that of CO_2.

Waste generated in the City is either diverted or transported to a landfill. Both of the landfills currently used for disposal of City waste are located outside the City. According to CalRecycle, approximately half of the cities in the County have landfills located within their own city limits. Landfill emissions do not occur within the boundaries of every city generating the waste; however, every city is responsible for creating this waste and subsequent landfill emissions. Thus, emissions from the decomposition in landfills of waste produced by Ontario in 2008 are included in the inventory.

Milliken Sanitary Landfill's current status and characteristics are listed in Table 15. The emissions from this landfill are included as an informational item only as a CAP planning tool. Because this landfill accepts waste from many jurisdictions, landfill-related emissions are not related to City population, waste generated by City or municipal facilities, or behavioral or regulatory changes related to waste generation that happen within the City.

4.7.1 Data Acquisition and Sources

In 2009, the CARB conducted a study to examine the CH_4 reduction potential of proposed landfill regulation (California Air Resources Board 2009). The report contains data on the majority of landfills in the state, including opening year, closing year, 1990 waste in place, 2006 waste in place, and estimated 2020 waste in place, as well as the control technologies installed at each landfill. This report was used for calculating both site-based and generation-based emissions.

Additional data for the landfill within the City were collected from CalRecycle and the EPA Landfill Methane Outreach Program (LMOP) database (U.S. Environmental Protection Agency 2009). This information included annual waste disposal during 1995–2009 for each landfill. Specific CH_4 capture data, including measured flow rates of landfill gas, were obtained from the EPA LMOP database (U.S. Environmental Protection Agency 2009). These data were supplemented by a report detailing CH_4 capture rates for a few landfills in California (Themelis and Ulloa 2007).

Projection data used to estimate waste disposed prior to 1995 and after 2009 were obtained from SCAG and the California Department of Finance (Southern California Association of Governments 2012; California Department of Finance 2010a, 2010b, 2010c, 2010d).

4.7.2 Emission Calculations and Methodologies

There are two methods for calculating emissions from solid waste disposed in landfills: site-based and generation-based. Generation-based emissions were included in the inventory; site-based emissions were not included (but are provided for informational purposes).

4.7.2.1 Site-Based Emissions

Site-based emissions, which include emissions from the landfill located within the City boundaries, were estimated as an informational item but were not included in the inventory. This is because Milliken Sanitary Landfill accepts waste from numerous cities, and Ontario is not responsible for generating much of this waste. Ontario also has no jurisdiction to reduce waste disposal from these other cities as part of the CAP. Emissions from waste disposed of by Ontario are included in the inventory as generation-based emissions discussed in the following section.

Site-based emissions were included as an informational item to help Ontario identify site-based waste control measures to reduce CH_4 emissions from Milliken Sanitary Landfill (such as landfill caps and CH_4 flaring systems). The site-based approach calculates landfill emissions for the inventory year based on the landfills located within the geographic boundaries of the jurisdiction, regardless of when the waste was disposed of. This method is also known as waste in place and is a suitable method for calculating the amount of landfill gas available for flaring, heat recovery, and energy generation.

CARB's First Order Decay model was used to estimate CH_4 emissions from landfills (California Air Resources Board 2010c) for the site-based method. This is an Excel-based model that is consistent with IPCC-recommended methodologies for estimating waste decay rate, CH_4, and CO_2 emissions. The model requires the following inputs: year of opening, year of closing, annual waste deposition, and local annual precipitation rate. For site-based emissions, specific landfill data from CalRecycle, the EPA, and a CH_4 generation study (CalRecycle 2010a; U.S. Environmental Protection Agency 2009; Themelis and Ulloa 2007) were input to the model. Only total waste in place data were available. For disposal in the landfills for all years, it was assumed that waste was deposited evenly over each year of operation. A landfill-specific CH_4 capture rate of 63% was used based on research conducted for San Bernardino County.

For estimating site-based emissions in 2020, a linear extrapolation of population growth for Ontario, combined with the average per-capita waste disposal rate in 2009, was used (CalRecycle 2010b). It was assumed that the cities would deposit waste generated in 2020 in the same landfills accepting waste from the cities in 2009. The CH_4 capture efficiency for landfills in 2020 also was assumed to be equal to 2009.

4.7.2.2 Generation-Based Emissions

Generation-based emissions for 2008 and 2020 were estimated and included in the inventory. These emissions can help the City identify generation-based waste control measures to reduce CH_4 emissions from landfills (such as source reduction or recycling programs). This approach estimates baseline landfill emissions based on the amount of current annual waste generated within City boundaries and the landfills where the waste is deposited, regardless of whether the waste is deposited in a landfill within the jurisdiction. This approach discloses the annual landfill emissions associated with annual waste generation.

CARB's First Order Decay model was used to estimate CH_4 emissions from landfills (California Air Resources Board 2010c). For generation-based emissions, the First Order Decay model was run for the City of Ontario assuming the City was a hypothetical landfill. For landfills listed as having CH_4 capture or flaring technologies installed, but not having specific information on the efficiency of the CH_4 capture, a default CH_4 destruction efficiency of 75% was assumed (U.S. Environmental Protection Agency 1998).

The waste generated in the City, along with the destination landfill of that waste, was provided by the City, and landfill details were identified based on CalRecycle data for the years 1995–2009. For each landfill, the CH_4 capture efficiency was determined using the EPA's LMOP database and a CH_4 generation study (U.S. Environmental Protection Agency 2009; Themelis and Ulloa 2007). Waste deposited in 2008 in each landfill was compared to the landfill's CH_4 capture efficiency for the given year, if applicable, to develop a profile of CH_4 emissions for each ton of waste landfilled by the City in 2008. It was assumed that the k-value for each City landfill was 0.02, which represents areas with annual average rainfall of less than 20 inches because most of the waste generated by the cities ends up in landfills located in the region.

For estimating waste generation in 2020, a linear extrapolation of population growth for the City, combined with the average per-capita waste disposal rate in 2008, was used (California Department of Finance 2010d; CalRecycle 2010b). It was assumed that the City would deposit waste generated in 2020 in the same landfills accepting waste from the cities in 2009. The CH_4 capture efficiency for landfills in 2020 was also assumed to be equal to 2008.

4.7.3 Data Gaps

Site-specific landfill CH_4 capture rates would improve this sector of the inventory. Landfill emissions are based on the consolidated landfill report prepared by CARB and data from CalRecycle for 2008. The CARB report contained waste in place information for all landfills in the County. Although individual landfill operators may collect data on site related to the maintenance and operation of gas flaring systems, these data are not always sufficient to estimate precise CH_4 destruction efficiency. This information was not included in the summary report prepared by CARB in 2009 (California Air Resources Board 2009). Individual landfill operators were not contacted for the purposes of data collection. Additional CH_4 capture rates were found by Themelis and Ulloa (2007) but not for all landfills where the City is sending its waste.

4.7.4 Solid Waste Management Emissions

Table 14 presents generation-based solid waste emissions. Table 15 shows the landfills used by the City but located outside of City jurisdictional boundaries. This table also states whether the landfill is open or closed, the amount of waste in place at the landfill in 2008, and the associated CH_4 emissions.

Table 14. Generation-Based Solid Waste Management Greenhouse Gas Emissions for 2008 and 2020 Business as Usual Forecast

Category	2008 Inventory	2020 BAU Forecast
Waste disposed of (tons)	256,328	288,659
Waste disposed of 1950–2008 and 1950–2020 (tons)	10,158,605	13,171,007
Total CH_4 Emissions (MTCO2e)	60,000	64,326

Table 15. Site-Based Solid Waste Management Emissions for 2008 and 2020 Business as Usual Forecast

Landfill Name	2008 Inventory			2020 Projection		
	Open/ Closed	Waste in Place (tons)[1]	CH_4 Emissions ($MTCO_2e$)	Open/ Closed	Waste in Place (tons)[1]	CH_4 Emissions ($MTCO_2e$)
Milliken Sanitary Landfill (SWIS # 36-AA-0054)	Closed	12,011,629	60,787	Closed	12,011,629	47,817
Total Emissions ($MTCO_2e$)			60,787			47,817

[1] The 2008 value was estimated based on the full capacity of the landfill and the amount of waste in place in 2006, as provided by the CARB (2009).

Sources: California Air Resources Board 2009, 2010c.

4.8 Wastewater Treatment

There is one wastewater treatment plant (WWTP) located within the boundaries of this inventory. Wastewater generated by Ontario is treated at IEUA Regional Water Recycling Plant No. 1 (RP-1). This facility serves the cities of Ontario, Rancho Cucamonga, Upland, Montclair, and Fontana and an unincorporated area of San Bernardino County. The GHG emissions result from electricity and/or natural gas used to power the facility. These emissions are classified as Scope 1 (natural gas) and Scope 2 (electricity) and are included in the inventory in the building energy sector above. Additional emissions of CH_4 and N_2O result from the treatment and breakdown of waste in the facility. These are commonly referred to as fugitive emissions, are classified as Scope 1 emissions, and are included in the inventory. Although the IEUA RP-1 plant captures some fugitive emissions (biogas) on site and uses it for local power, the total amount captured was unavailable at the time of analysis. Therefore, all fugitive emissions are included in the inventory.

Wastewater generated in the City will be sent to IEUA RP-1, along with wastewater generated by the other regions served by this facility. Only the fugitive emissions occurring as a result of treating wastewater generated by the City were included in the inventory because the City is not responsible for generating all of the wastewater treated by IEUA RP-1. GHG emissions due to fugitive emissions at these facilities are listed in Table 16. These emissions represented 0.2% of the total emissions.

4.8.1 Data Acquisition and Sources

For each of its WWTPs, IEUA provided daily influent flow, population served, amount of digester gas combusted, average nitrogen load, and biochemical oxygen demand (BOD_5) load (Tam pers. comm.).

4.8.2 Emissions Calculations and Methodologies

Equations 10.3 and 10.4 in CARB's Local Government's Operating Protocol (California Air Resources Board et al. 2010) were used to estimate fugitive emissions of CH_4 and N_2O resulting from wastewater treatment. These equations require the following inputs: daily influent flow, population served, amount of biogas produced, average nitrogen load, and BOD_5 load. These standard equations are recommended for use by local governments in preparing GHG inventories and consistent with methodologies used for national and state-level inventories.

4.8.3 Data Gaps

The estimate of GHG emissions associated with wastewater treatment by the City is based on the City's population, and not on actual emissions resulting from WWTP activities within City boundaries. If these activities at IEUA RP-1 could be disaggregated to the City level, this information would provide for a more accurate estimate of GHG emissions from wastewater treatment. In addition, the amount of biogas produced at the IEUA RP-1 plant was unavailable at the time of analysis. This information would refine the estimate of fugitive emissions in the inventory.

4.8.4 Wastewater Treatment Plant Emissions

Table 16 presents GHG emissions from WWTPs.

Table 16. 2008 and 2020 Business as Usual Projected Fugitive Wastewater Treatment Emissions

Greenhouse Gas Emissions	2008 Inventory ($MTCO_2e$)	2020 BAU Forecast ($MTCO_2e$)
CH_4 emissions	149	198
N_2O emissions	11	15
Total Emissions ($MTCO_2e$)	6,587	8,781

4.9 Water Transport, Distribution, and Treatment

Emissions related to the transport, distribution, and treatment of water accounted for approximately 1.0% of total emissions in 2008. The City's water consumption results in indirect emissions from the following activities: electricity consumption for water supply and conveyance, water treatment, water distribution, and wastewater treatment. All wastewater treatment emissions are accounted for in Section 4.1, *Building Energy Use,* and Section 4.8, *Wastewater Treatment.* The emissions were calculated based on whether the source of water was located in the City and whether the water consumption–related activity occurred in the City. For local sources of water, the emissions resulting from water supply and conveyance, water treatment, and water distribution also have been included in this sector (electricity provided by SCE in a general *Water* category). Additional emissions from electricity associated with other local water-related activities were accounted for in Section 4.1, *Building Energy Use*, as these activities were assumed to be occurring within the City. For non-local sources of water, such as the State Water Project, this sector includes:

- Transporting water to the City from other areas in the state (water supply and conveyance).;
- Treatment of water at facilities not located in the City (water treatment).
- Distributing this water to the City (water distribution).

Where utility data are not available, emissions from water consumption can be estimated using an activity-based approach. The CEC 2006 report, *Refining Estimates of Water-Related Energy Use in California*, provides proxies for embodied energy use for water in southern and northern California (California Energy Commission 2006b).

This hybrid approach using both utility data and activity data was used to minimize double-counting of emissions for the City. Table 17 presents how utility data were used in conjunction with the activity-based approach to estimate emissions for local and non-local sources of water, as applied specifically to the City.

Table 17. Water Transport, Distribution, and Treatment Data Source Mapping

Source/Activity	Water Supply and Conveyance	Water Treatment	Water Delivery
Local	Utility data	Activity data	Utility data
Nonlocal	Activity data	Activity data	Utility data

4.9.1 Data Acquisition and Sources

Water supply data were provided by the *City of Ontario 2005 Urban Water Management Plan* (UWMP) (City of Ontario 2005). For all sectors described below, water supply data were provided for 2005, 2010, 2015, and 2020.

Because the UWMP provides water quantity forecasts every 5 years starting in 2005, the water quantity for the 2008 base year of the inventory was estimated based on an average growth rate, using the 2005 data and the 2010 forecast. This estimate then was combined with the electricity emission factors to develop the indirect emissions estimate.

4.9.2 Emission Calculations and Methodologies

Methods for calculating emissions associated with City municipal water consumption, including water supply and conveyance, water treatment, and water distribution are described below.

4.9.2.1 Water Supply and Conveyance

Water supply involves indirect emissions from the generation of electricity required to supply each city with water. The City's water includes a mix of local and non-local sources of water. The local sources of water include groundwater and recycled water from the wastewater treatment plant located in the City. For local sources of water, the emissions are assumed to be included either in the utility data category in Table 18 or in Section 4.1, *Building Energy Use*. The non-local sources of water include deliveries from the State Water Project, transfers from third parties, and desalinated water. For non-local sources, the energy intensity associated with water supply and conveyance in southern California is approximately 9,727 kWh/million gallons (MG) (California Energy Commission 2006b).

Information in the CEC report regarding electricity usage and loss factors, and imported water quantities provided by the UWMP, was used to calculate indirect emissions from water importation to the City in 2008 (California Energy Commission 2006b; City of Ontario 2005). Electricity emission factors for the CAMX/WECC California region were used to calculate GHG emissions (724.12 pounds CO_2/megawatt hour [MWh], 30.24 pounds CH_4/gigawatt hour [GWh], and 8.08 pounds N_2O/GWh) because electricity used to transport water to the City facilities is supplied by many utilities within this region (U.S. Environmental Protection Agency 2010b).

The emissions for the BAU forecast for 2020 were estimated using projected water quantities for the City in 2020 obtained from the UWMP and emission factors discussed above.

4.9.2.2 Water Treatment

Before water is pumped to each city, it is purified by passing through various treatment processes. Because the City does not own or operate any water treatment plants, most electricity consumed to treat water for City use is not included in the utility data provided in Section 4.1, *Building Energy Use*. However, the City does own groundwater wells in the Chino Basin, and any treatment of this water occurring in the City is included in the utility data in Table 18. Because the City relies on water treatment services occurring outside City boundaries, emissions associated with electricity consumed for water treatment processes were included in the inventory. The energy intensity for water treatment is approximately 111 kWh/acre-foot of water (California Energy Commission 2006b).

The emissions for the BAU forecast for 2020 were estimated using projected water quantities for the City in 2020 obtained from the City of Ontario UWMP and emission factors discussed above.

4.9.2.3 Water Distribution

Water distribution involves distributing water to end users within a region. The energy intensity in distribution is directly related to the distance and lift involved in transporting water from the conveyance terminus to the retail customers. Because the City operates its own water utility, it is assumed that water distribution electricity use was included in either the utility data category in Table 18 or the utility data provided above in Section 4.1., *Building Energy Use*. Consequently, emissions associated with this electricity were not included as a separate category in the inventory.

The emissions for the BAU forecast for 2020 were estimated using the same methodology for the building energy use section and emission factors discussed above.

4.9.3 Data Gaps

Emission estimates related to the City's water consumption uses two methods that can result in varying degrees of accuracy. Applying the methodology used in the CEC report can result in higher estimates of emissions if the City's water infrastructure is less energy-intensive than the average water infrastructure in the state. Conversely, relying only on utility data can result in a lower emissions estimate because some activities are occurring outside of the City's boundary.

4.9.4 Water Consumption Emissions

Table 18 presents water consumption and the emissions associated with water supply and conveyance, water treatment, and water distribution for 2008 and for the 2020 BAU Forecast.

Table 18. 2008 and 2020 Business as Usual Forecast Water Transport, Distribution, and Treatment Emissions

Category	2008 Inventory	2020 BAU Forecast
Water Consumption (acre-feet)	54,610	76,585
GHG Emissions ($MTCO_2e$)		
Water supply and conveyance	19,933	25,787
Water treatment	568	796
Water distribution[1]	0	0
Utility data (local water activity)[2]	8,544	11,993
Total Emissions ($MTCO_2e$)	29,044	38,575

[1] Emissions are accounted for in the *Utility data* category or in Section 4.1, *Building Energy Use.*

[2] Includes energy-consuming activities related to water occurring in the City, such as groundwater pumping, water distribution, and local water treatment. Emissions from all other categories in this table are occurring outside of City boundaries, but are due to activities necessary to provide water to the City itself.

4.10 Indirect Emissions of Sulfur Hexafluoride due to Electricity Consumption

Emissions of SF_6 from transmission of electricity to the City accounted for approximately 0.2% of total emissions in 2008. These emissions include leaked SF_6 from electrical transmission and distribution systems, and are classified as a Scope 2 emissions source. SF_6 is used to insulate power switching equipment and transformers (CEC 2006c). SF_6 emissions are based on electricity consumption in Ontario.

Table 19 presents 2008 and 2020 BAU forecast GHG emissions of SF_6 from electricity consumption. SF_6 emissions are generally a function of population and employment in Ontario, as population and employment are good indicators of electricity consumption.

4.10.1 Data Acquisition and Sources

Electricity consumption data were obtained from Southern California Edison, as described in Section 4.1.1. The emission factor for SF_6 was obtained from CARB (2010b).

4.10.2 Emission Calculations and Methodologies

Total electricity consumption for the City was multiplied by the SF_6 emission factor obtained from CARB. CARB estimates the California statewide emissions of SF_6 from electricity transmission and distribution to be fairly constant from 2000 to 2008, and emissions are not expected to increase very much by 2020. The CARB's per-kWh emission rate for SF_6 in 2008 was used to estimate emissions from each city in 2008 and 2020 (California Air Resources Board 2010b). Emissions of SF_6 were multiplied by the GWP of SF_6, which is 23,900.

4.10.3 Data Gaps

The current methodology assumes a statewide average emission rate of SF_6 from electrical power switching equipment and transformers in the City. It is possible that the emission rate in the county is different from the statewide average, so a region-specific emission factor would improve the estimate of emissions in this sector. In addition, because this sector is dependent on the amount of electricity consumed by Ontario, the data gaps listed in the building energy sector also apply to this sector.

4.10.4 SF6 from Electricity Consumption Emissions

Table 19 presents SF6 from Electricity Consumption Emissions for 2008 and for the 2020 BAU Forecast.

Table 19. 2008 and 2020 Business as Usual Forecast SF6 from Electricity Consumption Emissions

Category	2008 Inventory	2020 BAU Forecast
Total Electricity Consumption (kWh)	1,617,154,790	2,154,366,297
SF6 Emissions (kg)	222	296
Total Emissions ($MTCO_2e$)	5,310	7,072

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Community Climate Action Plan

Appendix B

Greenhouse Gas Emissions CEQA Thresholds and Screening Tables

GREENHOUSE GAS EMISSIONS

CEQA Thresholds and Screening Tables
City of Ontario, California

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City Council Approval December 16, 2014
Resolution No. 2012-122

CONTENTS

TABLES

Introduction

The Ontario Climate Action Plan (CAP) includes reducing 39,769 Metric Tons of Carbon Dioxide Equivalents ($MTCO_2e$) per year from new development by 2020 as compared to the 2020 unmitigated conditions. This requires new development to be 25% more efficient. Reductions related to transportation, water, solid waste, energy, and renewable energy sources all play a part in gaining this level of efficiency within new development.

Mitigation of GHG emissions impacts through the Development Review Process (DRP) provides one of the most substantial reduction strategies for reducing community-wide emissions associated with new development. The DRP procedures for evaluating GHG impacts and determining significance for CEQA purposes will be streamlined by (1) applying an emissions level that is determined to be less than significant for small projects, and (2) utilizing Screening Tables to mitigate project GHG emissions that exceed the threshold level. Projects will have the option of preparing a project-specific technical analysis to quantify and mitigate GHG emissions. A threshold level of 3,000 $MTCO_2e$ per year will be used to identify projects that require the use of Screening Tables or a project-specific technical analysis to quantify and mitigate project emissions.

The California Environmental Quality Act ("CEQA") requires assessment of the environmental impacts of proposed projects including the impacts of greenhouse gas (GHG) emissions. The purpose of this document is to provide guidance on how to analyze GHG emissions and determine the significance of those emissions during CEQA review of proposed development projects within the City of Ontario. The analysis, methodology, and significance determination (thresholds) are based upon the CAP, the GHG emission inventories within the CAP, and the GHG reduction measures that reduce emissions to the AB-32 compliant reduction target of the CAP. The Screening Tables can be used by the City of Ontario Community Development Department for review of development projects in order to ensure that the specific reduction strategies in the CAP are implemented as part of the CEQA process for development projects. The Screening Tables provide a menu of options that both-ensures implementation of the reduction strategies and flexibility on how development projects will implement the reduction strategies to achieve an overall reduction of emissions, consistent with the reduction target of the CAP.

California Environmental Quality Act

CEQA MANDATES FOR ANALYSIS OF IMPACTS

CEQA requires that Lead Agencies inform decision makers and the public regarding the following: potential significant environmental effects of proposed projects; feasible ways that environmental damage can be avoided or reduced through the use of feasible mitigation measures and/or project alternatives; and the reasons why the Lead Agency approved a project if significant environmental effects are involved (CEQA Guidelines §15002). CEQA also requires Lead Agencies to evaluate potential environmental effects based to the fullest extent possible on scientific and factual data (CEQA Guidelines §15064[b]). A determination of whether or not a particular environmental impact will be significant must be based on substantial evidence, which includes facts, reasonable assumptions predicated upon facts, and expert opinion supported by facts (CEQA Guidelines §15064f[5]).

The recently amended CEQA Guidelines (CEQA Guidelines §15064.4[a] [b]) explicitly requires Lead Agencies to evaluate GHG emissions during CEQA review of potential environmental impacts generated by a proposed project. To assist in this effort, two questions were added to Appendix G of the CEQA Guidelines:

- Would the project generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?
- Would the project conflict with any applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs?

Finally, under the "rule of reason," an EIR is required to evaluate impacts to the extent that is reasonably feasible ([CEQA Guideline § 15151; *San Francisco Ecology Center v. City and County of San Francisco* (1975) 48 Cal.App.3rd 584]). While CEQA does require Lead Agencies to make a good faith effort to disclose what they reasonably can, CEQA does not demand what is not realistically possible ([*Residents at Hawks Stadium Committee v. Board of Trustees* (1979) 89 Cal.App.3rd 274, 286]).

Greenhouse Gas Impact Determination

STATEWIDE OR REGIONAL THRESHOLDS OF SIGNIFICANCE

There are currently no published statewide thresholds of significance for measuring the impact of GHG emissions generated by a proposed project. CEQA Guidelines §15064.7 indicates only that, "each public agency is encouraged to develop and publish thresholds of significance that the agency uses in the determination of the significance of environmental effects." The County of San Diego has published draft thresholds that, when finalized, jurisdictions within the County can use if they do not have their own thresholds and GHG mitigation plans. However, the CAP for the City of Ontario addresses cumulative GHG emissions, has a reduction target that reduces the cumulative GHG impacts to less than significant, has a set of reduction measures that achieves the reduction target and provides an implementation plan to implement the reduction measures. This document provides guidance in how to address GHG emissions in CEQA analysis and determine the significance of project generated GHG emissions.

QUANTITATIVE ANALYSIS RELATIVE TO THE ONTARIO CLIMATE ACTION PLAN

METHODOLOGY OVERVIEW

An individual project cannot generate enough GHG emissions to influence global climate change. The project participates in this potential impact by its incremental contribution combined with the cumulative increase of all other sources of GHGs, which when taken together may have a significant impact on global climate change. To address the State's requirement to reduce GHG emissions, the City prepared the CAP with the target of reducing GHG emissions within Ontario by 30 percent below 2020 business as usual (BAU) emissions. The City's target is consistent with AB 32 and ensures that Ontario is providing GHG reductions locally that will complement the State and international efforts of stabilizing climate change.

Because the City's CAP addresses GHG emissions reduction, is in concert with AB 32 and international efforts to address global climate change, and includes specific local requirements that will substantially lessen the cumulative problem, compliance with the CAP fulfills the description of mitigation found in CEQA Guidelines §15130(a)(3) and §15183.5.

Because GHG emissions are only important in the context of cumulative emissions, the focus of the analysis is on answering the question of whether incremental contributions of GHGs are a cumulatively considerable contribution to climate change impacts. The CAP includes a set of mitigation measures designed to substantially lessen cumulative impacts associated with GHG emissions as described in CEQA Guidelines §15130(a)(3), in determining if a project's effects will result in significant impacts. The CAP has the following components that fulfill cumulative mitigation for GHG emissions:

1. The CAP provides a community-wide GHG emissions reduction target that will substantially lessen the cumulative impact;
2. The CAP provides measures that new development projects must follow to meet the City's reduction target and substantially lessen the cumulative impact;
3. The CAP provides a set of GHG emission inventories that provides quantitative facts and analysis of how the measures within the CAP meet the reduction target that substantially lessens the cumulative impact:
4. The CAP provides an implementation, monitoring and update program to insure that the reduction target is met.

The CAP satisfies the first condition by adopting a target of reducing GHG emissions within Ontario by 30 percent below 2020 business as usual (BAU), which also equates to approximately 15 percent below existing levels within the City of Ontario by 2020. This reduction target is compliant with AB 32; the AB 32 Climate Change Scoping Plan states: "In recognition of the critical role local governments will play in the successful implementation of AB 32, ARB recommended a greenhouse gas reduction goal for local governments of 15 percent below existing levels by 2020 to ensure that their municipal and community-wide emissions match the State's reduction target" (Scoping Plan page ES-5, CARB, December 2008). In this way, the City is teaming with the State's efforts to reduce GHG emissions globally and substantially lessen the cumulative problem.

The CAP satisfies the second condition through the implementation of the reduction measures for new development. This document supplies the specific criteria that new development must follow to ensure that the reduction measures associated with new development are implemented and the reduction target is met.

The CAP satisfies the third criteria by providing a set of community-wide GHG emissions inventories for existing conditions (2008 baseline), for future 2020 GHG emissions that are anticipated without the reduction measures (Business As Usual; BAU), and reduced levels of 2020 GHG emissions which demonstrates how the implementation of reduction measures achieves the reduction target (30 percent below 2020 business as usual (BAU) emissions). These community-wide GHG emission inventories are found in the appendices of the CAP.

THE DEVELOPMENT REVIEW PROCESS

Integrating the reduction measures of the CAP into the CEQA development review process is the first step in determining how a proposed project will implement the GHG reduction measures within the CAP. The GHG emissions development review process is predicated on a couple of questions. Appendix A of this document is a flow chart that diagrams this development review process. The questions are as follows:

Question 1: Is the Project exempt under CEQA? If it is, then SCAQMD has determined that GHG emissions are less than significant and no additional GHG reductions are needed. A list of CEQA Exemptions are found in CEQA Guidelines §15300 through §15332. There are exemption opportunities associated with transit oriented development (TOD) associated with the Sustainable Communities Strategy (SCS) for the region developed by the Southern California Association of Governments (SCAG) and first introduced in the 2012 Regional Transportation Plan (RTP). Exemptions associated with TOD are divided into two categories, transit priority projects (TPP), and Sustainable Community Projects (SCP). A TPP and SCP Checklist is provided in Appendix B of this document to assist project applicants in determining if a project qualifies for these Exemptions under CEQA. If the Project does not qualify for a CEQA exemption, then move on to Question 2.

Question 2: Are Project GHG emissions less than 3,000 metric tons carbon dioxide equivalents ($MTCO_2e$) per year? To assist applicants in answering this question Appendix C of this document includes a table showing various sizes of typical land use development projects that are typically at or below that level of emissions. Applicants can also calculate emissions using the methodology described below to answer this question. Additional information is provided below on how this level of emissions was determined and what needs to be done if your project is at or below this amount. If the project is above 3,000 $MTCO_2e$ then the applicant needs to either use the screening tables or analyze GHG emissions and provide additional mitigation as shown in Appendix A.

METHODOLOGY FOR THE CALCULATION OF GHG EMISSIONS

Analysis of development projects can either be done through emissions calculations or by using the screening tables beginning on page 6.

Total GHG emissions are the sum of emissions from both direct and indirect sources. Direct sources include mobile sources such as construction equipment, motor vehicles, landscape equipment; and stationary sources such as cooling and heating equipment. Indirect sources are comprised of electrical, and potable water use, and the generation of solid waste, and waste water.

Direct GHG emissions from mobile and stationary sources are determined as the sum of the annual GHG emissions from construction equipment, motor vehicles, landscape equipment, and heating and cooling equipment.

Indirect sources are determined based on source as follows. Electrical usage is reported as annual emissions from electrical usage. Potable water usage is reported as the annual emissions from electricity used for potable water treatment and transportation. Solid waste is reported as the sum of annual emissions from solid waste disposal treatment, transportation, and fugitive emissions of methane at the solid waste facilities. Wastewater usage is reported as the annual emissions from wastewater transport and treatment.

Analysis of development projects not using the screening tables should use the emission factors found in the latest version of the California Climate Action Registry (CCAR) General Reporting Protocol. Quantification of emissions from electricity used for potable water treatment and transportation as well as wastewater transport and treatment can be found in the California Energy Commission (CEC) document titled “Refining Estimates of Water-Related Energy Use in California (CEC December 2006).

3,000 MT CO_2e Emission Level

The City determined the size of development that is too small to be able to provide the level of GHG emission reductions expected from the Screening Tables based upon the 90th percentile capture rate concept. To do this the City determined the GHG emission amount allowed by a project such that 90 percent of the emissions on average from all projects would exceed that level and be “captured” by the Screening Table.

In determining this level of emissions the City used the database of Projects kept by the Governor’s Office of Planning and Research (OPR). That database contained 798 Projects, 60 of which were extremely large General Plan Updates, Master Plans, or Specific Plan Projects. The 60 very large projects were removed from the database in order not to skew the emissions value, leaving a net of 738 Projects.

In addition, 27 projects were found to be outliers that would skew the emission value to high, leaving 711 as the sample population to use in determining the 90^{th} percentile capture rate.

The analysis of the 738 Projects within the sample population combined commercial, residential, and mixed use projects. Also note that the sample of projects included warehousing and other industrial land uses but did not include industrial processes (i.e. oil refineries, heavy manufacturing, electric generating stations, mining operations, etc.). Emissions from each of these Projects were calculated by SCAQMD and provide a consistent method of emissions calculations across the sample population further reducing potential errors in the statistical analysis. In calculating the emissions from Projects within the sample population, construction period GHG emissions were amortized over 30-years (the average economic life of a development project). Direct GHG emissions were calculated using URBEMIS and indirect electricity/water use GHG emissions calculated separately and added to the URBEMIS output.

This analysis determined that the 90^{th} percentile ranged from 2,983-3,143 MTCO_2e per year.

The **3,000 MT CO_2e per year** value is used in defining small projects that, when combined with the modest efficiency measures shown in the bullet points below are considered less than significant and do not need to use the Screening Tables or alternative GHG mitigation analysis described below. The efficiency measures required of small projects are summarized below:

- Energy efficiency of at least five percent greater than Title 24 requirements or other equivalent levels of GHG reductions, and
- Water conservation measures that matches the California Green Building Code or equivalent levels of GHG reductions

Screening Threshold Tables

The purpose of this Screening Table is to provide guidance in measuring the reduction of greenhouse gas emissions attributable to certain design and construction measures incorporated into development projects. The analysis, methodology, and significance determination (thresholds) are based upon the CAP, which includes GHG emission inventories (2008 and 2020 forecasts), a year 2020 emission reduction target, the goals and policies to reach the target, together with the Addendum prepared for the CAP. The methodology for the development and application of the Screening Table is set forth in Appendix D of this document.

Instructions for Residential, Commercial, or Industrial Projects

The Screening Table assigns points for each option incorporated into a project as mitigation or a project design feature (collectively referred to as “feature”). The point values correspond to the minimum emissions reduction expected from each feature. The menu of features allows maximum flexibility and options for how development projects can implement the GHG reduction measures. The point levels are based upon improvements compared to 2008 emission levels of efficiency. Projects that garner at least 100 points will be consistent with the reduction quantities anticipated in the City’s CAP. As such, those projects that garner a total of 100 points or greater would not require quantification of project specific GHG emissions. Consistent with CEQA Guidelines, such projects would be determined to have a less than significant individual and cumulative impact for GHG emissions.

Instructions for Mixed Use Projects

Mixed use projects provide additional opportunities to reduce emissions by combining complimentary land uses in a manner that can reduce vehicle trips. Mixed use projects also have the potential to complement energy efficient infrastructure in a way that reduces emissions. For mixed use projects, fill out both Screening Table 1 and Table 2, but proportion the points identical to the proportioning of the mix of uses. As an example, a mixed use project that is 50% commercial uses and 50% residential uses will show ½ point for each assigned point value in Table 1 and Table 2. Add the points from both tables. Mixed use Projects that garner at least 100 points will be consistent with the reduction quantities in the City’s CAP and are considered less than significant for GHG emissions.

Those projects that do not garnish 100 points using the screening tables will need to provide additional analysis to determine the significance of GHG emissions. Nothing in this guidance shall be construed as limiting the City’s authority to adopt a statement of overriding consideration for projects with significant GHG impacts. The following tables provides a menu of performance standards/options related to GHG mitigation measures and design features that can be used to demonstrate consistency with the reduction measures and GHG reduction quantities in the CAP.

Table 1: Screening Table for Implementation of GHG Reduction Measures for Residential Development

Feature	Description	Assigned Point Values	Project Points
Reduction Measure PS E1: Residential Energy Efficiency			
Building Envelope			
Insulation	2008 Baseline (walls R-13:, roof/attic: R-30) Modestly Enhanced Insulation (walls R-13:, roof/attic: R-38) Enhanced Insulation (rigid wall insulation R-13, roof/attic: R-38) Greatly Enhanced Insulation (spray foam wall insulated walls R-15 or higher, roof/attic R-38 or higher)	0 points 12 points 15 points 18 points	
Windows	2008 Baseline Windows (0.57 U-factor, 0.4 solar heat gain coefficient (SHGC) Modestly Enhanced Window Insulation (0.4 U-Factor, 0.32 SHGC) Enhanced Window Insulation (0.32 U-Factor, 0.25 SHGC) Greatly Enhanced Window Insulation (0.28 or less U-Factor, 0.22 or less SHGC)	0 points 6 points 7 points 9 points	
Cool Roof	Modest Cool Roof (CRRC Rated 0.15 aged solar reflectance, 0.75 thermal emittance) Enhanced Cool Roof(CRRC Rated 0.2 aged solar reflectance, 0.75 thermal emittance) Greatly Enhanced Cool Roof (CRRC Rated 0.35 aged solar reflectance, 0.75 thermal emittance)	10 points 12 points 14 points	
Air Infiltration	Minimizing leaks in the building envelope is as important as the insulation properties of the building. Insulation does not work effectively if there is excess air leakage. Air barrier applied to exterior walls, calking, and visual inspection such as the HERS Verified Quality Insulation Installation (QII or equivalent) Blower Door HERS Verified Envelope Leakage or equivalent	 10 points 8 points	
Thermal Storage of Building	Thermal storage is a design characteristic that helps keep a constant temperature in the building. Common thermal storage devices include strategically placed water filled columns, water storage tanks, and thick masonry walls. Modest Thermal Mass (10% of floor or 10% of walls: 12" or more thick exposed concrete or masonry. No permanently installed floor covering such as carpet, linoleum, wood or other insulating materials) Enhanced Thermal Mass (20% of floor or 20% of walls: 12" or more thick exposed concrete or masonry. No permanently installed floor covering such as carpet, linoleum, wood or other insulating materials)	 2 points 4 points	

Feature	Description	Assigned Point Values	Project Points
Indoor Space Efficiencies			
Heating/ Cooling Distribution System	Minimum Duct Insulation (R-4.2 required) Modest Duct insulation (R-6) Enhanced Duct Insulation (R-8) Distribution loss reduction with inspection (HERS Verified Duct Leakage or equivalent)	0 points 7 points 8 points 12 points	
Space Heating/ Cooling Equipment	2008 Minimum HVAC Efficiency (SEER 13/60% AFUE or 7.7 HSPF) Improved Efficiency HVAC (SEER 14/65% AFUE or 8 HSPF) High Efficiency HVAC (SEER 15/72% AFUE or 8.5 HSPF) Very High Efficiency HVAC (SEER 16/80% AFUE or 9 HSPF)	0 points 4 points 7 points 9 points	
Water Heaters	2008 Minimum Efficiency (0.57 Energy Factor) Improved Efficiency Water Heater (0.675 Energy Factor) High Efficiency Water Heater (0.72 Energy Factor) Very High Efficiency Water Heater (0.92 Energy Factor) Solar Pre-heat System (0.2 Net Solar Fraction) Enhanced Solar Pre-heat System (0.35 Net Solar Fraction)	0 points 12 points 15 points 18 points 4 points 8 points	
Daylighting	Daylighting is the ability of each room within the building to provide outside light during the day reducing the need for artificial lighting during daylight hours. All peripheral rooms within the living space have at least one window (required) All rooms within the living space have daylight (through use of windows, solar tubes, skylights, etc.) All rooms daylighted	 0 points 1 points 2 points	
Artificial Lighting	2008 Minimum (required) Efficient Lights (25% of in-unit fixtures considered high efficacy. High efficacy is defined as 40 lumens/watt for 15 watt or less fixtures; 50 lumens/watt for 15-40 watt fixtures, 60 lumens/watt for fixtures >40watt) High Efficiency Lights (50% of in-unit fixtures are high efficacy) Very High Efficiency Lights (100% of in-unit fixtures are high efficacy)	0 points 8 points 10 points 12 points	
Appliances	Energy Star Refrigerator (new) Energy Star Dish Washer (new) Energy Star Washing Machine (new)	1 points 1 points 1 points	

Feature	Description	Assigned Point Values	Project Points
Miscellaneous Residential Building Efficiencies			
Building Placement	North/South alignment of building or other building placement such that the orientation of the buildings optimizes natural heating, cooling, and lighting.	5 point	
Shading	At least 90% of south-facing glazing will be shaded by vegetation or overhangs at noon on Jun 21st.	4 Points	
Energy Star Homes	EPA Energy Star for Homes (version 3 or above)	25 points	
Independent Energy Efficiency Calculations	Provide point values based upon energy efficiency modeling of the Project. Note that engineering data will be required documenting the energy efficiency and point values based upon the proven efficiency beyond Title 24 Energy Efficiency Standards.	TBD	
Other	This allows innovation by the applicant to provide design features that increases the energy efficiency of the project not provided in the table. Note that engineering data will be required documenting the energy efficiency of innovative designs and point values given based upon the proven efficiency beyond Title 24 Energy Efficiency Standards.	TBD	
Existing Residential Retrofits	The applicant may wish to provide energy efficiency retrofit projects to existing residential dwelling units to further the point value of their project. Retrofitting existing residential dwelling units within the City is a key reduction measure that is needed to reach the reduction goal. The potential for an applicant to take advantage of this program will be decided on a case by case basis and must have the approval of the Ontario Planning Department. The decision to allow applicants to ability to participate in this program will be evaluated based upon, but not limited to the following; Will the energy efficiency retrofit project benefit low income or disadvantaged residents? Does the energy efficiency retrofit project fit within the overall assumptions in reduction measures associated with existing residential retrofits? Does the energy efficiency retrofit project provide co-benefits important to the City? Point value will be determined based upon engineering and design criteria of the energy efficiency retrofit project.	TBD	
Reduction Measure PS E2: Residential Renewable Energy Generation			
Photovoltaic	Solar Photovoltaic panels installed on individual homes or in collective neighborhood arrangements such that the total power provided augments:		
	Solar Ready Homes (sturdy roof and solar ready service panel)	2 points	
	10 percent of the power needs of the project	10 points	
	20 percent of the power needs of the project	15 points	
	30 percent of the power needs of the project	20 points	
	40 percent of the power needs of the project	28 points	
	50 percent of the power needs of the project	35 points	
	60 percent of the power needs of the project	38 points	
	70 percent of the power needs of the project	42 points	
	80 percent of the power needs of the project	46 points	

Feature	Description	Assigned Point Values	Project Points
	90 percent of the power needs of the project	52 points	
	100 percent of the power needs of the project	58 points	
Wind turbines	Some areas of the City lend themselves to wind turbine applications. Analysis of the area's capability to support wind turbines should be evaluated prior to choosing this feature. Individual wind turbines at homes or collective neighborhood arrangements of wind turbines such that the total power provided augments:		
	10 percent of the power needs of the project	10 points	
	20 percent of the power needs of the project	15 points	
	30 percent of the power needs of the project	20 points	
	40 percent of the power needs of the project	28 points	
	50 percent of the power needs of the project	35 points	
	60 percent of the power needs of the project	38 points	
	70 percent of the power needs of the project	42 points	
	80 percent of the power needs of the project	46 points	
	90 percent of the power needs of the project	52 points	
	100 percent of the power needs of the project	58 points	
Off-site renewable energy project	The applicant may submit a proposal to supply an off-site renewable energy project such as renewable energy retrofits of existing homes that will help implement renewable energy within the City. These off-site renewable energy retrofit project proposals will be determined on a case by case basis and must be accompanied by a detailed plan that documents the quantity of renewable energy the proposal will generate. Point values will be determined based upon the energy generated by the proposal.	TBD	
Other Renewable Energy Generation	The applicant may have innovative designs or unique site circumstances (such as geothermal) that allow the project to generate electricity from renewable energy not provided in the table. The ability to supply other renewable energy and the point values allowed will be decided based upon engineering data documenting the ability to generate electricity.	TBD	
Reduction Measure PS W1: Residential Water Conservation			
Irrigation and Landscaping			
Water Efficient Landscaping	Limit conventional turf to < 50% of required landscape area	0 points	
	Limit conventional turf to < 25% of required landscape area	4 points	
	No conventional turf (warm season turf to < 50% of required landscape area and/or low water using plants are allowed)	6 points	
	Only California Native Plants that requires no irrigation or some supplemental irrigation	8 points	

Feature	Description	Assigned Point Values	Project Points
Water Efficient irrigation systems	Low precipitation spray heads < .75"/hr or drip irrigation Weather based irrigation control systems or moisture sensors (demonstrate 20% reduced water use)	2 point 3 points	
Recycled Water	Recycled connections (purple pipe) to irrigation system on site	6 points	
Water Reuse	Gray water Reuse System collects Gray water from clothes washers, showers and faucets for irrigation use,	12 points	
Storm water Reuse Systems	Innovative on-site stormwater collection, filtration and reuse systems are being developed that provide supplemental irrigation water and provide vector control. These systems can greatly reduce the irrigation needs of a project. Point values for these types of systems will be determined based upon design and engineering data documenting the water savings.	TBD	
Potable Water			
Showers	Water Efficient Showerheads (2.0 gpm)	3 points	
Toilets	Water Efficient Toilets (1.5 gpm)	3 points	
Faucets	Water Efficient faucets (1.28 gpm)	3 points	
Dishwasher	Water Efficient Dishwasher (6 gallons per cycle or less)	1	
Washing Machine	Water Efficient Washing Machine (Water factor <5.5)	1	
WaterSense	EPA WaterSense Certification	12 points	
Reduction Measure PS T1: Land Use Based Trips and VMT Reduction			
Mixed Use	Mixes of land uses that complement one another in a way that reduces the need for vehicle trips can greatly reduce GHG emissions. The point value of mixed use projects will be determined based upon a Transportation Impact Analysis (TIA) demonstrating trip reductions and/or reductions in vehicle miles traveled. Suggested ranges: Diversity of land uses complementing each other (2-28 points) Increased destination accessibility other than transit (1-18 points) Increased transit accessibility (1-25 points) Infill location that reduces vehicle trips or VMT beyond the measures described above (points TBD based on traffic data).	TBD	
Residential Near Local Retail (Residential only Projects)	Having residential developments within walking and biking distance of local retail helps to reduce vehicle trips and/or vehicle miles traveled. The point value of residential projects in close proximity to local retail will be determined based upon traffic studies that demonstrate trip reductions and/or reductions in vehicle miles traveled (VMT)	TBD	

Feature	Description	Assigned Point Values	Project Points
Other Trip Reduction Measures	Other trip or VMT reduction measures not listed above with TIA and/or other traffic data supporting the trip and/or VMT for the project.	TBD	
Reduction Measure PS T2: Bicycle Master Plan			
Bicycle Infrastructure	Ontario's Bicycle Master Plan is extensive and describes the construction on 11.5 miles of Class I bike paths and 23 miles of Class II and Class III bikeways to build upon the current 8 miles of bikeways. Provide bicycle paths within project boundaries. Provide bicycle path linkages between residential and other land uses. Provide bicycle path linkages between residential and transit.	 TBD 2 points 5 points	
Reduction Measure PS T3: Neighborhood Electric Vehicle Infrastructure			
Electric Vehicle Recharging	Provide circuit and capacity in garages of residential units for use by an electric vehicle. Charging stations are for on-road electric vehicles legally able to drive on all roadways including Interstate Highways and freeways. Install electric vehicle charging stations in the garages of residential units	1 point 8 points	
Total Points Earned by Residential Project:			

Table 2: Screening Table for Implementation of GHG Reduction Measures for Commercial/Industrial Development

Feature	Description	Assigned Point Values	Project Points
Reduction Measure PS E3: Commercial/Industrial Energy Efficiency Development			
Building Envelope			
Insulation	2008 baseline (walls R-13; roof/attic R-30)	0 points	
	Modestly Enhanced Insulation (walls R-13, roof/attic R-38))	15 points	
	Enhanced Insulation (rigid wall insulation R-13, roof/attic R-38)	18 points	
	Greatly Enhanced Insulation (spray foam insulated walls R-15 or higher, roof/attic R-38 or higher)	20 points	
	(Applies to the conditioned space, defined as those areas within the building that have air conditioning and heating.)		
Windows	2008 Baseline Windows (0.57 U-factor, 0.4 solar heat gain coefficient [SHGC})	0 points	
	Modestly Enhanced Window Insulation (0.4 U-factor, 0.32 SHGC)	7 points	
	Enhanced Window Insulation (0.32 U-factor, 0.25 SHGC)	8 points	
	Greatly Enhanced Window Insulation (0.28 or less U-factor, 0.22 or less SHGC)	12 points	
	(Applies to the conditioned space, defined as those areas within the building that have air conditioning and heating.)		
Cool Roof			
	Modest Cool Roof (CRRC Rated 0.15 aged solar reflectance, 0.75 thermal emittance)	12 points	
	Enhanced Cool Roof (CRRC Rated 0.2 aged solar reflectance, 0.75 thermal emittance)	14 points	
	Greatly Enhanced Cool Roof (CRRC Rated 0.35 aged solar reflectance, 0.75 thermal emittance)	16 points	
Air Infiltration	Minimizing leaks in the building envelope is as important as the insulation properties of the building. Insulation does not work effectively if there is excess air leakage.		
	Air barrier applied to exterior walls, calking, and visual inspection such as the HERS Verified Quality Insulation Installation (QII or equivalent)	12 points	
	Blower Door HERS Verified Envelope Leakage or equivalent	10 points	
	(Applies to the conditioned space, defined as those areas within the building that have air conditioning and heating.)		
Thermal Storage of Building	Thermal storage is a design characteristic that helps keep a constant temperature in the building. Common thermal storage devices include strategically placed water filled columns, water storage tanks, and thick masonry walls.		

Feature	Description	Assigned Point Values	Project Points
	Modest Thermal Mass (10% of floor or 10% of walls 12" or more thick exposed concrete or masonry with no permanently installed floor covering such as carpet, linoleum, wood or other insulating materials)	4 points	
	Enhanced Thermal Mass (20% of floor or 20% of walls 12" or more thick exposed concrete or masonry with no permanently installed floor covering such as carpet, linoleum, wood or other insulating materials)	6 points	
	Enhanced Thermal Mass (80% of floor or 80% of walls 12" or more thick exposed concrete or masonry with no permanently installed floor covering such as carpet, linoleum, wood or other insulating materials)	24 points	
Indoor Space Efficiencies			
Heating/ Cooling Distribution System	Minimum Duct Insulation (R-4.2 required)	0 points	
	Modest Duct insulation (R-6)	8 points	
	Enhanced Duct Insulation (R-8)	10 points	
	Distribution loss reduction with inspection (HERS Verified Duct Leakage or equivalent)	14 points	
	(Applies to the conditioned space, defined as those areas within the building that have air conditioning and heating.)		
Space Heating/ Cooling Equipment	2008 Minimum HVAC Efficiency (EER 13/60% AFUE or 7.7 HSPF)	0 points	
	Improved Efficiency HVAC (EER 14/65% AFUE or 8 HSPF)	7 points	
	High Efficiency HVAC (EER 15/72% AFUE or 8.5 HSPF)	8 points	
	Very High Efficiency HVAC (EER 16/80% AFUE or 9 HSPF)	12 points	
	(Applies to the conditioned space, defined as those areas within the building that have air conditioning and heating.)		
Commercial Heat Recovery Systems	Heat recovery strategies employed with commercial laundry, cooking equipment, and other commercial heat sources for reuse in HVAC air intake or other appropriate heat recovery technology. Point values for these types of systems will be determined based upon design and engineering data documenting the energy savings.	TBD	
Water Heaters	2008 Minimum Efficiency (0.57 Energy Factor)	0 points	
	Improved Efficiency Water Heater (0.675 Energy Factor)	14 points	
	High Efficiency Water Heater (0.72 Energy Factor)	16 points	
	Very High Efficiency Water Heater (0.92 Energy Factor)	19 points	
	Solar Pre-heat System (0.2 Net Solar Fraction)	4 points	
	Enhanced Solar Pre-heat System (0.35 Net Solar Fraction)	8 points	
Daylighting	Daylighting is the ability of each room within the building to provide outside light during the day reducing the need for artificial lighting during daylight hours.		

Feature	Description	Assigned Point Values	Project Points
	All peripheral rooms within building have at least one window or skylight All rooms within building have daylight (through use of windows, solar tubes, skylights, etc.) All rooms daylighted	1 points 5 points 7 points	
Artificial Lighting	2008 Minimum (required) Efficient Lights (25% of in-unit fixtures considered high efficacy. High efficacy is defined as 40 lumens/watt for 15 watt or less fixtures; 50 lumens/watt for 15-40 watt fixtures, 60 lumens/watt for fixtures >40watt) High Efficiency Lights (50% of in-unit fixtures are high efficacy) Very High Efficiency Lights (100% of in-unit fixtures are high efficacy)	0 points 9 points 12 points 14 points	
Appliances	Energy Star Commercial Refrigerator (new) Energy Star Commercial Dish Washer (new) Energy Star Commercial Cloths Washing	4 points 4 points 4 points	
Miscellaneous Commercial/Industrial Building Efficiencies			
Building Placement	North/South alignment of building or other building placement such that the orientation of the buildings optimizes conditions for natural heating, cooling, and lighting.	6 point	
Shading	At least 90% of south-facing glazing will be shaded by vegetation or overhangs at noon on June 21st.	6 Points	
Other	This allows innovation by the applicant to provide design features that increases the energy efficiency of the project not provided in the table. Note that engineering data will be required documenting the energy efficiency of innovative designs and point values given based upon the proven efficiency beyond Title 24 Energy Efficiency Standards.	TBD	
Existing Commercial building Retrofits	The applicant may wish to provide energy efficiency retrofit projects to existing commercial buildings to further the point value of their project. Retrofitting existing commercial buildings within the City is a key reduction measure that is needed to reach the reduction goal. The potential for an applicant to take advantage of this program will be decided on a case by case basis and must have the approval of the Ontario Planning Department. The decision to allow applicants the ability to participate in this program will be evaluated based upon, but not limited to the following:	TBD	

Feature	Description	Assigned Point Values	Project Points
	Will the energy efficiency retrofit project benefit low income or disadvantaged communities? Does the energy efficiency retrofit project fit within the overall assumptions in the reduction measure associated with commercial building energy efficiency retrofits? Does the energy efficiency retrofit project provide co-benefits important to the City? Point value will be determined based upon engineering and design criteria of the energy efficiency retrofit project.		
Reduction Measure PS E4: Commercial/Industrial Renewable Energy			
Photovoltaic	Solar Photovoltaic panels installed on commercial buildings or in collective arrangements within a commercial development such that the total power provided augments:		
	Solar Ready Roofs (sturdy roof and electric hookups)	2 points	
	10 percent of the power needs of the project	8 points	
	20 percent of the power needs of the project	14 points	
	30 percent of the power needs of the project	20 points	
	40 percent of the power needs of the project	26 points	
	50 percent of the power needs of the project	32 points	
	60 percent of the power needs of the project	38 points	
	70 percent of the power needs of the project	44 points	
	80 percent of the power needs of the project	50 points	
	90 percent of the power needs of the project	56 points	
	100 percent of the power needs of the project	60 points	
Wind turbines	Some areas of the City lend themselves to wind turbine applications. Analysis of the areas capability to support wind turbines should be evaluated prior to choosing this feature. Wind turbines as part of the commercial development such that the total power provided augments:		
	10 percent of the power needs of the project	8 points	
	20 percent of the power needs of the project	14 points	
	30 percent of the power needs of the project	20 points	
	40 percent of the power needs of the project	26 points	
	50 percent of the power needs of the project	32 points	
	60 percent of the power needs of the project	38 points	
	70 percent of the power needs of the project	44 points	

Feature	Description	Assigned Point Values	Project Points
	80 percent of the power needs of the project 90 percent of the power needs of the project 100 percent of the power needs of the project	50 points 56 points 60 points	
Off-site renewable energy project	The applicant may submit a proposal to supply an off-site renewable energy project such as renewable energy retrofits of existing commercial/industrial that will help implement reduction measures associated with existing buildings. These off-site renewable energy retrofit project proposals will be determined on a case by case basis accompanied by a detailed plan documenting the quantity of renewable energy the proposal will generate. Point values will be based upon the energy generated by the proposal.	TBD	
Other Renewable Energy Generation	The applicant may have innovative designs or unique site circumstances (such as geothermal) that allow the project to generate electricity from renewable energy not provided in the table. The ability to supply other renewable energy and the point values allowed will be decided based upon engineering data documenting the ability to generate electricity.	TBD	
Reduction Measure PS W2: Commercial/Industrial Water Conservation			
Irrigation and Landscaping			
Water Efficient Landscaping	Eliminate conventional turf from landscaping Only moderate water using plants Only low water using plants Only California Native landscape that requires no or only supplemental irrigation	0 points 3 points 4 points 8 points	
Trees	Increase tree planting in parking areas 50% beyond City Code requirements	TBD	
Water Efficient irrigation systems	Low precipitation spray heads< .75”/hr or drip irrigation Weather based irrigation control systems combined with drip irrigation (demonstrate 20 reduced water use)	1 point 5 points	
Recycled Water	Recycled water connection (purple pipe)to irrigation system on site	5 points	
Storm water Reuse Systems	Innovative on-site stormwater collection, filtration and reuse systems are being developed that provide supplemental irrigation water and provide vector control. These systems can greatly reduce the irrigation needs of a project. Point values for these types of systems will be determined based upon design and engineering data documenting the water savings.	TBD	

Feature	Description	Assigned Point Values	Project Points
Potable Water			
Showers	Water Efficient Showerheads (2.0 gpm)	3 points	
Toilets	Water Efficient Toilets/Urinals (1.5gpm) Waterless Urinals (note that commercial buildings having both waterless urinals and high efficiency toilets will have a combined point value of 6 points)	3 points 4 points	
Faucets	Water Efficient faucets (1.28gpm)	3 points	
Commercial Dishwashers	Water Efficient dishwashers (20% water savings)	4 points	
Commercial Laundry Washers	Water Efficient laundry (15% water savings) High Efficiency laundry Equipment that captures and reuses rinse water (30% water savings)	3 points 6 points	
Commercial Water Operations Program	Establish an operational program to reduce water loss from pools, water features, etc., by covering pools, adjusting fountain operational hours, and using water treatment to reduce draw down and replacement of water. Point values for these types of plans will be determined based upon design and engineering data documenting the water savings.	TBD	
Reduction Measure PS T1: Land Use Based Trips and VMT Reduction			
Mixed Use	Mixes of land uses that complement one another in a way that reduces the need for vehicle trips can greatly reduce GHG emissions. The point value of mixed use projects will be determined based upon traffic studies that demonstrate trip reductions and/or reductions in vehicle miles traveled	TBD	
Local Retail Near Residential (Commercial only Projects)	Having residential developments within walking and biking distance of local retail helps to reduce vehicle trips and/or vehicle miles traveled. The point value of residential projects in close proximity to local retail will be determined based upon traffic studies that demonstrate trip reductions and/or reductions in vehicle miles traveled	TBD	
Reduction Measure PS T2: Bicycle Master Plan			
Bicycle Infrastructure	Ontario's Bicycle Master Plan is extensive and describes the construction on 11.5 miles of Class I bike paths and 23 miles of Class II and Class III bikeways to build upon the current 8 miles of bikeways. Provide bicycle paths within project boundaries. Provide bicycle path linkages between project site and other land uses. Provide bicycle path linkages between project site and transit.	TBD TBD 2 points 5 points	

Feature	Description	Assigned Point Values	Project Points
Reduction Measure PS T3: Electric Vehicle Infrastructure			
Electric Vehicles	Provide public charging station for use by an electric vehicle. *(ten points for each charging station within the facility)*	10 points	
Reduction Measure PS T4: Employee Based Trip &VMT Reduction Policy			
Compressed Work Week	Reduce the number of days per week that employees need to be on site will reduce the number of vehicle trips associated with commercial/industrial development. Compressed work week such that full time employees are on site: 5 days per week 4 days per week on site 3 days per week on site	TBD	
Car/Vanpools	Car/vanpool program Car/vanpool program with preferred parking Car/vanpool with guaranteed ride home program Subsidized employee incentive car/vanpool program Combination of all the above	TBD	
Employee Bicycle/ Pedestrian Programs	Complete sidewalk to residential within ½ mile Complete bike path to residential within 3 miles Bike lockers and secure racks Showers and changing facilities Subsidized employee walk/bike program (Note combine all applicable points for total value)	TBD	
Shuttle/Transit Programs	Local transit within ¼ mile Light rail transit within ½ mile Shuttle service to light rail transit station Guaranteed ride home program Subsidized Transit passes Note combine all applicable points for total value	TBD	
CRT	Employer based Commute Trip Reduction (CRT). CRTs apply to commercial, offices, or industrial projects that include a reduction of vehicle trip or VMT goal using a variety of employee commutes trip reduction methods. The point value will be determined based upon a TIA that demonstrates the trip/VMT reductions. Suggested point ranges: Incentive based CRT Programs (1-8 points) Mandatory CRT programs (5-20 points)	TBD	
Other Trip Reductions	Other trip or VMT reduction measures not listed above with TIA and/or other traffic data supporting the trip and/or VMT for the project.	TBD	
Total Points from Commercial/Industrial Project:			

References

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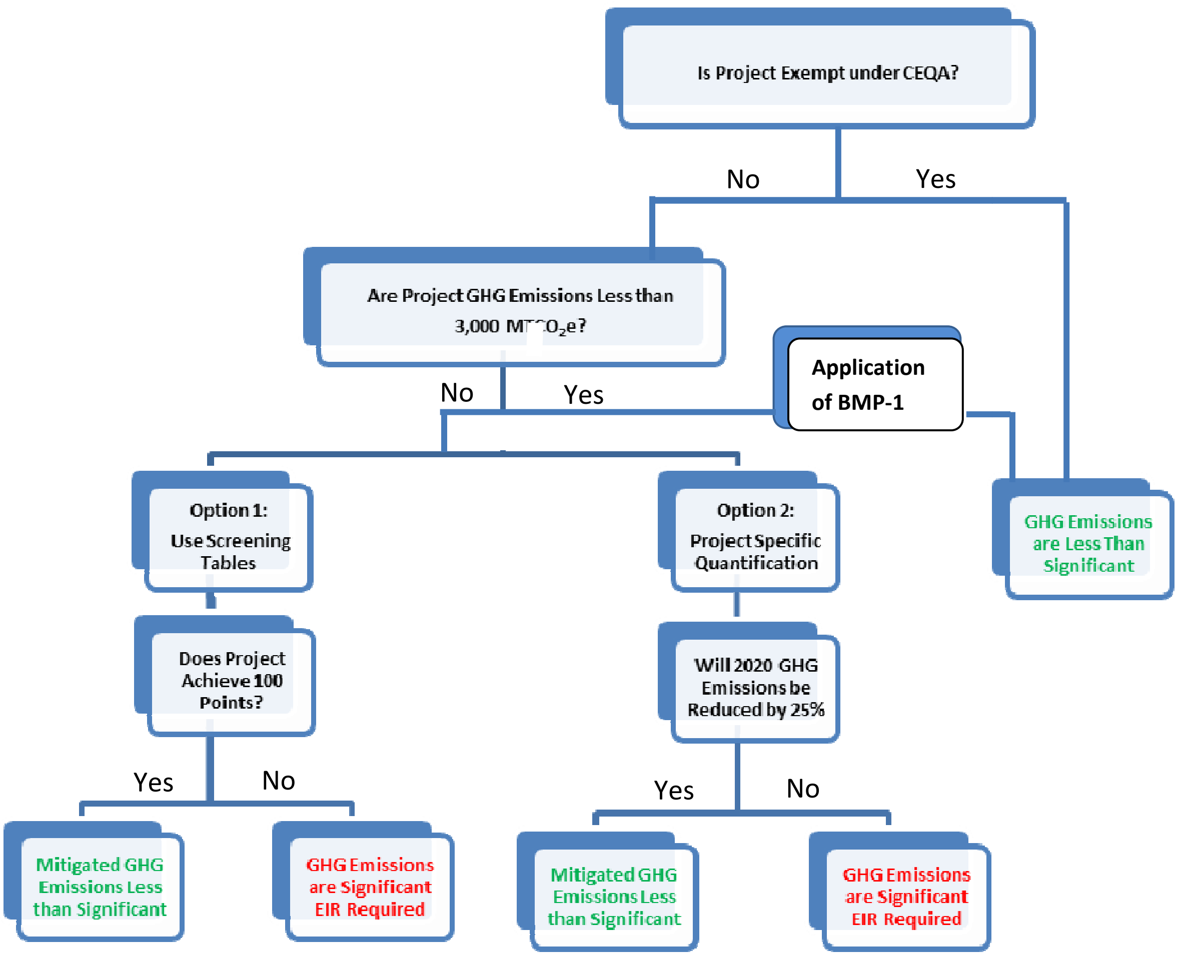
APPENDIX A:
THE GHG DEVELOPMENT REVIEW PROCESS FLOW CHART DIAGRAM

Approach to Implementation of GHG Development Review



APPENDIX B: TRANSIT PRIORITY PROJECT AND SUSTAINABLE COMMUNITY PROJECT CHECKLIST

CITY OF ONTARIO TRANSIT PRIORITY PROJECT CHECKLIST

The following checklist will assist in determining if your Project qualifies as a Transit Priority Project (TPP) and a Sustainable Community Project (SCP) as defined in PRC 21155(a), (b), and PRC 21152.

Yes	No	Is the Project:	
☐	☐	1.	Located within ½ mile from the East Ontario Metrolink Station at 3330 East Francis Street, Ontario or the future Metrolink Station at 198 East Emporia Street, Ontario?
☐	☐	2.	At least 50% residential use based upon total square footage, and non-residential uses within the Project between 26% to 50% of total square footage with FAR of not less than 0.75?
☐	☐	3.	At or above a minimum net density of at least 20 dwelling units per acre?
☐	☐	4.	Is your project consistent with the general land use designations in the SCP (if you answered yes to questions 1 thru 3, then answer yes to this one)?

If you answered **Yes** to questions 1 through 4 then your Project is a Transit Priority Project (TPP) as defined by PRC Section 21155(b). Continue with the next list of environmental questions:

Yes	No	Does the Project:	
☐	☐	5.	Contain sites on the Cortese List?
☐	☐	6.	Site contain any hazardous substances, contaminated soil or hazardous material?
☐	☐	7.	Site include historical resources?
☐	☐	8.	Have an unusually high risk of fire or explosion from material stored or used at properties within ¼ mile of the Project site?
☐	☐	9.	Site currently developed as Open Space (parks, habitat, etc.)?

Continue with the next list of land use questions below:

Yes	No		
☐	☐	10.	Does the Project design have all the buildings at least 15% more efficient than Title 24 energy standards and uses 25% or less water than average households?
☐	☐	11.	Is the Project site eight acres or less in size?
☐	☐	12.	Does the Project not include any single level of a building exceeding 75TSF?
☐	☐	13.	Project does not conflict with nearby industrial uses?
☐	☐	14.	The Project will sell at least 20% of housing to families of moderate income, or 10% of housing will be rented to families of low income, or at least 5% of housing rented to families of very low income, or the Project provides open space equal or greater than 5 acres per 1,000 residents, or the developer will pay in-lieu fees sufficient to result in the development of affordable housing meeting one of the criteria described above?

Determining Eligibility based upon the answers:

Full CEQA Exemption for Sustainable Community Projects (SCPs)

If you answered **Yes** to all the TPP questions 1 through 4, **No** to all the environmental questions 5 through 9, and **Yes** to all the land use questions 10 through 14, then your Project is a SCP and is eligible for a full CEQA Exemption under SB 375.

Transit Priority Projects (TPP)

If you answered **Yes** to all the TPP questions 1 through 4, but did not qualify as a SCP then your project is a TPP. Your TPP also needs to incorporate all appropriate mitigation measures required by an applicable prior CEQA document (such as an adopted EIR for a Specific Plan) for your Project location. If your TPP meets these two criteria then your TPP does not need to analyze the following impacts in the Sustainable Communities Environmental Assessment (SCEA) or CEQA analysis:

- Growth inducing impacts,
- Regional transportation impacts, and
- GHG emissions related to passenger cars and light duty trucks.

The impacts listed above are considered less than significant because the Project is a TPP and the SCEA or CEQA document should reference PRC Section 21155.2(c)

Other Residential and Mixed Use Projects

If you answered Yes to question 4, but did not qualify as an SCP or TPP your project may not need to analyze some of the impacts in the CEQA analysis, if your project is a **residential project or mixed-use project with 75%** of the total building square footage of the Project as residential units. Also, your Project needs to incorporate all appropriate mitigation measures required by an applicable prior to CEQA document (such as an adopted EIR for a Specific Plan) for your Project location. If your project meets these criteria, then the CEQA analysis of your Project does not need to analyze the following Impacts:

- Growth inducing impacts,
- Regional transportation impacts, and
- GHG emissions related to passenger cars and light duty trucks.

The impacts listed above are considered less than significant because the Project meets the criteria in PRC Section 21155.2(c)

APPENDIX C:
LAND USE DEVELOPMENT TABLE

Sample Project Sizes by Land Use Category that are below 3000 MT CO2e

Project Type	**Project Size that Generates 3000 Metric Tons of CO2e**
Single Family Residential (Single Family Detached)	60units
Apartments/Condominiums/Townhouse	85units
Retirement Community (Senior Housing Age 50 or older)	100units
General Commercial/Retail/Office (refrigeration not to exceed 10% of total sf)	160,000 square feet
Supermarket/Grocery/Discount Club (refrigeration exceed10% of total sf)	36,000 square feet
Restaurants (sit down)	8,200 square feet
Fast-Food Restaurants (Fast Food with or without /Drive Thru)	5,300 square feet
Gas Station	7,200 square feet
Industrial	53,000 square feet
Wireless Communication Towers	2,400 kw
Passive Park	200 acres
Active Park	60 acres

*based upon statistical analysis of Projects run in the CalEEMod model.

* Definitions are provided below

Sample Project Sizes by Land Use Category that are below 3000 MT CO2e Definitions

Definitions:

Single Family Residential

Single-Family Detached homes on individual lots typical of a suburban subdivision.

Apartments/Condominiums/Townhouse

Apartments High Rise:	High-rise apartments are units located in rental buildings that have more than 10 levels and most likely have one or more elevators.
Apartments Low Rise:	Low-rise apartments are units located in rental buildings that have 1-2 levels.
Apartments Mid Rise:	Mid-rise apartments in rental buildings that have between 3 and 10 levels.
Condo/Townhouse:	These are ownership units that have at least one other owned unit within the same building structure.
Condo/Townhouse High Rise:	These are ownership units that have three or more levels.

Retirement Community Senior Housing (Age 50 or older)

These communities provide multiple elements of senior adult living. Housing options may include various combinations of senior adult housing single family and/or multi-family, in support of assisted living, and skilled nursing care aimed at allowing the residents to live in one community as their medical needs change.

General Commercial/Retail/Office (refrigeration not to exceed 10% of total sf)

Home Improvement Super Store, Auto Care Center, Electronic Superstore, Hardware store, Pharmacy/Drugstore with & without drive thru, General Office Building, Bank with & without drive thru, Gov. Civic Center, Gov. Office Building, Medical Office, Office Park, Health Club, and Strip Mall (small strip shopping centers contain a variety of retail shops and specialize in quality apparel, hard goods and services such as real estate offices, dance studios, florists and small restaurants) or Convenience Store not to exceed 5,000 sf.

Supermarket/Grocery/Discount Club (refrigeration exceed 10% of total sf)

Supermarkets: free-standing retail stores selling a complete assortment of food: food preparation and wrapping materials; and household, cleaning items. Supermarkets may also contain the following products and services: ATMs, automobile supplies, bakeries, books and magazines, dry cleaning, floral arrangements, greeting cards, limited-service banks, photo centers, pharmacies and video rental areas.

Discount Club: a discount or warehouse store where shoppers pay a membership fee in order to take advantage of discounted prices on a wide variety of items such as food, clothing, tires and appliances. Many items are sold in large quantities or in bulk.

Restaurants (sit down) Full-service eating establishments with typical turnover rates of at least one hour or longer. Patrons commonly wait to be seated, are served by a waiter, order from menus and pay for meals after they eat.
Fast-Food Restaurants (with or without /Drive Thru) Patrons generally order at a cash register and pay before they eat.
Gas Station Gas Station includes the building square footage and excludes the canopy. Gas/Service Stations Projects that include "One building" with two to three ancillary uses: Fast Food w/Drive Thru, Convenience Market 24hr.
Industrial Warehouse with or without refrigeration, storage, distribution, manufacturing, R&D with exception to those uses that require Title 5 Permit from AQMD (i.e. paint booths).
Wireless Communication Towers Cell Towers-freestanding
Passive Park Amenities that include tot lots, picnic table, non-programmed open space.
Active Park Amenities include one of the following: game fields lighted, pool facility and community center (as per the Comprehensive Park and Recreation Master Plan for Old Model Colony).

APPENDIX D: METHODOLOGY FOR THE DEVELOPMENT AND APPLICATION OF THE SCREENING TABLES

METHODS SUMMARY

The point values in the Screening Tables were derived from the projected emissions reductions that would be achieved by each of the reduction measures associated with new development within the CAP. The points within the Screening Tables were proportioned by residential unit or square feet of commercial/industrial uses. This was accomplished by taking the predicted growth in households and commercial uses in 2020 and proportioning the appropriate reduction quantities for new development to the residential, commercial, and industrial land use sectors within the Screening Table. The result is point values that are proportioned by residential unit or commercial/industrial square feet. Because of this, the size of the project is not relevant to the Screening Table. Regardless of size, each project needs to garnish 100 points to demonstrate consistency with the CAP. Efficiency, not size of the project, is critical. The following equations can be used in determining the amount of emissions reduced per point in the Screening Table:

For Residential Projects:

0.012 MT CO_2e per Point per Residential Unit

For Commercial and Industrial Projects:

0.007 MT CO_2e per Point per 1,000 Square Feet of gross Commercial/Industrial building area

Note that the Screening Table and point values are best used for typical development projects processed by the City. Examples of typical development projects include residential subdivisions, multi-family residential apartments, condominiums and townhouses, retail commercial, big box retail, office buildings, business parks, and typical warehousing. Mixed use projects can use the instructions at the beginning of the Screening Tables. Transit oriented development (TOD), and infill projects are able to use the Screening Tables, but the Screening Tables points are likely to underestimate total emission reductions afforded these types of projects. Note that the Screening Tables include the opportunity to custom develop points (using the formula above) in order to provide points in the sections of the Screening Tables marked TBD and account for the predicted reductions in vehicle trips and vehicle miles traveled within a project specific traffic study and GHG analysis. TOD and infill projects can be more accurately assessed and allocated points using this method.

However, more unusual types of industrial projects such as cement manufacturing, metal foundries, refrigerant manufacturing, electric generating stations—including large alternative energy electric generation, and oil refineries cannot use the Screening Tables because the emission sources for those types of uses were not contemplated in the tables.

DEVELOPMENT OF THE POINT VALUES

Within the City measures, 39,769 MT CO_2e will be reduced using the Performance Standard for new development. The Performance Standard is implemented through Screening Tables and the point allocation within the Screening Tables are tied to 39,769 MT CO_2e of reductions.

The first step in allocating point values is to determine the number of new homes and commercial buildings that are anticipated by year 2020. The City predicts that 16,489 new residential units will be needed by 2020 to accommodate the population growth by 2020 and a total of approximately 36,940,000 square feet of new commercial and industrial buildings within Ontario is needed to accommodate anticipated job growth. Of all new development anticipated by 2020, a total of approximately 1,649 new residential units and 3,694,000 square feet of new commercial and industrial buildings within Ontario are anticipated to be built as small projects using the efficiency measures. Approximately 14,840 new residential units and 33,246,000 square feet of new commercial and industrial buildings within Ontario are anticipated to either use the screening tables or provide an independent analysis demonstrating reductions. Evaluating the growth in residential and commercial/industrial land uses, approximately 44.55% is attributable to residential and 55.45% attributable to commercial/industrial land uses. Using those ratios, the Performance Standard will reduce 17,717 MT CO_2e from residential development and 22,052 MT CO_2e from commercial/industrial development by 2020.

Dividing the 17,717 MT CO_2e reductions of emissions afforded the Screening Table implementation of the Performance Standard for new residential development by the anticipated 14,840 new residential units that will be built yields 1.19 MT CO_2e per residential unit that needs to be reduced to fulfill the anticipated reductions of the CAP. That amount equals 100 points, producing the following equation for the point values:

0.012 MT CO_2e per Point per Residential Unit

A similar process was used to derive the point value for new commercial/industrial development:

0.007 MTCO2e per Point per 1,000 Sq. Ft. of gross Commercial/Industrial building area

The final step was to allocate points to each of the reduction measures in order to provide the menu of point values. Tables 1 and 2 below shows emission reductions afforded each measure. Note that emissions associated with new development are reduced by the State, as well as the City's Performance Standard. The Screening Tables focus on the Performance Standard the City is implementing associated with new development within the City boundaries. For this reason, the menu of options pertains to sectors of emissions associated with new development.

Table 1 Emissions Reduction By Measure

Reduction Number	Reduction Measure Name	Reduced Emissions(MT CO_2e) Commercial/Industrial	Residential
PS-T1	Land Use Based Trips and VMT Reductions	2,500	2,000
PS-T2	Bicycle Master Plan	2,000	1,601
PS-T3	Electric Vehicle Incentives and Infrastructure	2,116	1,714
PS-E1	Residential Energy Efficiency		7,087
PS-E2	Residential Renewable Energy Generation		4,784
PS-E3	Commercial/Industrial Energy Efficiency	8,821	
PS-E4	Commercial/Industrial Renewable Energy Generation	5,954	
PS-W1	Residential Water Conservation		531
PS-W2	Commercial/Industrial Water Conservation	661	
Total PS Reductions for New Development		**22,052**	**17,717**

Table 2 Measure Reduction By Project Size

Project Size	Reduced Emissions(MT CO_2e) Commercial/Industrial	Residential	ALL
BMP-1: (Projects at or below 3000 MT CO_2e)	772	619	1,391
PS-1 (Screening Tables)	22,052	17,717	**39,769**
Total Reductions for New Development from Local Measures	22,824	18,336	41,160

The CAP did not quantify emissions reductions associated with BMP-1 and assumed that new development would reduce 39,769 MT CO2e. However, calculations of anticipated reductions associated with BMP-1 were completed within this document and shown above. The overall reductions of both BMP-1 and PS-1 are anticipated to reduce a total of 41,160 MT CO2e. The predicted excess in reductions allows more certainty that the CAP will achieve the intended reduction goal for new development.

CITY OF ONTARIO

Community Climate Action Plan

Appendix C

Greenhouse Gas Reduction Measure Methods

Appendix C
Greenhouse Gas Reduction Measure Methods

C.1 Introduction

This Appendix provides a detailed overview of the calculations and assumptions used to quantify greenhouse gas (GHG) emissions reductions for each of the City of Ontario (the city) Community Climate Action Plan (CCAP) GHG reduction measures. A qualitative discussion of benefits is also presented. The following information is provided for each measure.

- **Measure Description**: Details the implementation requirement(s) and reduction goal for each measure.
- **Assumptions**: Includes all assumptions used in calculating emissions reductions.
- **Analysis Details**: Presents the methods for calculating 2020 business-as-usual (BAU) emissions[1], 2020 emissions with state measures and 2020 emissions with local measures. A qualitative summary of benefits is also provided. For additional information, please refer to the citations provided for each measure.

As an introduction to the measure details, this Appendix begins with an overview of the general GHG quantification methods by emissions sector.

C.2 Overview of GHG Methods

The quantification of GHG reductions was based on guidance provided by the California Air Pollution Control Officers Association (CAPCOA), other reference sources (such as the U.S. Environmental Protection Agency), and professional experience obtained from preparing climate action plans (CAP) for other jurisdictions in California. The majority of calculations were performed using standard factors and references, rather than performing a specific analysis of individual technologies. The following sections provide an overview of general calculation methods by emissions sector.

To avoid double counting emissions savings achieved by state programs, emissions reductions attributed to the local City measures subtract reductions achieved through the relevant state measures first. Likewise, emissions reductions attributed to certain local City measures subtract reductions achieved by overlapping local measures. By removing overlapping reductions, one can combine GHG reduction strategies to determine the cumulative effect of several measures without double counting measure effectiveness.

Some measures were not quantified due to insufficient data needed to quantify GHG reductions. This appendix describes the methods used to quantify GHG reductions for state and local measures. Unquantified measures are not included in this appendix. The table below presents a summary of quantified and unquantified measures.

Measure Number	Measure Name	Quantified/ Unquantified
State		
State-1	Title 24 Standards for Residential and Non-Residential Buildings (CALGreen)	Quantified
State-2	AB 1109 (Huffman) Lighting Efficiency and Toxics Reduction Act	Quantified

[1] BAU emissions are defined as those that would occur without the implementation of state (e.g., renewable energy portfolio, Title 24) or local action (e.g., Energy-1, Energy-2).

Measure Number	Measure Name	Quantified/ Unquantified
State-3	AB 1470 (Huffman)	Quantified
State-4	Industrial Boiler Efficiency	Quantified
State-5	Statewide Renewable Portfolio Standard (RPS)	Quantified
State-6	AB 1493 Pavley I and II and Low Carbon Fuel Standard (LCFS)	Quantified
State-7	AB 32 Transportation Reduction Strategies	Quantified
State-8	Sustainable Communities Strategy/Regional Blueprint Planning	Quantified
State-9	Low Carbon Fuel Standard (LCFS)	Quantified
County		
County-1	San Bernardino County Landfill Methane Capture Systems	Quantified
GHG Performance Standard		
PS-1	Performance Standard for New Development	Quantified
BMP-1	Performance Standard for New Development: BMP-1: Exceed Title 24 Energy-Efficiency Standards for New Buildings by 5% by 2020	Quantified
Building Energy		
Muni-1 [a]	Municipal Energy Measures	Quantified
Energy-1	CAP Consistency	Not Quantified
Energy-2	Regional Cooperation	Not Quantified
Energy-3	Energy Efficiency Funding for Existing Low-Income Residents	Quantified
Energy-4	Energy Efficiency Incentives and Programs to Promote Retrofits for Existing Residential Buildings	Quantified
Energy-5	Energy Efficiency Incentives and Programs to Promote Retrofits for Existing Non-Residential Buildings	Quantified
Energy-6	Streetlights	Quantified

Measure Number	Measure Name	Quantified/ Unquantified
Renewable Energy		
Muni-2 [a]	Municipal Renewable Energy Measures	Quantified
Renewable Energy-1	Solar Installation for Existing Non-Residential for Major Rehabilitations or Expansion	Quantified
Renewable Energy-2	Solar Installation in Existing Single Family Housing	Quantified
Renewable Energy-3	Solar Installation in Existing Nonresidential Buildings	Quantified
Wastewater Treatment		
Wastewater-1	Recycled Water	Not Quantified
Wastewater-2	Waste-to-energy/Methane Recovery	Not Quantified
Solid Waste Management		
Waste-1	Waste Diversion	Quantified
Waste-2	Construction and Demolition Waste Recovery Ordinance	Not Quantified
On-Road Transportation		
Muni-3 [a]	Municipal Transportation Measures	Quantified
Trans-1	Expand Public Transportation Infrastructure	Not Quantified
Trans-2	Transit Frequency and Speed	Not Quantified
Trans-3	“Smart Bus” Technology	Quantified
Trans-4	Expand Public Transportation Participation	Not Quantified
Trans-5	Low- and Zero-Emission Vehicles	Not Quantified
Trans-6	Vehicle Idling	Quantified
Trans-7	Parking Policy	Not Quantified
Trans-8	Event Parking	Not Quantified
Trans-9	Roadway Management	Not Quantified
Trans-10	Signal Synchronization	Not Quantified
Trans-11	School Transit Plan	Not Quantified
Trans-12	Ridesharing Programs	Not Quantified
Trans-13	Bicycle and Pedestrian Infrastructure Plan	Not Quantified
Trans-14	Development Standards for Bicycles	Not Quantified
Trans-15	Smart Growth and Infill	Not Quantified
Trans-16	Transit-Oriented Development	Not Quantified
Off-Road Equipment		
Muni-4 [a]	Municipal Off Road Measures	Quantified
Off Road-1	Idling Ordinance	Quantified
Off Road-2	Landscaping Equipment	Quantified
Agriculture		
Agriculture-1	Methane Emissions Reduction for Animal Operations	Quantified

Measure Number	Measure Name	Quantified/ Unquantified
Water Transport, Distribution, and Treatment		
Muni-5 [a]	Municipal Water Measures	Not Quantified
Water-1	Water Conservation for Existing Buildings	Quantified
Water-2	Outdoor Irrigation Monitoring and Management System	Quantified
Water-3	Water System Efficiency	Not Quantified
Water-4	SB X7-7	Quantified
Miscellaneous		
Misc-1	Climate Change Awareness	Not Quantified
Misc-2	Carbon Sequestration	Not Quantified
Misc-3	Shade Tree Planting	Quantified
Misc-4	Refrigeration and Air Conditioning Disposal	Not Quantified
Misc-5	Pervious Paving	Not Quantified
Misc-6	Infiltration	Not Quantified

Notes:

[a] All MCAP measures are quantified and explained in the City of Ontario Municipal Climate Action Plan. They are not included in this appendix.

C.2.1 State Measures

The CCAP includes emissions benefits from eight statewide initiatives. These State measures span multiple emission sectors, but are primarily targeted at the building energy and transportation sectors. Emissions reductions achieved by these measures were apportioned to the city-level using statewide estimates of measure effectiveness and sector-specific information. For example, the California Air Resources Board (CARB) estimates that implementation of Assembly Bill 1109 will reduce indoor residential lighting by at least 50% and reduce indoor commercial and outdoor lighting by at least 25% by 2018 (compared to 2007). GHG reductions achieved by Assembly Bill 1109 within Ontario was therefore quantified by multiplying 2020 BAU emissions from residential lighting and commercial lighting by 50% and 25%, respectively. It is important to note that while Ontario will achieve emissions reductions as a result of State programs, implementation of State measures does not necessarily always require local action. For example, state measures concerning the RPS, LCFS, or vehicle efficiency (Pavley/Advanced Clean Cars) don't require local action to be effective. However, some state measures (such as Title 24 building efficiency requirements or Sustainable Community Strategy local land use planning) require local implementation.

C.2.2 San Bernardino County Measures

The County of San Bernardino plans to install methane capture systems at a number of county-owned and operated landfills. Since these landfills serve Ontario, the city would see emission reductions from their solid waste management sector, as fewer fugitive methane emissions from the decomposition of city-generate waste would be released into the atmosphere.

C.2.3 Local Measures

The section summarizes local efforts that the CCAP proposes to further reduce community-wide GHG emissions. Measures that are required by State law, such as compliance with Assembly Bill 1109, or city regulations, such as an Idling Ordinance, would be mandatory for either existing and/or new development (and are identified with a [M]). The City of Ontario would require implementation of these measures, pursuant to state and new or existing local laws and regulations. Measures that would be implemented through incentive-based approaches, such as building retrofits, would be voluntary and are marked with a [V]. GHG reductions associated with these voluntary measures were quantified based on anticipated participation rates. Measures that would be implemented by the city for municipal measures are marked with a [CITY] mark. Some measures are a combination of city measures and voluntary or mandatory measures.

GHG Performance Standard for New Development

The GHG Performance Standard for New Development (PS) provides a streamlined and flexible program for new projects to reduce their emissions. This approach uses a performance standard for new private developments as part of the discretionary approval process under CEQA. New projects would be required to quantify project-generated GHG emissions and adopt feasible reduction measures to reduce project emissions to 25% below BAU project emissions. This approach does not require project applicants implement a pre-determined set of measures. Rather, project applicants are encouraged to choose the most appropriate measures for achieving the reduction goal, while taking into consideration cost, environmental or economic benefits, schedule, and other project requirements. The PS applies to all projects emitting more than 3,000 MT CO_2e per year, which is roughly equivalent to 90% of projects. Projects emitting less than this amount must implement a suite of BMPs. In order to quantify the reductions achieved for the PS approach, the amount of new development emissions from 2012 to 2020 was estimated for the city along with the GHG reductions needed to achieve the overall PS reduction goal for the city. Then the value of the other state and local measures for new development was estimated for the city and subtracted from the PS reduction goal to derive the net additional reductions that would result from the PS implementation. This does not mean that the state and local other measures would apply on an equal basis for every single project, and thus individual new development projects may have higher or lower project-level burdens than the average. Analysis of this measure indicates that the bulk of reductions needed to meet the PS would be from other state and local measures and a smaller portion from project-level reductions.

Building Energy

Reduction measures to address GHG emissions from building energy use are separated into two categories: energy efficiency and renewable energy. Emissions reductions associated with these measures were quantified using estimates of electricity kilowatt hour (kWh) and natural gas (therms) consumed by residential, commercial, and industrial buildings. Activity data was provided for the existing inventory year (2008), which was scaled to 2020 under BAU conditions using the socioeconomic data summarized in Appendix A, *City of Ontario 2008 Community Greenhouse Gas Emissions Inventory and 2020 Forecast*.

Emissions reductions achieved by energy efficiency and renewable energy measures were quantified using a general standards and factors. Specifically, percent reductions in energy consumption for various actions, such as exceeding the Title 24 Standard, were obtained from CAPCOA and other literature sources. These reductions were applied to the expected 2020 energy usage to quantify total reductions in energy consumption. GHG emissions that would have been emitted had the energy been consumed were then calculated using utility-specific emission factors.

Wastewater Treatment

The CCAP includes two wastewater measures; one to reduce the need for freshwater through the use of recycled water and one to capture methane produced during the wastewater treatment process.

GHG savings from methane capture were calculated assuming the majority of methane generated by wastewater treatment plants is captured and not released into the atmosphere. Emission reductions from the increased use of recycled water are based on the reduced energy intensity associated with producing recycled water, compared to conveying water to southern California from the State Water Project.

Solid Waste Management

The waste reduction strategy aims to reduce the amount of waste produced by the city. Existing waste generation volumes and diversion rates were obtained from CalRecycle (2010a). GHG emissions that would have been generated by waste if they had not been diverted were quantified using the CARB First Order Decay (FOD) model and the methods described in Appendix A.

On-Road Transportation

Measures within the on-road transportation sector seek to both reduce the number of vehicle trips, as well as encourage mode shifts from single occupancy vehicles to alternative transportation. There are three local community transportation measures that were quantified in the CCAP; SB 375, Smart Bus, and vehicle idling. The effect of SB 375 on transportation emissions by 2035 in the county was quantified by the Southern California Associated Governments (SCAG) using their regional transportation demand model. These county-wide reductions were scaled to 2020 and to Ontario. SB 375 also includes transportation-related GHG reductions from The Ontario Plan (TOP) which occur throughout the SCAG region. Smart Bus reductions were estimated using data on average weekday and annual ridership, vehicle miles, and passenger miles from Omnitrans along with standard transportation emission factors. Vehicle idling emission reductions were estimated using data on average idling fuel consumption rates from the U.S. Environmental Protection Agency (USEPA), ARB, and other sources.

Off-Road Equipment

Measures within the off-road equipment sector seek to increase the use of electricity and reduce the consumption of fossil fuels in heavy-duty off-road equipment. GHG emissions in 2020 for off-road activity within the city were quantified using the CARB OFFROAD2007 emissions model. OFFROAD2007 provides detailed estimates of fuel consumption, hours of operation, and emissions by equipment type and horsepower. GHG emissions associated with electrifying portions of the off-road vehicle fleet were determined by multiplying the model outputs by the anticipated emission reductions estimated by CAPCOA (2010). GHG reductions from vehicle idling restrictions were also quantified using OFFROAD2007 and standard fuel consumption factors.

Agriculture

The voluntary measure within the agriculture sector supports the reduction of methane emissions from manure management and enteric fermentation. This measure applies to the dairy industry and other animal operations. GHG emissions reductions associated with methane reduction at dairies and other animal operations were determined by multiplying BAU methane emissions by the number of participating dairies (estimated using date from the Climate Change Scoping Plan for *Measure A-1: Methane Capture at Large Dairies*) and the altered methane emissions rate under this measure.

Water Transport, Distribution, and Treatment

The CCAP seeks to reduce energy and GHG emissions associated with water consumption through adoption of the voluntary CALGreen water efficiency measures for existing and new development and encourage water-efficient landscaping practices in the participating cities. Fixture flow rates from CALGreen (2010) and CAPCOA (2010) along with socioeconomic data were used to estimate the water savings from CALGreen standards. Information from CAPCOA was used to estimate the water savings from water-efficient landscaping practices. Indirect GHG emissions from electricity required to pump, treat, distribute and/or heat the consumed water were calculated using state-specific emission factors.

Miscellaneous

The CCAP includes a measure to expand urban forestry programs to 1,000 new trees per year. Emissions benefits from increased shade were quantified based on information provided by ICLEI and CAPCOA. Regional tree planting lists were consulted to determine the types of tree species appropriate for planting along city streets and in open spaces. It was assumed that tree planting began in 2012 and will continue to occur on an annual basis. Reductions for this measure are included in the building energy sector, as shade trees reduce the energy consumption in buildings. There are a number of other miscellaneous measures that were included in the CCAP but were not quantified.

C.3 Overview of Measure Benefits

Many of the GHG reduction measures would result in financial, environmental, and public benefits for Ontario and communities that are additional to the expected GHG emission reductions. These benefits include cost savings over conventional activities, reductions in criteria pollutants, job growth, economic growth, and public health improvements. Studies have shown that climate action in California can produce net gains for the statewide economy, increasing growth and creating jobs (Roland-Host 2008). Climate policies can produce positive economic growth through monetary savings from improvements in energy efficiency and reduced energy bills, as well as investing in technologies for innovation, which can provide new stimulus for employment (Roland-Host 2008). Addressing and mitigating GHG emissions on a national level can yield a large savings potential, benefit the global economy, and can be mostly achieved through implementation of existing technology (Roland-Host 2008). Based on literature reviews, a qualitative discussion of anticipated benefits is provided for the city's GHG reduction measures. Benefits are identified using the following icons.

Benefits for the CCAP GHG Reduction Measures

 Reduced Energy Use

 Reduced Waste Generation

 Resource Conservation

 Energy Diversification and/or Security

 Reduced Air Pollution

 Increased Property Values

 Reduced Energy Price Volatility

 Economic Growth

 Public Health Improvements

 Increased Quality of Life

 Reduced Urban Heat Island Effect

 Smart Growth

C.4 GHG Quantification Methods

The following section provides GHG quantification details for the CCAP measures for each sector. For each measure, the following information is presented:

1. Measure Description
2. Assumptions
3. Analysis Details – GHG Analysis
4. Analysis Details – Co-Benefit Analysis

State-1: Title 24 Standards for Non-Residential and Residential Buildings (Energy Efficiency Standards and CALGreen)

Measure Description

Requires that building shells and building components be designed to conserve energy and water. 2008 T24 standards were effective starting January 1, 2009, and 2013 T24 standards were effective starting January 1, 2014. The standards are assumed to be periodically updated between 2014 and 2020.

Assumptions

Quantification of this measure employs the following assumptions:

- The 2013 Title 24 standards are 25% and 14% more stringent than the 2008 T24 standards for single-family homes and multi-family homes, respectively (California Energy Commission 2012). This is equivalent to an increase in stringency of approximately 21% on average for all residential buildings the county as a whole.
- The 2013 Title 24 standards are 30% more stringent than the 2008 T24 standards for nonresidential buildings (California Energy Commission 2012).
- Stringency of the residential Title 24 standards will be increased by 17% every three years starting in 2017 (Maziar pers. comm.)
- Stringency of the nonresidential Title 24 standards will be increased by 7% every three years starting in 2017 (Maziar pers. comm.)

Analysis Details

GHG Analysis

Energy efficiency upgrades as a result of the Title 24 standards will reduce electricity and natural gas consumption, thereby resulting in GHG emissions savings.

<u>2020 BAU Energy Consumption</u>

The GHG Inventory (Appendix A) estimates that community-wide electricity consumption in 2020 for the participating cities is approximately 2,154 MWh and community-wide natural gas consumption in 2020 for the participating cities is approximately 110 million therms.

<u>Emissions Reductions</u>

The stringency of the Title 24 Standards will be increased three times relative to the GHG inventory base year (2008) by 2020.[2] The 2013 standards represent a 21% and 30% increase in energy efficiency (electricity and natural gas) compared to the 2008 T24 standards for residential and non-residential buildings, respectively. Assuming a 17% and 7% tri-annual increase in the stringency of the residential and non-residential Title 24 standards, respectively, after 2014, 2020 residential energy use would be reduced to 54.8% of the 2008 code.[3] Non-residential energy use would likewise be reduced to 60.5% of the 2008 code. However, because the Title 24 code is revised on a semi tri-annual basis, only a fraction of total energy use is subject to each code revision. To avoid-double counting, estimated energy reductions were multiplied by the annual fraction of electricity subject to each code revision. The average reduction in residential energy use in 2020 as a result of the Title 24 Standards was therefore estimated to be 17.4% (82.6% of the 2008 code), and the average non-residential reductions were estimated to be 19.5% (80.5% of the 2008 code).

Energy reductions achieved by Title 24 were calculated by multiplying 17.4% and 19.5% by the city's 2020 BAU electricity and natural gas consumption for residential and non-residential development, respectively. GHG emissions reductions were quantified by multiplying the total energy reductions by the appropriate SCE emission factors.[4]

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[2] Increases assumed in 2014, 2017, and 2020.
[3] Assumes 100% in 2005 and a 17% reduction every three years beginning in 2008.
[4] SCE emission factors account for decreased carbon intensities as a result of the State's RPS.

Co-Benefit Analysis

The following benefits are expected from implementation of improvement of the Title 24 standards over time.

Reduced Energy Use: Energy retrofits and standards would improve the efficiency of residential and non-residential buildings. As such, the amount of energy (e.g., electricity, natural gas) consumed per unit of activity would be lowered.

Reduced Air Pollution: Reduced energy use would contribute to reductions in regional air pollution (from reduced generation of electricity) and local air pollution (from reduced burning of natural gas).

Resource Conservation: Increased building efficiency would reduce water consumption, which would help conserve freshwater.

Increased Property Values: Energy-efficient bulidings have higher property values and resale prices than less efficient buildings.

Public Health Improvements: Reduced regional and local air pollution would contribute to overall improvements in public health. A well-built, energy-efficient structure is also more durable and directly reduces certain health aliments. For example, properly sealed ducts help prevent mold and dust mites that can cause asthma.

Increased Quality of Life: The reduction of health aliments (see above) contributes to increased quality of life. Additionally, energy-efficient structures improve general comfort by equalizing room temperatures and reducing indoor humidity.

State-2: AB 1109 (Huffman) Lighting Efficiency and Toxics Reduction Act

Measure Description

Structured to reduce statewide electricity consumption in the following ways: 1) At least 50% reduction from 2007 levels for indoor residential lighting, and 2) At least 25% reduction from 2007 levels for indoor commercial and outdoor lighting, by 2018.

Assumptions

Quantification of this measure employs the following assumptions:

- Approximately 6.2% of electricity is used for commercial outdoor lighting (California Energy Commission 2006, Table 10-3).
- Approximately 29% of electricity is used for commercial indoor lighting (California Energy Commission 2006, Table 10-3).
- Approximately 39% of electricity is used for "other appliances and lighting" in residences in San Bernardino County based on climate zone (Energy Information Administration 2009, Table AP5).
- Of electricity is used for "other appliances and lighting," 50% is used for lighting (estimate); this means that approximately 20% of total residential electricity use is for lighting (39% * 50%).
- This measure results in a reduction of 50% for electricity used for indoor residential lighting and a reduction of 25% for electricity used for indoor commercial and outdoor lighting.

Analysis Details

GHG Analysis

Lighting requires the production of electricity to power the lights, which represents an indirect source of GHG emissions. Different light fixtures have different efficacies; in other words, certain bulbs can utilize less energy to obtain the same output. Replacing less efficient bulbs with energy-efficient ones therefore reduces energy consumption, and thus GHG emissions.

<u>2020 BAU Lighting Electricity Consumption</u>

Electricity usage from outdoor lighting in commercial developments within the city was estimated by multiplying the total anticipated energy use in 2020 under BAU conditions by 6.2% (California Energy Commission 2006, Table 10-3). Electricity usage from indoor lighting in residential and commercial developments within the city was estimated by multiplying the total anticipated energy use in 2020 under BAU conditions by 20% and 29%, respectively (California Energy Commission 2006, Table 10-3; Energy Information Administration 2009, Table AP5).

<u>Emissions Reductions</u>

AB 1109 will reduce indoor residential lighting by at least 50%. Energy reductions within the residential sector were calculated by multiplying the BAU indoor energy consumption for residential lighting by 0.50. AB1109 will reduce both outdoor and indoor commercial lighting by at least 25%. Energy reductions within the commercial sector were calculated by multiplying the BAU energy consumption for commercial lighting by 0.25. GHG emissions reductions were then quantified by multiplying the total energy reductions by the appropriate utility emission factors.

Co-Benefit Analysis

The following benefits are expected from implementation of AB1109.

Reduced Energy Use: Energy-efficient lighting (e.g., compact fluorescent lamps [CFL]) consumes, on average, 75% less electricity than incandescent bulbs.

Reduced Air Pollution: Reduced energy use would contribute to reductions in regional air pollution (from reduced generation of electricity).

Increased Property Values: Energy-efficient bulidings have higher property values and resale prices than less efficient buildings.

Increased Quality of Life: CFLs have a much longer lifetime than incandescent bulbs, resulting in reduced bulb turn-over and the need to purchase new fixtures.

State-3: AB 1470 (Huffman) Solar Water Heaters

Measure Description

Creates a $25 million per year, 10-year incentive program to encourage the installation of solar water heating systems that offset natural gas use in homes and businesses throughout the state.

Assumptions

Quantification of this measure employs the following assumptions:

- Solar water heaters reduce natural gas use by 130 therms (California Air Resources Board 2008a).
- An average of 0.013 water heaters per home will be replaced as a result of AB 1470 (California Air Resources Board 2008a; California Department of Finance 2000).

Analysis Details

GHG Analysis

California relies heavily on natural gas for water heating. Rooftop solar water heating technologies are designed to reduce fuel consumption, and thus GHG emissions. It is estimated that by creating a mainstream market, California can save more than 1 billion therms of natural gas per year—24% of the state's residential natural gas usage. (Huffman et. al. 2007)

<u>Emissions Reductions</u>

CARB estimates that implementation of AB 1470 would result in the installation of 200,000 solar water heaters by 2020. Assuming that an average of 0.013 heaters per home would be replaced as a result of AB 1470, and that the participating cities would have 520,241 single- and multifamily homes in 2020 (Southern California Association of Governments 2012a), a total of 6,503 water heaters would be replaced with solar water heaters. Each solar water heater will reduce natural gas use by 130 therms (California Air Resources Board 2008a). Natural gas reductions were therefore calculated by multiplying 130 therms by 6,503. GHG emissions reductions were then quantified by multiplying the total energy reductions by the appropriate utility emission factors.

Co-Benefit Analysis

The following benefits are expected from implementation of AB 1470.

Reduced Energy Use: Solar water heaters consume, on average, 130 therms less natural gas than non-solar units.

Reduced Air Pollution: Reduced energy use would contribute to corresponding reductions in local air pollution (from reduced burning of natural gas).

Increased Property Values: Energy-efficient bulidings have higher property values and resale prices than less efficient buildings.

State-4: Industrial Boiler Efficiency

Measure Description

This measure evaluated by ARB would require one or more of the following: annual tuning of all boilers, the installation of an oxygen trim system, and/or a non-condensing economizer to maximize boiler efficiency. A source could also replace an existing boiler with a new one that is equipped with these systems.

Assumptions

The following assumptions were considered in the evaluation of this measure:

- Because separate industrial natural gas emissions data were not available for Ontario, the statewide ratio of commercial to industrial natural gas emissions was used to estimate industrial natural gas emissions. This value is 66% (California Air Resources Board 2008b).
- 80% of all industrial natural gas emissions in the State are affected by this measure (California Air Resources Board 2008a); the same percent effectiveness rate was used for the Partnership cities.
- The Industrial Boiler Efficiency measure will reduce emissions by 5% (California Air Resources Board 2008a); the same percent reduction was used for Ontario.

Analysis Details

GHG Analysis

Newer, more efficient industrial boilers consume less natural gas, thereby reducing GHG emissions from natural gas combustion.

<u>2020 BAU Emissions</u>

The GHG Inventory quantified emissions associated with commercial and industrial natural gas use in 2020 under BAU conditions. Because the Industrial Boiler Efficiency measure only applies to industrial natural gas use, 2020 BAU emissions from commercial and industrial natural gas use were quantified by multiplying BAU emissions from this sector by 0.66.[5]

<u>Emissions Reductions</u>

CARB estimates that implementation of the Industrial Boiler Efficiency measure will reduce statewide emissions from industrial natural gas use by 4% (80% penetration multiplied by a 5% reduction) (California Air Resources Board 2008a). Since statewide emissions from industrial natural gas use account for 66% of total emissions from industrial and commercial natural gas use combined (California Air Resources Board 2008b), the net reduction in statewide industrial and commercial natural gas use emissions is 2.6% (4% multiplied by 66%).

GHG reductions achieved by the Industrial Boiler Efficiency measure within Ontario were therefore quantified by multiplying 2020 BAU emissions from commercial plus industrial natural gas consumption by 0.026.

Co-Benefit Analysis

The following benefits are expected from implementation of the Industrial Boiler Efficiency Measure.

Reduced Energy Use: Newer, more efficient industrial boilers consume less natural gas. As such, the amount of energy (e.g., natural gas) consumed per unit of activity would be lowered.

Reduced Air Pollution: Reduced energy use would contribute to reductions in local air pollution (from reduced burning of natural gas).

[5] Value based on 38.41 $MMTCO_2e$ for statewide emissions in 2020 from natural gas use in the commercial and industrial sectors combined, with 25.4 $MMTCO_2e$ due to industrial natural gas use (California Air Resources Board 2008b)

Increased Property Values: Buildings with newer, more efficient boilers will likely have higher property values and resale prices than buildings with older, less efficient boilers.

Public Health Improvements: Reduced local air pollution would contribute to overall improvements in public health.

Increased Quality of Life: The reduction of health aliments (see above) contributes to increased quality of life.

State-5: Senate Bill 1078 (2002)/Senate Bill 107 (2006) and Senate Bill 2 (2011) Renewable Portfolio Standard

Measure Description

Obligates investor-owned utilities (IOUs), energy service providers (ESPs), and Community Choice Aggregations (CCAs) to procure 20% of retail sales from eligible renewable sources by 2013, 25% by 2016. SB 2 (2011) and EO S-14-08 also sets forth a longer range target of procuring 33% of retail sales by 2020.

Assumptions

Quantification of this measure employs the following assumptions:

- The 2020 BAU renewable energy mix for Southern California Edison (SCE) is 13.8% (California Energy Commission 2009)each utility is as follows:

Analysis Details

GHG Analysis

Implementation of the Renewable Portfolio Standard (RPS) will increase the proportion of renewable energy within the energy supply mix of the utility serving the city. Renewable resources, such as wind and solar power, produce the same amount of energy as coal and other traditional sources, but do not emit any GHGs. By generating a greater amount of energy through renewable resources, electricity provided to the city by SCE will be cleaner and less GHG intensive.

<u>2020 BAU Emissions</u>

The GHG Inventory (Appendix A) estimates that community-wide electricity consumption[6] in 2020 for the city would be approximately 2,154 megawatt hours (MWh). The 2020 BAU renewable energy mix for SCE was determined using the direct renewable percentage for 2008 from the CEC's Utility Energy Supply Plans.

<u>Emissions Reductions</u>

Based on the renewable energy mix assumptions listed above, achievement of the RPS will reduce the carbon intensity of the 2020 CO_2 emission factor for SCE from 631 pounds per MWh to 490 pounds per MWh for SCE (The Climate Registry 2009; California Energy Commission 2009).

Similar reductions will be achieved by the statewide CH_4 and N_2O emission factors as reported by the U.S. EPA (U.S. Environmental Protection Agency 2010). GHG emissions that would be generated by community-wide electricity consumption in 2020 will therefore be lower as a result of the RPS-adjusted emission factors.

GHG emissions generated from electricity consumption were calculated assuming implementation of the RPS by multiplying 2020 community-wide electricity consumption by the RPS-adjusted emissions factors. The difference in emissions between the 2020 BAU and 2020 RPS scenarios represents the emissions reductions achieved by this measure.

Co-Benefit Analysis

The RPS provides California with a flexible, market-based strategy to increase renewable energy generation and distribution. As discussed above, renewable energy provides the same amount of power as tradition sources (e.g., coal), but does not emit any GHGs or other criteria pollutants. Renewable energy therefore represents a clean source of power for the State and the participating cities. The following benefits are expected from implementation of the RPS (International Energy Agency 2007; U.S. Environmental Protection Agency 2009a).

Reduced Air Pollution: SCE generates power through a combination of sources, but the majority of electricity is provided by fossil fuels (e.g., coal, natural gas). The extraction and processing of fossil fuels generates localized pollutants emissions at the place of mining and at the source of power generation. These pollutants may be dispersed into the atmosphere, where they can be transported over long distances and result in regional air pollution. Reducing the amount of fossil fuels processed at power stations through increased generation of renewable energy would contribute to

[6] Includes electricity consumed by buildings.

cumulative reductions in criteria pollutants throughout the State.

Waste Reduction: The generation of electricity from fossil fuels (e.g., coal, natural gas) generates a substantial amount of waste including, but not limited to: fly ash, bottom ash, flue gas, and sludge. These products can have detrimental effects on the environment if absorbed into groundwater, soil, and/or biota. The extraction and mining of fossil fuels also generates waste. Increasing renewable energy production would reduce waste created by fossil fuel supplied power.

Energy Diversity and Security: Fuels that are traded in the open market are subject to energy supply constraints and interruptions from political unrest, conflict, and trade embargoes. Centralized power structures (e.g., stations, substations, refineries, ports) may also be targets of energy terrorism. Providing a diversified and domestic energy supply reduces foreign fuel dependency.

Reduced Price Volatility: Energy supply constraints and the uneven global distribution of fossil fuels increase the instability of the energy market. As the demand for global fossil fuels rises, energy prices would likely be subject to fluctuations and frequent price spikes. Renewables would contribute to the diversification of the energy supply mix, thereby buffering local economies from the volatile global energy market.

Economic Development: Development of renewable energy infrastructure (e.g., solar farms, wind turbines) would create new jobs, taxes, and revenue for local and regional economies.

Public Health Improvements: Reduced regional air pollution and waste generation would contribute to overall improvements in public health.

State-6: AB 1493 (Pavley)/Advanced Clean Cars) and Executive Order S-1-07 (Low Carbon Fuel Standard)

Measure Description

AB 1493 (Pavley) will reduce GHG emissions from automobiles and light duty trucks by 30% from 2002 levels by the year 2016. The regulations affect 2009 models and newer. The "Advanced Clean Cars" regulations introduces new standards for model years 2017–2025, and will reduce GHG emissions from automobiles and light duty trucks by 34 percent from 2017 levels by 2025.

The Low Carbon Fuel Standard (LCFS) reduces GHG emissions by requiring a low carbon intensity of transportation fuels sold in California by at least 10% by the year 2020.

Assumptions

Quantification of this measure employs the following assumptions:

- Assumptions are embodied in the EMFAC2011 model (California Air Resources Board 2011b).

Analysis Details

GHG Analysis

Engine efficiency improvements will reduce fuel consumption, thereby reducing GHG emissions from fossil fuel combustion.

The LCFS is a policy-based strategy that targets carbon emissions generated through the lifecycle of transportation fuels (i.e., from extraction to production to consumption). The standard assigns a maximum level of GHG emissions per unit of fuel produced for several refiners and importers. Companies that exceed the LCFS through development of biofuels and other clean technologies are able to sell their excess credits, creating a flexible and dynamic market for low-carbon transportation fuels (Sperling and Yen 2009).

CARB approved the LCFS on April 23, 2009 and the regulation became effective on January 12, 2010 (California Air Resources Board 2011). The U.S. District Court for the Eastern District of California ruled in December 2011 that the LCFS violates the Commerce Clause of the U.S. Constitution. CARB appealed this ruling in 2012 and on September 18, 2013, a 9th U.S. Circuit Court of Appeals panel upheld the LCFS, ruling that the program does not violate the Commerce Clause and remanded the case to the Eastern District. It is assumed that the LCFS will be ultimately implemented by 2020 as proposed. If the LCFS were ultimately to be blocked from implementation due to federal legal constraints, then the goals for local reduction by the city may need to be adjusted downward accordingly.

<u>2020 BAU Emissions</u>

The GHG Inventory quantified emissions associated with on-road transportation in 2020 under BAU conditions using emission factors generated by EMFAC 2011 and VMT data provided by SCAG (California Air Resources Board 2011b). These emission factors do not assume the implementation of Pavley/Advanced Clean Cars and the LCFS.

<u>Emissions Reductions</u>

The EMFAC2011 model was used to generate emission factors for vehicles traveling within San Bernardino County (in the Mojave Desert Air Basin and South Coast Air Basin) for the year 2020 with implementation of Pavley/Advanced Clean Cars and LCFS (California Air Resources Board 2011b). These emission factors were multiplied by the 2020 BAU VMT for the city and compared to the 2020 BAU emissions. The difference in emissions equal the reductions associated with Pavley/Advanced Clean Cars and the LCFS.

Co-Benefit Analysis

The following benefits are expected from implementation of Pavley/Advanced Clean Cars and the LCFS.

Reduced Energy Use: Pavley/Advanced Clean Cars would increase the fuel efficiency of passenger vehicles, which would reduce the amount of fossil fuels consumed per mile travelled. The LCFS would reduce the carbon content of transportation fuels by 10%. The combustion of hydrocarbons generates a number of air pollutants, including particulate matter, carbon monoxide, sulfur dioxide[7], and ozone precursors[8]. Reducing the carbon content of transportation fuels would therefore reduce local and regional air pollution.

Reduced Air Pollution: Efficient vehicles burn less fuel per mile travelled then less efficient vehicles. Air pollutants generated by fossil fuel combustion, including particulate matter, carbon monoxide, sulfur dioxide, and ozone precursors, would therefore be reduced.

Public Health Improvements: Fossil fuel combustion releases several toxic air containments known to cause adverse human health effects. Improvements in vehicle efficiency would reduce the amount of fuel combusted, resulting in corresponding reductions in toxic air containments. Additionally, reductions in ozone precursors would reduce the formation of smog, which has numerous human and environmental effects, including respiratory irritation and reduced plant productivity.

Energy Security: In 2009, 51% of petroleum consumed by the U.S. was imported from oversees (Energy Information Administration 2010). Reducing fuel consumption by passenger vehicles would lessen the demand for petroleum and ultimately the demand for imported oil.

Reduced Price Volatility: Energy supply constraints and the uneven global distribution of fossil fuels increase the instability of the energy market. As the demand for global fossil fuels rises, fuel prices would likely be subject to fluctuations and frequent price spikes. Biofuels and other renewable technologies would contribute to the diversification of the energy supply mix, thereby buffering local economies from the volatile global energy market.

Economic Development: The development of biofuels and other clean technologies would create new jobs, taxes, and revenue for local and regional economies.

[7] Sulfur dioxide contributes to acid rain.

[8] Ozone precursors (reactive organic compounds and nitrogen oxides) contribute to smog formation.

State-7: AB 32 Transportation Reduction Strategies

Measure Description

The AB 32 Scoping Plan includes vehicle efficiency measures (in addition to Pavley/Advanced Clean Cars and LCFS) that focus on maintenance practices. The Tire Pressure Program will increase vehicle efficiency by assuring properly inflated automobile tires to reduce rolling resistance. The Low Friction Oils Program will increase vehicle efficiency by mandating the use of engine oils that meet certain low friction specifications. The Heavy-Duty Vehicle GHG Emission Reduction Program will increase heavy-duty vehicle (long-haul trucks) efficiency by requiring installation of best available technology and/or CARB approved technology to reduce aerodynamic drag and rolling resistance.

Assumptions

Quantification of this measure employed the following assumptions:

- Tire Pressure Program will reduce statewide emissions from passenger vehicles by 0.6 million MT CO_2e (California Air Resources Board 2011a), corresponding to a 0.39% reduction in Statewide 2020 BAU emissions.
- Low Friction Oils Program will reduce statewide emissions from passenger vehicles by 2.8 million MT CO_2e (California Air Resources Board 2011a), corresponding to a 1.8% reduction in Statewide 2020 BAU emissions.
- Heavy-Duty Vehicle GHG Emission Reduction Program will reduce statewide emissions from heavy-duty vehicles by 0.9 million MT CO_2e (California Air Resources Board 2011a), corresponding to a 2.2% reduction in Statewide 2020 BAU emissions.
- The percent reduction in transportation emissions in the city will be equal to the percent reduction in transportation emissions reductions on a state level.

Analysis Details

GHG Analysis

Improvements in engine efficiency and vehicle technology will reduce fuel consumption, thereby reducing GHG emissions from fossil fuel combustion.

<u>2020 BAU Emissions</u>

The GHG Inventory quantified emissions associated with on-road transportation in 2020 under BAU conditions. The Tire Pressure and Low Friction Oils programs primarily affect light-duty vehicles, whereas the Heavy-Duty GHG Emissions Reduction Program affects heavy-duty vehicles. 2020 BAU emissions from light-duty autos and heavy-duty vehicles are approximately 970,000 and 276,000 MT CO_2e, respectively.

<u>Emissions Reductions</u>

Tire Pressure

CARB estimates that implementation of the Tire Pressure Program will reduce statewide emissions from passenger vehicles by 0.6 million MT CO_2e, or by approximately 0.39% (California Air Resources Board 2011a). GHG reductions achieved by the Tire Pressure Program within the city were therefore quantified by multiplying 2020 BAU emissions from passenger vehicles by 0.0039.

Low Friction Oils

CARB estimates that implementation of the Low Friction Oils Program will reduce statewide emissions from passenger vehicles by 2.8 million MT CO_2e, or by approximately 1.8% (California Air Resources Board 2011a). GHG reductions achieved by the Low Friction Oils Program within the city were therefore quantified by multiplying 2020 BAU emissions from passenger vehicles by 0.018.

Heavy-Duty Vehicle GHG Emissions Reductions

CARB estimates that implementation of the Heavy-Duty Vehicle GHG Emission Reduction Program will reduce statewide emissions from heavy-duty vehicles by 0.9 million MT CO_2e, or by approximately 2.2% (California Air Resources Board 2011a). GHG reductions achieved by the Heavy-Duty Vehicle GHG Emission Reduction Program within the city were therefore quantified by multiplying 2020 BAU emissions from heavy-duty vehicles by 0.022.

Co-Benefit Analysis

The following benefits are expected from implementation of AB 32 Transportation Reduction Strategies.

Reduced Energy Use: The AB 32 Transportation Reduction Strategies would increase the efficiency of passenger vehicles and heavy-duty trucks, which would reduce the amount of fossil fuels consumed per mile travelled.

Reduced Air Pollution: Efficient vehicles burn less fuel per mile travelled then less efficient vehicles. Air pollutants generated by fossil fuel combustion, including particulate matter, carbon monoxide, sulfur dioxide, and ozone precursors, would therefore be reduced.

Public Health Improvements: Fossil fuel combustion release several toxic air containments known to cause adverse human health effects. Improvements in vehicle efficiency would reduce the amount of fuel combusted, resulting in corresponding reductions in toxic air containments. Additionally, reductions in ozone precursors would reduce the formation of smog, which has numerous human and environmental effects, including respiratory irritation and reduced plant productivity.

Energy Security: In 2009, 51% of petroleum consumed by the U.S. was imported from oversees (Energy Information Administration 2010). Reducing fuel consumption by passenger vehicles would lessen the demand for petroleum and ultimately the demand for imported oil.

State-8: SB 375 Sustainable Communities Strategy [V]

Measure Description

SB 375 provides for a new planning process that coordinates land use planning, regional transportation plans (RTPs), and funding priorities in order to help California meet the GHG reduction goals established in AB 32. While Pavley/Advanced Clean Cars and LCFS seek to reduce fuel consumed and reduce the carbon content of fuel consumed, SB 375 seeks to reduce VMT through land use planning. SB 375 requires RTPs, developed by metropolitan planning organizations (MPOs) to incorporate a "sustainable communities strategy" (SCS) in their RTPs. The goal of the SCS is to reduce regional vehicle miles traveled (VMT) through land use planning and consequent transportation patterns. The regional GHG reduction target for the local MPO, the Southern California Associated Governments (SCAG), is 9% by 2020 and a 16% reduction by 2035 compared to 2005 GHG emissions on a per capita basis. SCAG's 2012–2035 RTP/SCS successfully achieves and exceeds these targets set by ARB (Southern California Association of Governments 2012b).

Although this is a state measure because SB 375 is promulgated at the state level, it will require local action from the city to implement. The city will need to implement actions and policies to carry out the SCS for SCAG, by emphasizing Transit Oriented Development and infill, by improving transit infrastructure and service, and by investing in biking and walking infrastructure, for example. In order to comply with the SCS in Ontario, the city has adopted the Ontario Plan, or "TOP", which is a city planning framework that contains many transportation and land use-related actions to reduce vehicle-related GHG emissions throughout the SANBAG region. The Ontario Plan will support the goals of SB 375 and the Sustainable Communities Strategy (Transportation-1) through a wide range of actions which include the following.

- Integrate state, regional and local Sustainable Community/Smart Growth principles into the development and entitlement process.
- Develop a system of trails and corridors that facilitates and encourages bicycling and walking, including the Multipurpose Trails & Bikeway Corridor Plan.
- Require new development to provide transit facilities, such as bus shelters, transit bays and turnouts, as necessary.
- Require the future development of community-wide serving facilities to be sited in transit-ready areas that can be served and made accessible by public transit.
- Provide development-related incentives for projects that promote transit use.
- Ensure the development of a multimodal transit center near LAONT airport to serve as a transit hub for local buses, BRT, the Gold Line, high-speed rail, the proposed Ontario Airport Metro Center circulator and other future transit modes.
- Support extension of the Metro Rail Gold Line to Ontario and advocating the expansion of Metrolink service to include the Downtown and the multimodal transit center.
- Designate and maintain a network of city truck routes that provide for the effective transport of goods while minimizing negative impacts on local circulation and noise-sensitive land uses, as shown in the Truck Routes Plan.

Assumptions

The following assumptions were considered in the evaluation of this measure:

- The percentage reduction in per-capita VMT associated with the SCS in the SCAG region is 2.4% by 2035 (Fehr and Peers 2011, Table 11).
- The percentage reduction in per-capita VMT associated with the SCS in 2020 is approximately 1% (linear interpolation from 2008 to 2035)
- This measure includes 50,596 MT CO_2e reductions from The Ontario Plan (The Planning Center 2009). This is based on a total reduction of 209,614 MT CO_2e for the year 2035 for total trips in the entire SCAG region. This value was scaled to the year 2020 and scaled again from region-wide trips to origin-destination trips, to be consistent with the GHG inventory and BAU forecast.
- The percent reduction in VMT was assumed to be commensurate with the percent reduction in GHGs.

Analysis Details

GHG Analysis

VMT reduction through land use planning will reduce GHG emissions associated with on-road transportation.

<u>BAU On-Road Emissions</u>

The GHG Inventory quantified emissions associated with on-road transportation in 2008 and in 2020 under BAU conditions. Population for 2008 and 2020 was used to determine per-capita light/medium-duty VMT for 2008 and 2020 BAU.

<u>Emissions Reductions</u>

The percent change in per-capita light/medium-duty VMT from 2008 to 2020 under BAU conditions was calculated for the city. 1% was subtracted from this value to determine the new percent change in per-capita light/medium-duty VMT from 2008 to 2020 with implementation of this measure. Then the per-capita light/medium-duty VMT in 2008 was multiplied by the new percent change in per-capita VMT to determine the new per-capita VMT in 2020. The new per-capita VMT in 2020 was then multiplied by the projected population in 2020 to determine a new total 2020 VMT. The VMT reduction was calculated by subtracting the new 2020 VMT from the 2020 BAU VMT.

In Ontario, the 2008 per-capita VMT is 10,841 and the 2020 BAU per-capita VMT is 10,489. The change in per-capita VMT is -3.2%. Subtracting 1% from this yields a -4.2% change. A -4.2% change in per-capita VMT from 2008 is 10,381. So, the reduction in VMT would be 108 miles per-capita.

The percent reduction in VMT was assumed to be commensurate with the percent reduction in GHGs. Emission reductions associated with this measure were therefore calculated by multiplying the percent reduction in VMT by the BAU emissions for light-duty autos.

For TOP GHG reductions, the difference in 2035 SCAG regional transportation GHG emissions (with Ontario) between the existing general plan and the TOP was used to calculate the reduction for the City of Ontario. 2035 SCAG regional transportation GHG emissions for the existing general plan are 124,162,369 MT CO_2e and for the TOP are 124,371,983 MT CO_2e for a reduction of 209,614 MT CO_2e (The Planning Center 2009). This reduction was scaled to the year 2020 using a linear interpolation from the start year (2006) to the end year (2035); this scaling factor is 0.48 (or 48% of the 2035 GHG reductions would occur in the year 2020). 2020 reductions are therefore 101,193. Because the GHG inventory and BAU forecast use origin-destination approach to calculating VMT associated with Ontario, an additional scaling factor of 0.5 was applied to the calculated 2020 reductions. This scaling factor was assumed to be 0.5 which means that approximately half of the total SCAG region trips either begin in Ontario, end in Ontario, or begin and end in Ontario. After applying this scaling factor, the final GHG reductions are 50,596 MT CO_2e.

Co-Benefit Analysis

The following benefits are expected from implementation of State-8.

Reduced Energy Use: Increased density would reduce the number of private vehicle trips made within each city. As a result, gasoline and diesel consumption would be reduced.

Reduced Air Pollution: Because less petroleum would be consumed by vehicles, air pollutants generated by fossil fuel combustion, including particulate matter, carbon monoxide, sulfur dioxide, and ozone precursors, would be reduced. Likewise, reductions in congestion from fewer vehicles on the roadway network would contribute reductions in emissions generated by vehicle idling.

Public Health Improvements: Fossil fuel combustion release several toxic air containments known to cause adverse human health effects. Reductions in the amount of fuel combusted would result in corresponding reductions in toxic air containments. Additionally, reductions in ozone precursors would reduce the formation of smog, which has numerous human and environmental effects, including respiratory irritation and reduced plant productivity.

Energy Security: In 2009, 51% of petroleum consumed by the U.S. was imported from oversees (Energy Information Administration 2010). Reducing fuel consumption would lessen the demand for petroleum and ultimately the demand for imported oil.

Increased Quality of Life: Increased density along transit routes, employment corridors, and in downtown areas would increase the accessibility of public transportation and basic services. Reductions in the number of vehicle trips may also reduce congestion and travel times.

Smart Growth: Increased density in the urban core is a form of smart growth development that creates more walkable and accessible environments.

State-9: Executive Order S-1-07 (Low Carbon Fuel Standard) for Offroad Equipment

Measure Description

Requires a 10% reduction in the carbon intensity of California's transportation fuels by 2020.

Assumptions

Quantification of this measure employs the following assumptions:

- Low Carbon Fuel Standard (LCFS) will reduce statewide emissions from transportation-based fuels[9] by 15 million MT CO_2e (California Air Resources Board 2011a). This is equivalent to an 8.9% reduction in emissions from transportation fuels.

Analysis Details

GHG Analysis

See measure State-6 above for a detailed description of the LCFS. State-9 applies the LCFS to the Offroad Transportation and Equipment sector only (State-6 applies to on-road transportation only).

<u>2020 BAU Emissions</u>
The GHG Inventory quantified emissions associated with off-road transportation and equipment in 2020 under BAU conditions.
<u>Emissions Reductions</u>
CARB estimates that implementation of the LCFS will reduce statewide emissions from transportation-based fuels[9] by 15 million MT CO_2e, or by approximately 8.9% (California Air Resources Board 2011a). GHG reductions achieved by the LCFS within the city were therefore quantified by multiplying BAU off-road emissions by 0.089.

Co-Benefit Analysis

The following benefits are expected from implementation of LCFS.

Reduced Air Pollution: The LCFS would reduce the carbon content of transportation fuels by 10%. The combustion of hydrocarbons generates numbers air pollutants, including particulate matter, carbon monoxide, sulfur dioxide, and ozone precursors. Reducing the carbon content of transportation fuels would therefore reduce local and regional air pollution.

Public Health Improvements: Fossil fuel combustion release several toxic air containments known to cause adverse human health effects. Improvements in vehicle efficiency would reduce the amount of fuel combusted, resulting in corresponding reductions in toxic air containments. Additionally, reductions in ozone precursors would reduce the formation of smog, which has numerous human and environmental effects, including respiratory irritation and reduced plant productivity.

Energy Security: In 2009, 51% of petroleum consumed by the U.S. was imported from oversees (Energy Information Administration 2010). Reducing the carbon-content of transportation fuels would reduce the consumption and demand for imported petroleum.

Reduced Price Volatility: Energy supply constraints and the uneven global distribution of fossil fuels increase the instability of the energy market. As the demand for global fossil fuels rises, fuel prices would likely be subject to fluctuations and frequent price spikes. Biofuels and other renewable technologies would contribute to the diversification of the energy supply mix, thereby buffering local economies from the volatile global energy market.

Economic Development: The development of biofuels and other clean technologies would create new jobs, taxes, and revenue for local and regional economies.

[9] Excludes aviation fuel, residual fuel oil, and lubricants.

County-1: San Bernardino County GHG Reduction Plan Landfill Controls

Measure Description

The County of San Bernardino, through their adopted GHG Emissions Reduction Plan, will install landfill gas controls on the following County-owned and operated landfills (County of San Bernardino 2011):

- 95% capture at Mid-Valley landfill
- 85% capture at Milliken and Colton landfills
- 75% capture at Barstow and Landers landfills

Since these landfills serve Ontario, the city will realize GHG reductions from the county's installation of landfill gas controls.

Assumptions

Quantification of this measure employs the following assumptions:

- The methane capture rate increases at the Mid-Valley landfill from 75% to 95%
- The methane capture rate increases at the Milliken landfill from 54% to 85% and at the Colton landfill from 37% to 85%
- The methane capture rate increases at the Barstow and Landers landfills from 0% to 75%

Analysis Details

GHG Analysis

Methane capture systems can reduce the amount of methane released from the decomposition of waste.

Emissions Reductions

The landfills listed above would install landfill gas controls as noted above. Some of these landfills currently have methane capture systems. Pursuant to this measure, it was assumed that by 2020, all 5 landfills would install a methane system with capture efficiencies as noted above. GHG emissions generated by city-generated waste in 2020 were re-calculated using these assumptions and the methods outlined in the GHG Inventory.

Co-Benefit Analysis

The following benefits are expected from implementation of the San Bernardino County GHG Plan Landfill Controls.

Reduced Air Pollution: Capture systems prevent methane from migrating into the atmosphere and contributing to local smog.

Resource Conservation: Anaerobic digesters help prevent groundwater contamination by reducing the leaching of organic pollutants. The integrity of freshwater systems would therefore be conserved.

Increased Quality of Life: Methane capture helps reduce odors and other hazards associated with landfill gas emissions.

PS-1: GHG Performance Standard for New Development [M]

Measure Description

The city will adopt a GHG Performance Standard for New Development (PS), which will provide a streamlined and flexible program for new projects to reduce their emissions. This measure would include a performance standard for new private developments as part of the discretionary approval process under CEQA. New projects would be required to quantify project-generated GHG emissions and adopt feasible reduction measures to reduce project emissions to a level which is 25% below BAU project emissions.

The PS applies to all projects emitting more than 3,000 MT CO_2e per year, which is roughly equivalent to 90% of projects. Projects emitting less than this amount must implement a suite of BMPs.

Assumptions

The following assumptions were considered in the evaluation of this measure:

- Emissions were estimated for the year 2012 for the city using socioeconomic data. Socioeconomic data for the year 2012 was not available, so population, jobs, and housing were estimated using linear growth from 2010–2020.
- The PS percent reduction in new development emissions was determined for Ontario (refer to Appendix B).
- Some state measures which will affect new development, and therefore might overlap with the PS measure, could not be broken down into reductions associated with new development only (e.g., RPS, Pavley). Consequently, these measures were not included in the calculation of the PS.

Analysis Details

GHG Analysis

Implementation of the performance standard would reduce GHG emissions attributable to new discretionary development projects by 25% by 2020. Measurable reductions of GHG emissions would be achieved through the city's review and discretionary approval of residential, commercial, and industrial development projects. It is expected that project proponents would often include energy efficiency and alternative energy strategies to help reduce their project's GHG emissions because these are often the most cost-effective approach to reducing GHG emissions but are free to propose any valid measures that would achieve the overall reduction goal.

<u>2020 BAU Emissions</u>

An estimate of emissions in 2012 was performed using inventory and socioeconomic data for 2008 and 2020. 2012 emissions were estimated using the same methods that were used to forecast 2008 emissions to 2020, as feasible. Socioeconomic data for 2012 was not available. This data was estimated using linear growth from 2010–2020.

Although PS-1 won't apply to new development constructed before presumed CCAP adoption in 2014, the City has already been requiring projects to adopt GHG mitigation for new projects in 2013 and 2014. The City's GHG mitigation measures have been delivering the rough equivalent of PS-1 for new development in 2013 and in 2014 before adoption of the CCAP. For example, the Grand Park Specific Plan was approved in December 2013 and the adopted EIR included Mitigation Measures AQ-4 and AQ-5. Measure AQ-4 requires the recycling of construction waste, energy efficiency in building design, urban heat island mitigation, the use of energy efficiency appliances and fixtures, energy audits, outlets for electric landscaping, diversion of solid waste from landfills, and the support of pedestrian facilities and shade trees. Measure AQ-5 requires safe and convenient access for pedestrians and bicyclist, support for electric vehicle and plug-in electric vehicles (such as vehicle access and wired receptacles), traffic calming, bicycle facilities, transit support, energy efficient traffic lights, and water conservation (Michael Brandman Associates 2013). These mitigation measures (and other measures applied to other discretionary projects) will reduce emissions on par with PS-1 and thus development in 2013 and 2014 prior to adoption of the CCAP and implementation of PS-1 would have similar reductions to subsequent approvals with implementation of PS-1.

<u>Emissions Reductions</u>

In order to calculate the reductions from this measure, a 25% reduction from new development emissions from 2012 to 2020 was estimated for the city. State measures and local mandatory measures were quantified for new development. These measures achieve approximately 65% of the PS goal, or reduce new development emissions by 16%. The PS contributes the remaining 9% reduction required to achieve the 25% PS goal for new developments. As noted above, prior to CCAP adoption, the City has already been requiring mitigation measures that reduce air quality and GHG emissions similar to the level that will result from implementation of PS-1, so the calculation includes reductions through CEQA mitigation in 2013 and 2014 as well as reductions from 2014 to 2020 with PS-1 implementation.

The value of these state and local measures for new development were subtracted from the PS reduction to derive the net additional reductions that would result from the PS implementation. This does not mean that the other state and local measures would apply on an equal basis for every single project; individual new development projects may have higher or lower project-level burdens than the average. However, state and local mandatory measures are still expected to result in the largest share of the burden in meeting the PS reduction target for all cities (with a smaller portion from project-level reductions).

Co-Benefit Analysis

Co benefits will depend on the exact measures selected by individual project proponents, but would be the same as the corresponding strategies described below, i.e., if a project proponent were to select energy-efficiency measures as part of meeting their project reductions, the benefits would be similar in character to those described below for energy efficiency retrofits.

BMP-1: Performance Standard for Smaller New Development Projects: Best Management Practices. Exceed Title 24 Energy-Efficiency Standards for New Buildings by 5% by 2020 [M]

Measure Description

All new land use development projects emitting less than 3,000 MT CO_2e per year, which is roughly equivalent to 10% of projects, will be required to exceed the Energy Efficiency Standards under Title 24 by at least 5% for all new residential and commercial buildings, or provide an equivalent level of alternate GHG emission reductions.

Assumptions

The following assumptions were considered in the evaluation of this measure:

- 10% of new homes and commercial buildings will be affected (built from 2013–2020)
- Reductions reflect an additional 5% exceedance of Title 24 for 10% of new buildings.
- The ratio of single-family household electricity and natural gas use to multi-family household electricity and natural gas use is 1.39 and 1.23, respectively (Energy Information Administration 2009)
- Climate zone 10 was used for Ontario (California Air Pollution Control Officers Association 2010).
- The energy reduction for a 1% improvement over 2008 T24 standards for Climate Zone 10 are as follows (California Air Pollution Control Officers Association 2010):
    - 0.18% reduction in electricity use for single-family homes
    - 0.83% reduction in natural gas use for single-family homes
    - 0.26% reduction in electricity use for multi-family homes
    - 0.80% reduction in natural gas use for multi-family homes
    - 0.30% reduction in electricity use for commercial buildings
    - 0.61% reduction in natural gas use for commercial buildings

Analysis Details

GHG Analysis

Implementation of BMP-1 would reduce GHG emissions attributable to 10% of new development projects by exceeding Title-24 requirements by 5%. This would reduce energy consumption (electricity and natural gas) and the associated GHG emissions (Appendix B).

<u>2020 BAU Emissions</u>

The GHG Inventory quantified electricity and natural gas emissions associated with existing residential and nonresidential facilities in 2008. The 2008 values were projected to 2012 in order to determine electricity and natural gas use and emissions for all new buildings built from 2013 to 2020, The number of single-family and multi-family residences in 2012 was estimated by interpolating from the 2008 and 2020 values for the city.

Although BMP-1 won't apply to new development constructed before mid to late 2014, the GHG reductions that would have been obtained by this measure for projects constructed in 2013 and the first half of 2014 are small (a maximum of 120 $MTCO_2e$ out of 474 $MTCO_2e$ total). Thus, although the calculation assumed application of BMP-1 in 2013 and the first half of 2014, the potential loss in reductions will be minor and won't affect the overall ability of the City to meet the CAP reduction target overall. Also, similar to the discussion above for PS-1, some of the 2013/2014 projects that would be subject to BMP-1 are discretionary projects subject to CEQA and thus would likely have CEQA mitigation measures adopted during their respective CEQA process.

<u>Emissions Reductions</u>

Energy reductions associated with State-1 (T24), State-2 (AB1109), and Energy-3 (Energy Efficiency Funding for Existing Low-Income Residents) were subtracted from the energy used by all new buildings built from 2013 to 2020. This was done in order to determine the energy used by new buildings after the implementation of preceding measures, before the application of BMP-1.

New energy use (2013–2020) for single-family and multi-family homes was estimated by multiplying total residential energy use by the ratios listed in the assumptions section above, taking into consideration the number of single-family and multi-family homes within the city.

Energy reductions (electricity and natural gas) were then estimated by multiplying the new energy use for single-family homes, multi-family homes, and nonresidential buildings by the 5% reduction beyond T24 as specified by BMP-1 and then multiplying by the appropriate factor from CAPCOA for a 1% reduction beyond 2008 T24 standards (California Air Pollution Control Officers Association 2010).

GHG emissions reductions achieved by BMP-1 were quantified by multiplying the energy reductions for each building type by the appropriate utility emission factors.

Co-Benefit Analysis

The following benefits are expected from implementation of BMP-1.

Reduced Energy Use: Energy retrofits and standards would improve the efficiency of residential and non-residential buildings. As such, the amount of energy (e.g., electricity, natural gas) consumed per unit of activity would be lowered.

Reduced Air Pollution: Reduced energy use would contribute to reductions in regional air pollution (from reduced generation of electricity) and local air pollution (from reduced burning of natural gas).

Resource Conservation: Increased building efficiency would reduce water consumption, which would help conserve freshwater.

Increased Property Values: Energy-efficient bulidings have higher property values and resale prices than less efficient buildings.

Public Health Improvements: Reduced regional and local air pollution would contribute to overall improvements in public health. A well-built, energy-efficient structure is also more durable and directly reduces certain health aliments. For example, properly sealed ducts and air leaks helps prevent mold and dust mites that can cause asthma.

Increased Quality of Life: The reduction of health aliments (see above) contributes to increased quality of life. Additionally, energy-efficient structures improve general comfort by equalizing room temperatures and reducing indoor humidity.

Energy-3: Energy Efficiency Funding for Existing Low-Income Residents [V]

Measure Description

Partner with community services agencies to fund energy efficiency projects, including heating, ventilation, air conditioning, lighting, water heating equipment, insulation, and weatherization, for low income residents. Provide permitting-related and other incentives for energy efficient building project.

Assumptions

The following assumptions were considered in the evaluation of this measure:

- The assumed market penetration rate for residential buildings performing retrofits was 27%.
- Participating residences perform weatherization for low-income households. To calculate reductions from low-income weatherization, the following assumptions were used:
  - The number of low-income households in Ontario was determined by multiplying the total number of households in the city (Southern California Association of Governments 2012a) by the percent of homes classified as extreme low income, very low income, and lower income (Southern California Association of Governments 2011). This percent is 37.7%.
  - Weatherization only applies to low-income households.
  - Energy savings from low-income weatherization are 20%, 32%, and 32% for heating electricity, natural gas, and fuel oil, respectively (Schweitzer 2005)
- Ontario will also launch energy efficiency campaigns targeted at residents and promote smart grid. This will result in a 5% energy savings (electricity and natural gas). This value was discounted from ICLEI's Climate and Air Pollution Planning Assistant (CAPPA) value of 10% for the measure "Energy Efficiency Education Targeted at Residents" in order to be more conservative (ICLEI Local Governments for Sustainability 2010).

Analysis Details

GHG Analysis

Existing buildings generate a considerable amount of GHG emissions. Older developments are typically less energy-efficient and therefore consume greater amounts of electricity and natural gas, relative to newly constructed facilities.

<u>BAU Energy Use</u>

BAU electricity and natural gas use for residential buildings were used to calculate reductions for this measure. The GHG inventory (Appendix A) documents the energy use and assumptions employed for the BAU analysis.

The number of low income homes in 2008 (and their respective energy use) was projected to 2012 in order to determine electricity and natural gas use and emissions for all existing homes built before 2013, which are subject to Energy-3. The number of single-family and multi-family residences in 2012 was estimated by interpolating from the 2008 and 2020 values for the city.

A "start" date of 2012 for Energy-3 is sufficient for purposes of GHG quantification because this measure relies on incentives that generally already exist and retrofits are already occurring throughout the city. Example retrofit programs currently underway include Energy Upgrade California, SCE programs, CPUC programs, the Home Energy Renovation Opportunity (HERO) program, GRID Alternative program Southern California Gas Company (SCG) programs, along with state and federal tax breaks. Although the GHG quantification doesn't include retrofits for existing homes constructed during 2013 and 2014, the actual adopted measure will apply to these homes. Therefore the GHG quantification is conservative in estimating GHG reductions for homes constructed on or before 2012.

<u>Emissions Reductions</u>

Energy savings for each sub-measure were generally calculated by multiplying BAU energy use by a penetration rate, and then by a percent reduction in energy use. Emission reductions were then calculated by multiplying the energy savings by the appropriate emission factors.

For low-income weatherization, the total projected number of homes existing in 2012 was multiplied by the percent of low-income homes as determined by SCAG (Southern California Association of Governments 2011). The number of low-income homes was then multiplied by the penetration rate (27%). Then, the energy used for electric heating, natural gas heating, and fuel oil use was estimated by multiplying the number of low-income households by the respective energy use factors as detailed in the assumptions section above. The resulting energy use was multiplied by the percent reduction in energy use for low-income weatherization by energy source (see assumptions above) to determine energy reductions.

For efficiency campaigns targeted at residents, the total residential energy use (electricity and natural gas) in 2012 was multiplied by 27%. The resulting energy use was then multiplied by 5% to determine energy savings for residential buildings.

GHG emissions savings were then quantified by multiplying the energy reductions by the appropriate utility emission factors.

Co-Benefit Analysis

The following benefits are expected from implementation of Energy-3.

Reduced Energy Use: Energy retrofits would improve the efficiency of residential buildings. As such, the amount of energy (e.g., electricity, natural gas) consumed per unit of activity would be lowered.

Reduced Air Pollution: Reduced energy use would contribute to reductions in regional air pollution (from reduced generation of electricity) and local air pollution (from reduced burning of natural gas).

Increased Property Values: Energy-efficient homes have higher property values and resale prices than less efficient homes.

Public Health Improvements: Reduced regional and local air pollution would contribute to overall improvements in public health. A well-built, energy-efficient structure is also more durable and directly reduces certain health aliments. For example, properly sealed ducts and air leaks helps prevent mold and dust mites that can cause asthma.

Increased Quality of Life: The reduction of health aliments (see above) contributes to increased quality of life. Additionally, energy-efficient homes improve general comfort by equalizing room temperatures and reducing indoor humidity.

Energy-4: Energy Efficiency Incentives and Programs to Promote Retrofits for Existing Residential Buildings [V]

Measure Description

Incentivize, or otherwise support, voluntary energy efficiency retrofits of existing residential buildings to achieve reductions in natural gas and electricity usage. Adopt standards and/or promote voluntary programs that retrofit indoor lights, electric clothes dryers, energy-star thermostats, window seals, duct sealing, air sealing, and attic insulation.

Assumptions

The following assumptions were considered in the evaluation of this measure:

- The assumed market penetration rate for residential buildings performing retrofits was 27%.
- 50% of participating homes will conduct a basic retrofit package. This package includes the following retrofits:
  - Replace interior high use incandescent lamps with compact florescent lamps (CFLs)
  - Seal air leaks
- 30% of participating homes will conduct an advanced retrofit package. This package includes the following retrofits:
  - All basic retrofits listed above
  - Seal duct leaks
  - Install a programmable thermostat
  - Replace windows with double-pane, solar-control low E-argon gas wood frame windows
- 20% of participating homes will conduct a premium retrofit package. This package includes the following retrofits:
  - All basic and advanced retrofits listed above
  - Insulate the attic
  - Replace electric clothes dryers with natural gas dryers
  - Replace natural gas furnaces with ENERGY STAR labeled models
- Energy reductions achieved by the basic retrofit level would be 1,084 kWh and 79 therms per single-family house (U.S. Department of Energy 2013).
- Energy reductions achieved by the advanced retrofit level would be 2,199 kWh and 128 therms per single-family house (U.S. Department of Energy 2013).
- Energy reductions achieved by the premium retrofit level would be 3,081 kWh and 238 therms per single-family house (U.S. Department of Energy 2013).

Analysis Details

GHG Analysis

Existing buildings generate a considerable amount of GHG emissions. Older developments are typically less energy-efficient and therefore consume greater amounts of electricity and natural gas, relative to newly constructed facilities.

<u>BAU Energy Use</u>

BAU electricity and natural gas use for residential buildings were used to calculate reductions for this measure. The GHG inventory documents the energy use and assumptions employed for the BAU analysis.

The number of homes in 2008 (and their respective energy use) was projected to 2012 in order to determine electricity and natural gas use and emissions for all existing homes built before 2013, which are subject to Energy-4. The number of single-family and multi-family residences in 2012 was estimated by interpolating from the 2008 and 2020 values for the city.

A "start" date of 2012 for Energy-4 is sufficient for purposes of GHG quantification because this measure relies on incentives that generally already exist and retrofits are already occurring throughout the city. Example retrofit programs currently underway include Energy Upgrade California, SCE programs, CPUC programs, the Home Energy Renovation Opportunity (HERO) program, Southern California Gas Company (SCG) programs, along with state and federal tax breaks. Although the

GHG quantification doesn't include retrofits for existing homes constructed during 2013 and 2014, the actual adopted measure will apply to these homes. Therefore the GHG quantification is conservative in estimating GHG reductions for homes constructed on or before 2012.

Emissions Reductions

For each retrofit package, the total number of homes existing in 2012 was multiplied by the penetration rate (27%). The number of participating households was then multiplied by the respective energy use savings values as detailed in the assumptions section above. GHG emissions savings were then quantified by multiplying the energy reductions by the appropriate utility emission factors.

Co-Benefit Analysis

The following benefits are expected from implementation of Energy-4.

Reduced Energy Use: Energy retrofits would improve the efficiency of residential buildings. As such, the amount of energy (e.g., electricity, natural gas) consumed per unit of activity would be lowered.

Reduced Air Pollution: Reduced energy use would contribute to reductions in regional air pollution (from reduced generation of electricity) and local air pollution (from reduced burning of natural gas).

Increased Property Values: Energy-efficient homes have higher property values and resale prices than less efficient homes.

Public Health Improvements: Reduced regional and local air pollution would contribute to overall improvements in public health. A well-built, energy-efficient structure is also more durable and directly reduces certain health aliments. For example, properly sealed ducts and air leaks helps prevent mold and dust mites that can cause asthma.

Increased Quality of Life: The reduction of health aliments (see above) contributes to increased quality of life. Additionally, energy-efficient homes improve general comfort by equalizing room temperatures and reducing indoor humidity.

Energy-5: Energy Efficiency Incentives and Programs to Promote Retrofits for Existing Non-Residential Buildings [V]

Measure Description

Promote energy efficiency in existing nonresidential buildings, and remove funding barriers for energy efficiency improvements. Actions may include, but are not limited to: launching energy efficiency outreach/education campaigns targeted at businesses, promoting the smart grid, leveraging funding mechanisms and grant funding, scheduling energy efficiency tune-ups and promoting energy efficiency management services for large energy users.

Assumptions

The following assumptions were considered in the evaluation of this measure:

- The assumed market penetration rate for nonresidential buildings performing retrofits was 27%.
- This measure will result in a 20% reduction in energy use for participating buildings.

Analysis Details

GHG Analysis

Existing buildings generate a considerable amount of GHG emissions. Older developments are typically less energy-efficient and therefore consume greater amounts of electricity and natural gas, relative to newly constructed facilities.

BAU Energy Use

BAU electricity and natural gas use for nonresidential buildings were used to calculate reductions for this measure. The GHG inventory documents the energy use and assumptions employed for the BAU analysis.

The GHG Inventory quantified electricity and natural gas emissions associated with existing nonresidential facilities in 2008. The 2008 values were projected to 2012 in order to determine electricity and natural gas use and emissions for all existing nonresidential buildings built before 2013, which are subject to Energy-5.

A “start” date of 2012 for Energy-5 is sufficient for purposes of GHG quantification because this measure relies on incentives that generally already exist and retrofits are already occurring throughout the city. Example retrofit programs currently underway include Energy Upgrade California, SCE programs, CPUC programs, the Home Energy Renovation Opportunity (HERO) program, Southern California Gas Company (SCG) programs, along with state and federal tax breaks. Although the GHG quantification doesn’t include retrofits for existing nonresidential buildings constructed during 2013 and 2014, the actual adopted measure will apply to these buildings. Therefore the GHG quantification is conservative in estimating GHG reductions for nonresidential buildings constructed on or before 2012.

Emissions Reductions

The total nonresidential energy use (electricity and natural gas) in 2008 for the city was multiplied by the penetration rate (27%). The resulting energy use was then multiplied by 20% to determine energy savings for nonresidential buildings. GHG emissions savings were then quantified by multiplying the energy reductions by the appropriate utility emission factors.

Co-Benefit Analysis

The following benefits are expected from implementation of Energy-5.

Reduced Energy Use: Energy retrofits would improve the efficiency of residential buildings. As such, the amount of energy (e.g., electricity, natural gas) consumed per unit of activity would be lowered.

Reduced Air Pollution: Reduced energy use would contribute to reductions in regional air pollution (from reduced generation of electricity) and local air pollution (from reduced burning of natural gas).

Increased Property Values: Energy-efficient homes have higher property values and resale prices than less efficient homes.

Public Health Improvements: Reduced regional and local air pollution would contribute to overall improvements in public health. A well-built, energy-efficient structure is also more durable and directly reduces certain health aliments. For example, properly sealed ducts and air leaks helps prevent mold and dust mites that can cause asthma.

Increased Quality of Life: The reduction of health aliments (see above) contributes to increased quality of life. Additionally, energy-efficient homes improve general comfort by equalizing room temperatures and reducing indoor humidity.

Energy-6: Streetlights [CITY, V]

Measure Description

Adopt outdoor lighting standards in the Zoning Ordinance to reduce electricity consumption above and beyond the requirements of AB 1109. Require 40% reduction in energy use from traffic signals and streetlights by 2020.

Assumptions

The following assumptions were considered in the evaluation of this measure:

- Total 2008 Streetlight energy use is based off of the SCE inventory (26,616 MWh) which we assume includes streetlight electricity use indicated in the Ontario Municipal Inventory (10,098 MWh).
- This measure will result in a 40% savings in electricity use for streetlights and traffic signals.

Analysis Details

GHG Analysis

<u>BAU Energy Use</u>

BAU electricity use for streetlights and traffic signals were used to calculate reductions for this measure. The GHG inventory documents the energy use and assumptions employed for the BAU analysis.

<u>Emissions Reductions</u>

The total streetlights and traffic signals electricity use in 2020 for the city was multiplied by 40% to determine energy savings. GHG emissions savings were then quantified by multiplying the energy reductions by the appropriate utility emission factors.

Co-Benefit Analysis

The following benefits are expected from implementation of Energy-6.

Reduced Energy Use: Energy-efficient lighting (e.g., CFL fixtures) consumes, on average, 75% less electricity than incandescent bulbs.

Reduced Air Pollution: Reduced energy use would contribute to reductions in regional air pollution (from reduced generation of electricity).

Increased Property Values: Energy efficient bulidings have higher property values and resale prices than less efficient buildings.

Increased Quality of Life: CFLs have a much longer lifetime than incandescent bulbs, resulting in reduced bulb turn-over and the need to purchase new fixtures.

Renewable Energy-1: Solar Installation for Existing Non-Residential for Major Rehabilitations or Expansions [V]

Measure Description

Promote installation of solar photovoltaic panels on nonresidential buildings greater or equal to 25,000 square feet in size requiring discretionary permits for major rehabilitations or expansions. "Major rehabilitations or expansions" defined as including additions of 25,000 square feet of office retail/commercial or 100,000 square feet of industrial/warehouse floor area.

Promote and incentivize solar installations on existing nonresidential buildings performing major rehabilitations or expansions through partnerships with SCE and other private sector funding sources including SunRun, SolarCity, and other solar lease or PPA companies. This could be supported through non-financial incentives or streamlined permitting. The city of Ontario may also act as a resource for connecting project proponents with funding opportunities.

Assumptions

The following assumptions were considered in the evaluation of this measure:

- 12% of all existing commercial buildings greater than 25,000 square feet and industrial/warehouse buildings greater than 100,000 square feet are rehabilitated by 2020, and must install solar panels.
- Based on the participation rate, 4.1 million square feet of commercial space and 1.5 million square feet of industrial/warehouse space participate in this measure. This is approximately 7% of all existing nonresidential buildings in the City.
- The average number of stories is 1.1 (commercial) and 1.0 (industrial)
- The average percentage of roof space that can install solar is 70%
- Each square foot of solar PV produces 10 watts of electricity, which is equivalent to 15.36 kWh per year (U.S. Department of Energy 2005).
- This measure is equivalent to 24 MW of solar or 2.3 million square feet of solar panels installed.
- The energy generated by solar PV is carbon neutral (California Air Pollution Control Officers Association 2010).
- The average annual electricity generation per solar system is 1,536 kWh per kW of solar PV installed (National Renewable Energy Laboratory 2012).
- The amount of electricity generated by the panels will offset electricity provided by the utilities. For example, a system which generates 7,683 kWh in a year will offset 7,683 kWh produced by power plants, and therefore reduce emissions associated with 7,683 kWh of electricity generation.

Analysis Details

GHG Analysis

Utilizing electricity generated by solar photovoltaic panels displaces electricity demand that would ordinarily be provided by the utilities. Although SCE purchases a substantial amount of energy from renewable sources, electricity supplied by SCE still represents a source of indirect GHG emissions. Carbon neutral sources, such solar, do not emit GHGs (California Air Pollution Control Officers Association 2010).

<u>BAU Energy Use</u>

BAU electricity and natural gas use for nonresidential buildings were used to calculate reductions for this measure. The GHG inventory documents the energy use and assumptions employed for the BAU analysis.

The GHG Inventory quantified electricity and natural gas emissions associated with existing nonresidential facilities in 2008. The 2008 values were projected to 2012 in order to determine electricity and natural gas use and emissions for all existing nonresidential buildings built before 2013, which are subject to Renewable Energy-1.

A “start” date of 2012 for Renewable Energy-1 is sufficient for purposes of GHG quantification because this measure relies on incentives that generally already exist and solar installations are already occurring throughout the city. Example solar programs currently underway include the California Solar Initiative, power purchase agreement (PPA) financing, SCE solar rebates, and state and federal tax breaks. In addition to the Home Energy Renovation Opportunity (HERO) program. Although the GHG quantification doesn’t include solar installations for existing nonresidential buildings constructed during 2013 and 2014, the actual adopted measure will apply to these buildings. Therefore the GHG quantification is conservative in estimating GHG reductions for nonresidential buildings constructed on or before 2012.

Emissions Reductions

Assessor’s data for the city was used to determine the total square footage of commercial buildings greater than 25,000 square feet and the total square footage of industrial buildings greater than 100,000 square footage in 2012. These values were multiplied by 12% to determine the building square footage that are rehabilitated and will be installing solar. The total building square footage was combined with the average number of stories presented above to estimate the total roof-space for participating buildings. This value was multiplied by 0.7 to determine the total usable roof-space to install solar PV. Finally, the roof-space value was multiplied by 15.36 kWh produced per square foot of solar PV to determine the annual electricity production of the solar panels.

Carbon neutral sources do not emit GHGs. The kWh affected by this measure would therefore result in a 100% reduction in emissions, relative to BAU conditions. GHG emissions reductions achieved by Renewable Energy-1 were quantified by multiplying the resulting solar electricity production for each city by the appropriate utility emission factors.

Co-Benefit Analysis

The following benefits are expected from implementation of Renewable Energy-1.

Reduced Air Pollution: Generating community electricity through renewable sources would displace a portion of electricity generated by fossil fuels. As such, combustion at regional power stations would be reduced, contributing to cumulative reductions in criteria pollutants.

Waste Reduction: The generation of electricity from fossil fuels (e.g., coal, natural gas) generates a substantial amount of waste including, but not limited to: fly ash, bottom ash, flue gas, and sludge. These products can have detrimental effects on the environment if absorbed into groundwater, soil, and/or biota. The extraction and mining of fossil fuels also generates waste. Increasing renewable energy production would reduce waste created by fossil fuel supplied power.

Energy Diversity and Security: Fuels that are traded in the open market are subject to energy supply constraints and interruptions from political unrest, conflict, and trade embargoes. Centralized power structures (e.g., stations, sub-stations, refineries, ports) may also be targets of energy terrorism. Providing a diversified and domestic energy supply reduces foreign fuel dependency.

Reduced Price Volatility: Energy supply constraints and the uneven global distribution of fossil fuels increase the instability of the energy market. As the demand for global fossil fuels rises, energy prices would likely be subject to fluctuations and frequent price spikes. Renewables would contribute to the diversification of the energy supply mix, thereby buffering the local economy from the volatile global energy market.

Economic Development: Development of renewable energy infrastructure (e.g., solar farms, wind turbines) would create new jobs, taxes, and revenue for the local economy.

Public Health Improvements: Reduced regional air pollution and waste generation would contribute to overall improvements in public health.

Increased Property Values: If renewable infrastcuture is added to Ontario buildings as a result of this measure, property and resale values of those structures may be increased.

Renewable Energy-2: Solar Installation in Existing Single Family Housing [V]

Measure Description

Encourage residents to install rooftop solar using Power Purchase Agreements and other low or zero up-front cost options for installing solar photovoltaic systems. Install solar panels on 22% of existing single-family homes by 2020.

Assumptions

The following assumptions were considered in the evaluation of this measure:

- This measure only affects existing single-family homes (those built before 2013).
- The market penetration rate for existing homes installing solar is 22%.
- The energy generated by solar PV is carbon neutral (California Air Pollution Control Officers Association 2010).
- The average annual electricity generation per solar system is 7,683 kWh (National Renewable Energy Laboratory 2012).
- The amount of electricity generated by the panels will offset electricity provided by the utilities. For example, a system which generates 7,683 kWh in a year will offset 7,683 kWh produced by power plants, and therefore reduce emissions associated with 7,683 kWh of electricity generation.
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Analysis Details

GHG Analysis

Utilizing electricity generated by solar photovoltaic panels displaces electricity demand that would ordinarily be provided by the utilities. Although SCE purchases a substantial amount of energy from renewable sources, electricity supplied by SCE still represents a source of indirect GHG emissions. Carbon neutral sources, such solar, do not emit GHGs (California Air Pollution Control Officers Association 2010).

<u>BAU Energy Use</u>

The number of homes in 2008 (and their respective energy use) was projected to 2012 in order to determine the number of existing homes participating in this measure. The number of single-family residences in 2012 was estimated by interpolating from the 2008 and 2020 values for the city.

A “start” date of 2012 for Renewable Energy-2 is sufficient for purposes of GHG quantification because this measure relies on incentives that generally already exist and solar installations are already occurring throughout the city. Example solar programs currently underway include the California Solar Initiative, power purchase agreement (PPA) financing, SCE solar rebates, and state and federal tax breaks. In addition to the Home Energy Renovation Opportunity (HERO) program. Although the GHG quantification doesn’t include solar installations for existing single-family homes constructed during 2013 and 2014, the actual adopted measure will apply to these homes. Therefore the GHG quantification is conservative in estimating GHG reductions for single-family homes constructed on or before 2012.

<u>Emissions Reductions</u>

The number of single-family homes in 2012 (those that are considered existing) was multiplied by the 22% penetration rate to determine the number of new homes installing solar PV. This number was then multiplied by 7,683 kWh, which is the annual amount of electricity provided by the average solar system in the county (National Renewable Energy Laboratory 2012). This determines the total amount of renewable energy provided by the panels, and offset from the utilities.

Carbon neutral sources do not emit GHGs. The kWh affected by this measure would therefore result in a 100% reduction in emissions, relative to BAU conditions. GHG emissions reductions achieved by Renewable Energy-2 were quantified by multiplying the resulting solar electricity production for the city by the appropriate utility emission factors.

Co-Benefit Analysis

The following benefits are expected from implementation of Renewable Energy-2.

Reduced Air Pollution: Generating community electricity through renewable sources would displace a portion of electricity generated by fossil fuels. As such, combustion at regional power stations would be reduced, contributing to cumulative reductions in criteria pollutants.

Waste Reduction: The generation of electricity from fossil fuels (e.g., coal, natural gas) generates a substantial amount of waste including, but not limited to: fly ash, bottom ash, flue gas, and sludge. These products can have detrimental effects on the environment if absorbed into groundwater, soil, and/or biota. The extraction and mining of fossil fuels also generates waste. Increasing renewable energy production would reduce waste created by fossil fuel supplied power.

Energy Diversity and Security: Fuels that are traded in the open market are subject to energy supply constraints and interruptions from political unrest, conflict, and trade embargoes. Centralized power structures (e.g., stations, sub-stations, refineries, ports) may also be targets of energy terrorism. Providing a diversified and domestic energy supply reduces foreign fuel dependency.

Reduced Price Volatility: Energy supply constraints and the uneven global distribution of fossil fuels increase the instability of the energy market. As the demand for global fossil fuels rises, energy prices would likely be subject to fluctuations and frequent price spikes. Renewables would contribute to the diversification of the energy supply mix, thereby buffering the local economy from the volatile global energy market.

Economic Development: Development of renewable energy infrastructure (e.g., rooftop solar, solar farms, wind turbines) would create new jobs, taxes, and revenue for the local economy.

Public Health Improvements: Reduced regional air pollution and waste generation would contribute to overall improvements in public health.

Increased Property Values: If renewable infrastcuture is added to Ontario buildings as a result of this measure, property and resale values of those structures may be increased.

Renewable Energy-3: Solar Installations for Existing Nonresidential Buildings [V]

Measure Description

Encourage existing businesses (commercial and industrial) to install rooftop solar using Power Purchase Agreements and other low or zero up-front cost options for installing solar photovoltaic systems. Install solar panels on 32% of existing nonresidential buildings by 2020.

Promote and incentivize solar installations on existing nonresidential buildings through partnerships with SCE and other private sector funding sources including SunRun, SolarCity, and other solar lease or PPA companies. This could be supported through non-financial incentives or streamlined permitting. The city of Ontario may also act as a resource for connecting project proponents with funding opportunities.

Assumptions

The following assumptions were considered in the evaluation of this measure:

- 32% of existing commercial/industrial buildings will install solar was.
- The energy generated by solar PV is carbon neutral (California Air Pollution Control Officers Association 2010).
- Based on the participation rate, 12.8 million square feet of commercial space and 8.6 million square feet of industrial space participate in this measure.
- The average number of stories is 1.1 (commercial) and 1.0 (industrial)
- The average percentage of roof space that can install solar is 70%
- The average annual electricity generation per solar system is 1,536 kWh per kW of solar PV installed based on a 5kW system generating 7,683 kWh per year (National Renewable Energy Laboratory 2012).
- Each square foot of solar PV produces 10 watts of electricity, which is equivalent to 15.36 kWh per year (U.S. Department of Energy 2005).
- This measure is equivalent to 137 MW of solar or 13.2 million square feet of solar panels installed.
- Solar can be installed anywhere on the property (including on carports and on parking lot roofs).
- Each solar PV system supplies 15% of a building's total electricity demand.
- The amount of electricity generated by the panels will offset electricity provided by the utilities. For example, a system which generates 7,683 kWh in a year will offset 7,683 kWh produced by power plants, and therefore reduce emissions associated with 7,683 kWh of electricity generation.

Analysis Details

GHG Analysis

Utilizing electricity generated by solar photovoltaic panels displaces electricity demand that would ordinarily be provided by the utilities. Although SCE purchases a substantial amount of energy from renewable sources, electricity supplied by SCE still represents a source of indirect GHG emissions. Carbon neutral sources, such solar, do not emit GHGs (California Air Pollution Control Officers Association 2010).

<u>BAU Energy Use</u>

BAU electricity and natural gas use for nonresidential buildings were used to calculate reductions for this measure. The GHG inventory documents the energy use and assumptions employed for the BAU analysis.

The GHG Inventory quantified electricity and natural gas emissions associated with existing nonresidential facilities in 2008. The 2008 values were projected to 2012 in order to determine electricity and natural gas use and emissions for all existing nonresidential buildings built before 2013, which are subject to Renewable Energy-3.

A “start” date of 2012 for Renewable Energy-3 is sufficient for purposes of GHG quantification because this measure relies on incentives that generally already exist and solar installations are already occurring throughout the city. Example solar programs currently underway include the California Solar Initiative, power purchase agreement (PPA) financing, SCE solar rebates, and state and federal tax breaks. In addition to the Home Energy Renovation Opportunity (HERO) program. Although the GHG quantification doesn’t include solar installations for existing nonresidential buildings constructed during 2013 and 2014, the actual adopted measure will apply to these buildings. Therefore the GHG quantification is conservative in estimating GHG reductions for nonresidential buildings constructed on or before 2012.

Emissions Reductions

Assessor’s data for the city was used to determine the total commercial and industrial building square footage in 2012. These values were multiplied by the 32% participation rate to determine the building square footage that will be installing solar. The total building square footage was combined with the average number of stories presented above to estimate the total roof-space for participating buildings. This value was multiplied by 0.7 to determine the total usable roof-space to install solar PV. Finally, the roof-space value was multiplied by 15.36 kWh produced per square foot of solar PV to determine the annual electricity production of the solar panels.

Carbon neutral sources do not emit GHGs. The kWh affected by this measure would therefore result in a 100% reduction in emissions, relative to BAU conditions. GHG emissions reductions achieved by Renewable Energy-3 were quantified by multiplying the resulting solar electricity production by the appropriate utility emission factors.

Co-Benefit Analysis

The following benefits are expected from implementation of Renewable Energy-3.

Reduced Air Pollution: Generating community electricity through renewable sources would displace a portion of electricity generated by fossil fuels. As such, combustion at regional power stations would be reduced, contributing to cumulative reductions in criteria pollutants.

Waste Reduction: The generation of electricity from fossil fuels (e.g., coal, natural gas) generates a substantial amount of waste including, but not limited to: fly ash, bottom ash, flue gas, and sludge. These products can have detrimental effects on the environment if absorbed into groundwater, soil, and/or biota. The extraction and mining of fossil fuels also generates waste. Increasing renewable energy production would reduce waste created by fossil fuel supplied power.

Energy Diversity and Security: Fuels that are traded in the open market are subject to energy supply constraints and interruptions from political unrest, conflict, and trade embargoes. Centralized power structures (e.g., stations, sub-stations, refineries, ports) may also be targets of energy terrorism. Providing a diversified and domestic energy supply reduces foreign fuel dependency.

Reduced Price Volatility: Energy supply constraints and the uneven global distribution of fossil fuels increase the instability of the energy market. As the demand for global fossil fuels rises, energy prices would likely be subject to fluctuations and frequent price spikes. Renewables would contribute to the diversification of the energy supply mix, thereby buffering the local economy from the volatile global energy market.

Economic Development: Development of renewable energy infrastructure (e.g., solar farms, wind turbines) would create new jobs, taxes, and revenue for the local economy.

Public Health Improvements: Reduced regional air pollution and waste generation would contribute to overall improvements in public health.

Increased Property Values: If renewable infrastcuture is added to Ontario buildings as a result of this measure, property and resale values of those structures may be increased.

Waste-1: Increased Waste Diversion [M]

Measure Description

Continue to provide public education and collection services to community residents and business. Exceed the waste diversion goals recommended by Assembly Bill 939 and CALGreen by adopting citywide waste goals of at least 75% of waste diversion.

Assumptions

The following assumptions were considered for the quantification of this measure.

- The 2020 BAU waste diversion rate equals the 2006 diversion rate, which is 64% (CALRecycle 2010b).[10]
- Ontario will increase its diversion rate linearly from the 2006 rate to 75% by 2020.

Analysis Details

GHG Analysis

Diversion programs reduce the amount of waste deposited in regional landfills. Because waste generates methane emissions during decomposition, reducing the volume of waste sent to landfills directly reduces GHG emissions. In general, waste diversion rates have risen dramatically since the early 1980s. The U.S. achieved 51% diversion in fiscal year 2009 (U.S. Environmental Protection Agency 2011).

<u>2020 BAU Emissions</u>

The GHG Inventory projected 2020 waste volumes using historic landfill data obtained from CalRecycle. The 2006 diversion rate was assumed to remain constant under 2020 BAU conditions.

<u>Emissions Reductions</u>

Implementation of Waste-1 would increase the BAU diversion rate to 75% by 2020. The amount of waste diverted by material type under BAU conditions was therefore increased by the difference between the BAU diversion rate (64%) and the new diversion rate (75%). GHG emissions that would have been generated by the diverted waste if it had been deposited in regional landfills were quantified using CARB's FOD Model and new waste disposal quantities based on the new 2020 waste diversion goal.

CAPCOA recommends the use of the U.S. Environmental Protection Agency's Waste Reduction Model (WARM) to quantify emissions reductions from diverting landfill waste to composting or recycling but the EPA recommends against using this life-cycle approach for inventories because of the diffuse nature of the emissions and emission reductions within a single WARM emission factor. Consequently, the WARM model was not used to calculate reductions from Waste-1. CARB's FOD Model was used to calculate reductions because it is consistent with the inventory and does not have a lifecycle component.

Co-Benefit Analysis

The following benefits are expected from implementation of Waste-1.

Reduced Air Pollution: The decomposition of landfilled waste emits methane, which can react with other species in the atmosphere to form local smog. By sending less waste to regional landfills, methane emissions would be reduced.

Resource Conservation: Waste that is diverted to recycling centers can be converted into reusable products, thereby reducing the need for raw materials.

[10] Diversion rates for years after 2006 are not available from CALRecycle.

Trans-3: Smart Bus Technologies [V]

Measure Description

Smart Bus Technologies include Automatic Vehicle Location (AVL) systems and real-time passenger information at bus stations. Omnitrans plans to implement these technologies system-wide on all bus routes serving San Bernardino Valley (Omnitrans service area) to enable information sharing, enhance rider services, and attract potential riders. The AVL system has been implemented. The Bus Arrival Prediction Information System (BAPIS) will be installed in two phases. In Phase I, real-time rider information will be available via text messaging, Quick Response (QR), website, Interactive Voice Response (IVR), and mobile phone devices. Implementation completion is slated for December 2012. In Phase II Omnitrans will be installing electronic signs at all major transit hubs and provide General Transit Feed Specification (GTFS) data to the general public to build apps for mobile devices like smartphones and tablet computers. Phase II completion is slated for December 2013 (Kuruppu pers. comm.; Omnitrans 2012).

Assumptions

The following assumptions were considered in the evaluation of this measure:

- The growth rate in Omnitrans ridership from 2008 to 2020 is 0.56% (Onmitrans n.d.).
- Several sources in the literature suggest that these technologies may lead to a 20-50% reduction in wait times at transit stations and a 9-20% saving in fuel consumption. 50% was used as the reduction in wait time because of the system wide deployment proposed by Omnitrans (a sensitivity analysis using a 30% reduction in wait time was also performed to verify this value).
- A 10% saving in fuel consumption was used for Smart Bus technologies.
- Omnitrans' CNG buses had an average fuel economy of 3.3 miles per gallon (GGE) in 2010 which was assumed to remain constant out to 2020 (Federal Transit Administration 2010).
- A transit wait time elasticity of -0.5 was used. This implies that a 10% reduction in transit wait time is expected to result in a 5% increase in ridership (Transportation Research Board 2004).
- All of the additional transit riders switch modes from automobiles to transit.
- Not all additional transit riders previously drove alone (to be conservative in the analysis).
- Average vehicle occupancy (AVO) data was used to estimate the light duty VMT reduction resulting from these additional transit trips (Southern California Association of Governments 2012b).
- Omnitrans system-wide improvements associated with Trans-3 will equally affect each city served by Omnitrans.

Analysis Details

GHG Analysis

GHG emissions are expected to be reduced because the AVL technologies could lead to more fuel efficient bus operations for Omnitrans and the BAPIS technologies could potentially attract more transit riders who may switch modes from automobiles. Omnitrans' Demand Response Services, OmniLink and Access, do not operate on a fixed schedule or route and are not included in this analysis.

Emissions Reductions

Omnitrans provided data on average weekday and annual ridership, vehicle miles, and passenger miles for all routes included in fixed route, fixed schedule service. Weekday values are for 2012, year to date through March and annual values are for 2011. Average weekday trip lengths for 2011 and 2012 are also available. The growth rate in Omnitrans ridership from 2011 to 2012 (year to date) is approximately 8% but the average annual growth rate for the last 10 years (2002–2012) is 0.56%[11]. 0.56% was used to project ridership in 2020.

[11] Based on Omnitrans data available on http://www.omnitrans.org/about/quik-facts.shtml

System-wide VMT reductions were calculated using the following approach:

1. Calculate annual Omnitrans ridership in 2020 using average annual growth rate of 0.56% from 2002-2012. (15,333,567 riders)
2. Calculate annual increase in Omnitrans ridership from improved traveler information and reduced wait times in 2020. (3,833,392)
3. Calculate annual reduction in light duty VMT from additional transit riders switching modes from autos, using -0.5 elasticity and average passenger trip length, assumed same from 2011. (13,676,319)
4. Calculate annual reduction in CNG consumption from increased operational efficiency due to use of AVL systems. (319,280 GGE/gallons)

System-wide GHG emission reductions were calculated using the following approach:

1. Calculate annual emission benefit of light duty VMT reduction using 2020 emission factors for CO_2, CH_4, N_2O, and CO_2 equivalent. (4,253 metric tons of CO_2e)
2. Calculate annual emission benefit of CNG gallons saved using default factors from Climate Registry (2012). (2,286 metric tons of CO_2e)
3. Sum the two sources of emission reduction. (6,539 metric tons of CO_2e)

The system-wide reductions were then apportioned to each city that is served by Omnitrans. Since there are 15 cities served by Omnitrans, Ontario was assigned 436 MT CO_2e of reductions. The actual benefit of this measure will not be distributed evenly, as cities with greater potential for new riders will have more benefit than those with lesser potential. However, due to limited data about the effects of this measure on a city-by-city basis, reductions were apportioned evenly.

A sensitivity analysis assuming 30% reduction in wait time (as opposed to 50%) results in a 0.07% reduction in GHG emissions. A sensitivity analysis assuming 50% reduction in wait time and 30% of additional transit riders switching modes from autos results in a 0.05% reduction in GHG emissions.

Co-Benefit Analysis

The following benefits are expected from implementation of Trans-3.

Reduced Energy Use: More attractive transit would encourage motorists to utilize public transportation instead of private vehicles. As a result, the number of vehicle trips made within the city, and thus gasoline and diesel consumption, would be reduced.

Reduced Air Pollution: Because less petroleum would be consumed by vehicles within each city, air pollutants generated by fossil fuel combustion, including particulate matter, carbon monoxide, sulfur dioxide, and ozone precursors, would be reduced. Likewise, reductions in congestion from fewer vehicles on the roadway network would contribute reductions in emissions generated by vehicle idling.

Public Health Improvements: Reductions in the amount of fuel combusted would result in corresponding reductions in toxic air containments and ozone precursors.

Increased Quality of Life: Increased transit service would help reduce transit passenger travel time and may make public transportation more comfortable and enjoyable. Reductions in the number of vehicle trips may also reduce congestion and travel times.

Trans-6: Idling Ordinance [M]

Measure Description

Adopt an Ordinance that limits idling time for heavy duty trucks (greater than 26,000 gross vehicle weight) to 3 minutes. Support SCAMQD and ARB anti-idling requirements and provide signage in key areas where idling that is not consistent with SCAMQD or ARB requirements might occur. California state law currently requires all heavy duty trucks greater than 10,000 lbs to limit idling to no more than 5 minutes.

Assumptions

The following assumptions were considered in the evaluation of this measure:

- 0.9 gallons of diesel fuel are consumed per hour of idling (U.S. Environmental Protection Agency 2009b)
- 6.32 gallons of diesel fuel are consumed per hour of operation for construction equipment.
- On average, construction equipment spend approximately 29.4% of daily operating time idling (U.S. Environmental Protection Agency 2009b). This value was used to calculate idling fuel use for heavy-duty trucks.
- The average speed of heavy-duty trucks is 59.58 mph (calculated based on 2020 VMT by speed bin from the GHG inventory).
- Trucks emit 0.98 kg CO_2e per mile on average (calculated from the 2020 BAU forecast).
- 10.21 kg of CO_2 is emitted per gallon of diesel fuel combusted (Climate Registry 2012).
- Trucks operate 8 hours per day.
- This measure results in a 40% reduction in idling emissions (the change from 5 minutes to 3 minutes for max idling time)

Analysis Details

GHG Analysis

Idling requires fuel and results in GHG emissions. Regulating idling time would therefore reduce fuel consumption and GHG emissions.

<u>2020 BAU Emissions</u>

BAU emissions from heavy duty truck idling were quantified using the ratio of idle to operating fuel consumption. Fuel consumption for trucks will vary by type. However, according to the EPA, a typical mid-size track-type tractor consumes 0.9 gallon of fuel for every one hour at idle (U.S. Environmental Protection Agency 2009b). Anticipated BAU idling times were estimated using case studies of construction equipment. The EPA (2009a) estimates that on average, construction equipment spend approximately 29% of daily operating time idling. Assuming an average workday of 8 hours, this equates to approximately 139 minutes per day. At a rate of 0.9 gallon of fuel for every one hour at idle, each truck consumes approximately 2.1 gallons of fuel per day for idling.

Total daily operational fuel consumption was estimated to determine the percent of time that heavy-duty trucks spend idling. Assuming trucks travel 59.58 mph on average 8 hours per day and emit 0.98 kg CO_2e per mile on average, trucks emit 58.4 kg CO_2e per hour of operation. Using the emission factor of 10.21 kg of CO_2 per gallon of diesel fuel, trucks consume approximately 5.72 gallons of fuel per hour of operation. At 8 hours per day of operation and 139 minutes of idling per day, the total daily travel fuel consumption for each truck is therefore 32.49 gallons.

Using the calculated fuel consumption values for idling (2.1 gallons) and running (32.49 gallons), trucks spend approximately 6% of their fuel use on idling. This value was multiplied by the total 2020 BAU heavy-duty GHG emissions to determine emissions from idling.

<u>Emissions Reductions</u>

Emission reductions for heavy-duty trucks associated with State-6 (Pavley and LCFS) and State-7 (AB 32 Transportation Reduction Strategies) were subtracted from 2020 BAU heavy-duty truck emissions. This was done in order to determine the emissions from heavy-duty trucks after the implementation of Pavley, LCFS and AB 32 transportation strategies, but before the application of Trans-6.

Implementation of Trans-6 would reduce idling time to no more than 3 minutes at any one time. Although heavy duty trucks idle an estimated 139 minutes today, it is unlikely the idling occurs a single time. The CARB's regulations for heavy duty vehicles (5 minutes) was used a proxy to determine the percent reduction in potential idling emissions from implementation of Trans-6. Reducing idling time from 5 minutes to 3 minutes is a 40% reduction. Emissions savings associated with this measure were therefore calculated by multiplying BAU idling emissions by 0.40.

Co-Benefit Analysis

The following benefits are expected from implementation of Trans-6.

Reduced Energy Use: Trucks idle during rest periods, which requires fuel. Regulating idling time therefore reduces fossil fuel consumption.

Reduced Air Pollution: Reduced idling and fuel combustion would contribute to reductions in toxic air contaminates, ozone precursors, and other inorganic and organic air pollutants.

Public Health Improvements: Truck drivers are exposed to pollutants that cause adverse health effects when they work near idling vehicles. By reducing vehicle idling time, exposure periods would be decreased, which may contribute to long-term health improvements.

Off-Road-1: Idling Ordinance [M]

Measure Description

Adopt an Ordinance that limits idling time for heavy-duty construction equipment beyond CARB or local air district regulations and if not already required as part of CEQA mitigation. This measure will require an idling limit of 3 minutes. Encourage contractors as part of permitting requirements or city contracts to submit a construction vehicle management plan that includes such things as: idling time requirements; requiring hour meters on equipment; documenting the serial number, horsepower, age, and fuel of all onsite equipment.

Assumptions

The following assumptions were considered in the evaluation of this measure:

- 0.9 gallons of diesel fuel are consumed per hour of idling (U.S. Environmental Protection Agency 2009b)
- 6.32 gallons of diesel fuel are consumed per hour of operation for construction equipment.
- On average, construction equipment spend approximately 29.4% of daily operating time idling (U.S. Environmental Protection Agency 2009b)
- This measure results in a 40% reduction in idling emissions (the change from 5 minutes to 3 minutes for max idling time)
-

Analysis Details

GHG Analysis

Equipment idles during rest periods, which requires fuel and results in GHG emissions. Regulating idling time would therefore reduce fuel consumption and GHG emissions.

<u>2020 BAU Emissions</u>

BAU emissions from construction equipment idling were quantified using the ratio of idle to operating fuel consumption. Fuel consumption for off-road equipment will vary by type. However, according to the EPA, a typical mid-size track-type tractor consumes 0.9 gallon of fuel for every one hour at idle (U.S. Environmental Protection Agency 2009b). Based on an URBEMIS2007 model run for a similar equipment piece, approximately 64 kilograms of carbon dioxide are emitted. Assuming 10.21 kilograms of carbon dioxide per gallon of diesel fuel (Climate Registry 2012), 6.28 gallons of fuel are consumed per hour of operation.

CARB does not regulate idling time for off-road equipment. Anticipated BAU idling times were therefore estimated using case studies of construction equipment. The EPA (2009a) estimates that on average, construction equipment spend approximately 29.4% of daily operating time idling. Assuming an average workday of 8 hours, this equates to approximately 141 minutes per day. Based on this assumption, and the estimated gallons of fuel consumed (above), BAU idling emissions were estimated for each city.

<u>Emissions Reductions</u>

Emission reductions associated with State-9 (LCFS for Off-Road Equipment) were subtracted from 2020 BAU construction equipment emissions. This was done in order to determine the emissions from off-road construction equipment after the implementation of the LCFS, before the application of the Off-Road-1.

Implementation of Off-Road-1 would reduce idling time to no more than 3 minutes at any one time. Although construction equipment idles for over 141 minutes today, it is unlikely the idling occurs a single time. The CARB's regulations for heavy duty vehicle (5 minutes) was used a proxy to determine the percent reduction in potential idling emissions from implementation of Off-Road-2. Reducing idling time from 5 minutes to 3 minutes is a 40% reduction. Emissions savings associated with this measure were therefore calculated by multiplying BAU idling emissions by 0.40.

Co-Benefit Analysis

The following benefits are expected from implementation of Off-Road-1.

Reduced Energy Use: Equipment idles during rest periods, which requires fuel. Regulating idling time therefore reduces fossil fuel consumption.

Reduced Air Pollution: Reduced idling and fuel combustion would contribute to reductions in toxic air contaminates, ozone precursors, and other inorganic and organic air pollutants.

Public Health Improvements: Construction workers are exposed to pollutants that cause adverse health effects when they work near idling vehicles. By reducing vehicle idling time, exposure periods would be decreased, which may contribute to long-term health improvements.

Off-Road-2: Electric Landscaping Equipment [V]

Measure Description

This measure supports reductions in gasoline-powered landscaping equipment use and/or reduces the number and operating time of such equipment community-wide. Support landscape equipment replacement programs to replace 75% of all landscaping equipment with electric equipment (945 total pieces of landscaping equipment replaced). This measure could include the following programs for community landscaping equipment:

- Sponsor a lawnmower exchange program that allows residents to trade in their gasoline powered mower for an electric mower at a low or discounted price.
- Provide incentives for electric and more efficient landscaping equipment, such as rebates and subsidies.
- Provide information on financing for this equipment to the community.
- Require new development to place electrical outlets on the outside of buildings to allow for easy access.

The city could also adopt an ordinance that requires 75% of the city's landscaping equipment be electric by 2020 through the programs and provisions listed above. Ontario would work in close cooperation with the air district in drafting an ordinance or developing outreach programs to be consistent with current air district rules and CEQA guidelines.

Assumptions

The following assumptions were considered in the evaluation of this measure:

- 75% of all landscaping equipment community-wide will be electric by 2020.
- The percent emission reductions for electric landscaping equipment (compared to gasoline-powered equipment) in SCE's service area by horsepower is provided below (California Air Pollution Control Officers Association 2010):
    - < 25 horsepower: 49.5%
    - 25-50 horsepower: 72.3%
    - 50-120 horsepower: 72.0%
    - 120-175 horsepower: 71.2%
    - 175-500 horsepower: 70.4%
- This measure applies to the following equipment as modeled in OFFROAD 2007: lawn mowers, chainsaws, leaf blowers, trimmers, shredders, commercial turf equipment, chippers, and other lawn and garden equipment
- Converting diesel landscaping equipment to electric equipment will provide the same percent reduction in GHG emissions for gasoline equipment (it is likely that the reductions for diesel equipment would be greater, since diesel has a higher CO_2 emission factor than gasoline).

Analysis Details

GHG Analysis

Utilizing electric power eliminates 100% of direct GHG emissions from fuel combustion. Indirect emissions from electricity are significantly lower than direct emissions from fuel combustion. Electrifying landscaping vehicles therefore results in a reduction in GHG emissions.

<u>2020 BAU Emissions</u>

The GHG Inventory quantified emissions associated with off-road equipment in 2020 under BAU conditions.

<u>Emissions Reductions</u>

Emission reductions associated with State-9 (LCFS for Off-Road Equipment) were subtracted from 2020 BAU landscaping equipment emissions. This was done in order to determine the emissions from off-road landscaping equipment after the implementation of the LCFS, before the application of the Off-Road-2.

The OFFROAD2007 model calculates vehicle operating emissions by fuel type (e.g., diesel, gasoline) and average horsepower. Model emissions outputs by vehicle class were multiplied by 75% percent for landscaping equipment which is electrified by 2020 and then multiplied by CAPCOA's anticipated percent reduction in GHG emissions for switching to electric power (see assumptions above).

Co-Benefit Analysis

The following benefits are expected from implementation of Off-Road-2.

Reduced Air Pollution: Utilizing electricity in place of gasoline and diesel would reduce local air pollution.

Public Health Improvements: Fossil fuel combustion release several toxic air containments known to cause adverse human health effects. Reductions in the amount of fuel combusted would result in corresponding reductions in toxic air containments. Additionally, reductions in ozone precursors would reduce the formation of smog, which has numerous human and environmental effects, including respiratory irritation and reduced plant productivity.

Increased Quality of Life: Electric equipment is quieter and typically easier to maneuver than diesel- and gasoline-powered equipment.

Agriculture-1: Methane Emissions Reduction for Animal Operations [V]

Measure Description

Support the dairy industry (and other animal operations) to consider existing and new technologies and methods to control emissions from enteric fermentation and manure management and assess the feasibility and cost effectiveness of these technologies. Animal operations should strive to reduce as much methane from manure management as feasible. Captured biogas can also be used in place of natural gas for heating, converted to vehicle fuel, used to replace gasoline and diesel, or combusted in a generator to produce renewable electricity. This measure includes efforts to reduce emissions from both enteric fermentation and manure management, but the GHG quantification is only based on reductions in methane from manure management because technologies to reduce emission from enteric fermentation are still under development.

As a voluntary measure, the City would support dairies (and other animal operations) to consider existing and new technologies to control emissions from enteric fermentation and manure management and assess the feasibility of these technologies. Dairies would be encouraged to explore new technologies and implement feasible manure digestion projects based on their own local conditions and operations. The City would assist in seeking local, regional, state, and/or federal grants to help offset capital costs, linking dairies to new research opportunities, and working with local partners to help assess the feasibility of reduction projects.

This measure also encourages dairies to reuse captured biogas (methane from manure). This biogas could be destroyed on-site, transported for off-site use (e.g., through gas distribution or transmission pipeline), or used to power vehicles. Using captured biogas could potentially offset natural gas use or offroad fuel use (reductions may be achieved in the building energy sector and/or the off-road sector).

Assumptions

The following assumptions were considered for the quantification of this measure.

- 157.06 kg of methane is emitted per head of dairy cattle per year from manure management (California Air Resources Board 2010)
- 73% of dairy cows at dairies with 1,000+ head will be feeding digesters through voluntary action (California Air Resources Board 2008a, pg. I-64)
- The BAU methane capture rate is 0% (i.e., no methane capture)
- The new methane capture rate is 75%
- 25% of methane is destroyed on site (flared) (estimate)
- 75% of methane is used for offsite use energy generation (estimate)
- Efficiency factor for converting methane into electricity is 85% (California Air Pollution Control Officers Association 2010)
- The energy content of biomethane is 1,012 btu per cubic foot (California Air Pollution Control Officers Association 2010)
- Combustion emission factors for biomethane are 52.07 kg CO_2/MMBtu, 0.032 kg CH_4/MMBtu, and 0.0042 kg N_2O/MMBtu (Climate Registry 2012)

Analysis Details

GHG Analysis

Dairies produce large quantities of methane from enteric fermentation and manure management of dairy cows. Capturing this methane, instead of allowing it to be released into the atmosphere, will reduce GHG emissions associated with dairies. Biodigesters recover methane from animal manure through a process called anaerobic digestion. The captured methane can be flared, combusted to produce electricity, or converted to fuel such as natural gas.

<u>2020 BAU Emissions</u>

The GHG Inventory projected 2020 dairy emissions using the number of head of dairy cattle in 2008 and a growth factor obtained for the city.

Emissions Reductions

Implementation of Agriculture-1 would result in the capture of 86% of the methane generated from the manure of 73% of the dairy cows within Ontario. Total BAU emissions from dairy cows were multiplied by 73% and then by 75% (the methane capture rate) to determine the quantity of methane captured.

This measure would also result in the flaring of 25% of the methane captured from dairies and the combustion for electricity of 75% of this methane.

The quantity of methane captured from was multiplied by 75% to determine the quantity of methane combusted for electricity. This was converted to energy units (MMBtu) and then into electricity production using the efficiency factor of 85%. GHG emissions reductions were quantified by multiplying the electricity reduction by the appropriate utility emission factors.

Co-Benefit Analysis

The following benefits are expected from implementation of Agriculture-1.

Reduced Air Pollution: Manure management at dairies emits methane, which can react with other species in the atmosphere to form local smog. By capturing much of this methane, emissions would be reduced. Generating community electricity through renewable sources would displace a portion of electricity generated by fossil fuels. As such, combustion at regional power stations would be reduced, contributing to cumulative reductions in criteria pollutants.

Resource Conservation: Methane can be used to generate electricity or produce other useful fuels, thereby reducing the need for energy.

Reduced Energy Use: This measure would increase the production of renewable electricity, which would reduce the amount of fossil fuels consumed to produce electricity in power plants.

Waste Reduction: The generation of electricity from fossil fuels (e.g., coal, natural gas) generates a substantial amount of waste including, but not limited to: fly ash, bottom ash, flue gas, and sludge. These products can have detrimental effects on the environment if absorbed into groundwater, soil, and/or biota. The extraction and mining of fossil fuels also generates waste. Increasing renewable energy production would reduce waste created by fossil fuel supplied power.

Reduced Price Volatility: Energy supply constraints and the uneven global distribution of fossil fuels increase the instability of the energy market. As the demand for global fossil fuels rises, energy prices would likely be subject to fluctuations and frequent price spikes. Renewables would contribute to the diversification of the energy supply mix, thereby buffering the local economy from the volatile global energy market.

Economic Development: Development of renewable energy infrastructure (e.g., anaerobic digesters) would create new jobs, taxes, and revenue for the local economy.

Water-1: Water Conservation for Existing Buildings [V]

Measure Description

Implement a program to renovate existing buildings to a higher level of water efficiency. Require 25% of existing buildings within the community to achieve a 25% reduction in water use. This measure will reduce both indoor and outdoor water use. Rebate programs can help promote installation of water-efficient plumbing fixtures. The program could address:

- Development plans to ensure water conservation techniques are used (e.g., rain barrels, drought tolerant landscape).
- Water efficiency upgrades as a condition of issuing permits for renovations or additions of existing buildings.
- Adopt water conservation pricing, such as tiered rate structures, to encourage efficient water use.

Incentives for projects that demonstrate significant water conservation through use of innovative water consumption technologies.

Assumptions

The following assumptions were considered for the quantification of this measure:

- The market penetration rate for buildings (residential and commercial) performing water efficiency retrofits is 27%.
- A 25% reduction in total water use is obtained by this measure.
- 57% of total residential water use is for outdoor use / landscaping; the remaining 43% is used indoors (ConSol 2010).
- 35% of total nonresidential water use is for outdoor use / landscaping; the remaining 65% is used indoors (Yudelson 2010).
- 33% of total residential indoor water use is hot water (Aquacraft, Inc. 2014).
- 22% of total commercial indoor water use is hot water (Yudelson 2010, U.S. Department of Energy 2012).
- Heating a gallon of hot water requires 0.0098 therms of natural gas or 0.19 kWh of electricity (ICLEI Local Governments for Sustainability 2010).
- 10.5% homes have electric water heaters (1.3 million households out of 12.4 million households used electricity to heat water in 2005 in California) (Energy Information Administration 2009, Table WH2).
- 40% of commercial buildings have electric heaters (2,771 million square feet out of 6,947 million square feet use electricity to heat water in 2003 in the Pacific Census Region) (Energy Information Administration 2009, Table B32).

Analysis Details

GHG Analysis

Water use contributes to GHG emissions indirectly, via the production of the electricity that is used to pump, treat, and distribute the water. Installing low-flow or high-efficiency water fixtures in buildings reduces water demand, energy demand, and associated indirect GHG emissions.

California homes and businesses consume a significant amount of water through indoor plumbing needs and outdoor irrigation. ConSol estimates that an average three-bedroom home uses 174,000 gallons of water each year (ConSol 2010). A large portion of water use can be attributed to inefficient fixtures (e.g., showerheads, toilets). Recognizing that water uses a great deal of electricity to pump, treat, and transport, achieving this goal would not only reduce electricity consumption, but avoid GHG emissions and conserve water.

<u>Emissions Reductions</u>

Estimated water use in 2012 was calculated by linearly interpolating 2008 water use and 2020 estimated water use for the residential and nonresidential sectors to determine water use from existing buildings. A "start" date of 2012 for Water-1 is sufficient for purposes of GHG quantification because this measure relies on incentives that generally already exist and water efficiency retrofits are already occurring throughout the city. Example programs currently underway which include water efficiency upgrades include funding and grants from the California Department of Water Resources, water use efficiency programs and rebates from the Inland Empire Utilities Agency (IEUA), and federal and state funding for water efficiency programs. Although the GHG quantification doesn't include water efficiency renovations for existing buildings constructed during 2013 and 2014, the actual adopted measure will apply to these buildings. Therefore the GHG quantification is conservative in estimating GHG reductions for nonresidential buildings constructed on or before 2012.

The 2012 water use values were then multiplied by 27% to determine the quantity of water subject to this measure and then by 25% to determine the water use reductions.

Water use reductions were then split into indoor and outdoor water use reductions based on the percentages presented above for residential and nonresidential uses. Indoor water use reductions were used to determine energy savings from reduced water heating. Total water use reductions (indoor and outdoor) were used to determine energy savings from reduced water conveyance, treatment, distribution, and wastewater treatment.

Water use savings result in energy use reductions for three different categories: reduced water conveyance, treatment, distribution, and wastewater treatment; reduced electricity used for water heating; and reduced natural gas used for water heating.

Electricity savings from reduced water conveyance, treatment, distribution, and wastewater treatment were quantified by multiplying the anticipated water reductions by the appropriate energy-intensities.

Electricity savings from reduced water heating were quantified as follows:

a) Residential electricity savings (kWh) = gallons of water saved * 33% hot water * 10.5% of homes with electric water heaters * 0.19 kWh to heat a gallon of water.

b) Nonresidential electricity savings (kWh) = gallons of water saved * 22% hot water * 40% of commercial buildings with electric water heaters * 0.19 kWh to heat a gallon of water.

Natural gas savings from reduced water heating were quantified as follows:

a) Residential natural gas savings (therms) = gallons of water saved * 33% hot water * 89.5% of homes with natural gas water heaters * 0.0098 therms to heat a gallon of water.

b) Nonresidential natural gas savings (therms) = gallons of water saved * 22% hot water * 60% of commercial buildings with natural gas water heaters * 0.19 kWh to heat a gallon of water.

GHG savings from electricity and natural gas reductions were then calculated by multiplying the energy reductions by the appropriate utility emission factors.

Co-Benefit Analysis

The following benefits are expected from implementation of Water-1.

Resource Conservation: Reduced water consumption would help conserve freshwater resources.

Reduced Energy Use: Water uses a great deal of electricity to pump, treat, and transport. Likewise, water consumed during showers, dish washing, and clothes washing require electricity and natural gas to heat the water to a comfortable temperature. Consequently, reductions in water use would reduce energy consumption from pumping, treatment, transporting, and heating.

Reduced Air Pollution: Reduced electricity use would contribute to reductions in regional air pollution.

Increased Property Values: Energy-efficient bulidings have higher property values and resale prices than less efficient buildings.

Water-2: Outdoor Irrigation Monitoring and Management System [V]

Measure Description

Install water monitoring and management systems (Smart controllers, etc.) across the community to reduce irrigation water needs and reduce the City's total community-wide water consumption by 10% by 2020. Additional outdoor water conservation can be achieved through the following implementation strategies:

- Evaluate existing landscaping and options to convert reflective and impervious surfaces to landscaping, and install or replace vegetation with drought-tolerant, low-maintenance native species or edible landscaping that can also provide shade and reduce heat-island effects.
- Participate in and support regional programs and projects that target the improvement and conservation of the region's groundwater and surface water supply. Also consider programs to collect stormwater for landscape watering.

Assumptions

The assumptions described in Water-1 were used to quantify water, energy, GHG emissions reductions associated with this measure. The following additional assumptions were used:

- This measure will result in a 10% reduction in total 2020 BAU water consumption through the reduction of outdoor water use.

Analysis Details

GHG Analysis

Water use contributes to GHG emissions indirectly, via the production of the electricity that is used to pump, treat, and distribute the water. California homes and businesses consume a significant amount of water through outdoor water use, which includes landscape irrigation. Installing a water monitoring and management system reduces water consumption and the associated indirect GHG emissions. Achieving this goal would not only reduce electricity consumption, but avoid GHG emissions and conserve water.

<u>Emissions Reductions</u>

The following steps were performed to calculate water savings:

a) 2020 water use reductions from Water-1 were subtracted from the BAU 2020 water use in order to determine the amount of water use after implementation of Water-1.

b) The percent reduction in water use rates due to the implementation of Water-2 was calculated by multiplying the resulting water use by 10%.

c) Water savings were calculated by source (SWP, groundwater, etc.) and sector (residential and commercial) using the assumptions identified in Water-1.

d) Hot water savings were calculated (residential and commercial) using the assumptions identified in Water-1.

e) Electricity and natural gas reductions in the building energy sector (for water heating) and the water conveyance sector (conveyance, treatment, etc.) associated with the reduced water use were then calculated using the assumptions identified in Water-1.

GHG savings from electricity reductions were then calculated by multiplying the energy reductions by the appropriate utility emission factors.

Co-Benefit Analysis

The following benefits are expected from implementation of Water-2.

Resource Conservation: Water monitoring and management systems would reduce water consumption and help conserve freshwater resources.

Reduced Energy Use: Water uses a great deal of electricity to pump, treat, and transport. Consequently, reductions in water use would reduce energy consumption from pumping, treatment, and transporting.

Reduced Air Pollution: Reduced energy use would contribute to reductions in regional air pollution (from reduced generation of electricity).

Increased Property Values: Energy-efficient buildings have higher property values and resale prices than less efficient buildings.

Water-4: Senate Bill X7-7 The Water Conservation Act of 2009 [M]

Measure Description

Meet (or exceed) the State-established per capita water use reduction goal as identified by Senate Bill (SB) X7-7 for 2020. SB X7-7 was enacted in November 2009 and requires urban water agencies throughout California to increase conservation to achieve a statewide goal of a 20% reduction in urban per capita use (compared to nominal 2005 levels) by December 31, 2020 (referred to as the "20X2020 goal"). Each urban water retailer in the state subject to the law has established a 2020 per-capita urban water use target to meet this goal. The City of Ontario Municipal Utilities Company (Utilities Company) is the water retailer that serves the city of Ontario.

The Utilities Company will implement water conservation measures according to their 2010 Urban Water Management Plan (City of Ontario 2011). The city will work with the Utilities Company as necessary to reduce per-capita water use by 2020. Implementation depends on the specific urban water management plans, but would be gradual through 2020 as new buildings are constructed with water-efficient fixtures and other conservation measures are put into place.

This strategy will reduce embodied energy use associated with water conveyance and treatment, along with fugitive emissions associated with wastewater treatment processes resulting from treatment of wastewater generated within the city.

Assumptions

The assumptions described in Water-1 were used to quantify water, energy, GHG emissions reductions associated with this measure. The following additional assumptions were used:

- 20% reduction in total water use obtained by this measure.

Analysis Details

GHG Analysis

Water use contributes to GHG emissions indirectly, via the production of the electricity that is used to pump, treat, and distribute the water. Installing low-flow or high-efficiency water fixtures in buildings reduces water demand, energy demand, and associated indirect GHG emissions.

California homes and businesses consume a significant amount of water through indoor plumbing needs and outdoor irrigation. ConSol estimates that an average three-bedroom home uses 174,000 gallons of water each year (ConSol 2010). A large portion of water use can be attributed to inefficient fixtures (e.g., showerheads, toilets). Recognizing that water uses a great deal of electricity to pump, treat, and transport, the state adopted SB X7-7, which requires a 20% reduction in urban per capita use by December 31, 2020 (20X2020 goal). Achieving this goal would not only reduce electricity consumption, but avoid GHG emissions and conserve water.

<u>Baseline Emissions and Emissions Reductions</u>

Each urban water retailer in the county has adopted a 2010 Urban Water Management Plan (UWMP). Each plan establishes a 2020 urban water use target for the retailer's service area. These targets vary by city and depend on the baseline per-capita water use rate identified in each UWMP. These targets represent the level of water consumption needed to achieve the 20X2020 goal for each water retailer.

The Ontario Municipal Utilities Company (OMUC) is the water retailer that serves the city of Ontario. The baseline per-capita water use rates for OMUC is 248 gallons per capita per day (gpcd) and the per-capita water use rate target is 198.4 gpcd (City of Ontario 2011). This represents a reduction in per-capita water use of 20%, consistent with most UWMPs to comply with SB X7-7.

The following steps were performed to calculate water savings:

a) 2020 water use reductions from Water-1 and Water-2 were subtracted from the BAU 2020 water use in order to determine the percent reduction in water use already achieved through these measures.

b) The percent reduction in per-capita water use rates due to the implementation of SB X7-7 was calculated using the baseline and target per-capita water use values from the 2010 UWMP for the Ontario Municipal Utilities Company. This value is 20%.

c) The water use percent reductions from Water-1 and Water-2 do not exceed the SB X7-7 percent reduction from 2020 BAU water use. Therefore, the water use reductions achieved by Water-4 are equal to the amount of additional water reductions needed to achieve the SB X7-7 per-capita water use targets.

d) Water savings were calculated by source (SWP, groundwater, etc.) and sector (residential, commercial, indoor, outdoor) using the assumptions identified in Water-1.

e) Hot water savings were calculated (residential and commercial) using the assumptions identified in Water-1above.

f) Electricity and natural gas reductions in the building energy sector (for water heating) and the water conveyance sector (conveyance, treatment, etc.) associated with the reduced water use were then calculated using the assumptions identified in Water-1 above.

g) Wastewater treatment emission reductions associated with Water-4, taking into account reductions from Water-1 and Water-2, were then calculated.

GHG savings from electricity reductions were then calculated by multiplying the energy reductions by the appropriate utility emission factors.

Co-Benefit Analysis

The following benefits are expected from implementation of Water-4.

 **Resource Conservation:** Reduced water consumption would help conserve freshwater resources.

 **Reduced Energy Use:** Water uses a great deal of electricity to pump, treat, and transport. Consequently, reductions in water use would reduce electricity consumption.

 **Reduced Air Pollution:** Reduced electricity use would contribute to reductions in regional air pollution.

 **Increased Property Values**: Energy-efficient bulidings have higher property values and resale prices than less efficient buildings.

Misc-3: Shade Tree Planting [CITY][12]

Measure Description

Establish a city-wide shade tree planting goal. Promote the planting of shade trees and establish shade tree guidelines and specifications. Plant 1,000 trees per year from 2012–2020 for a total of 9,000 trees by 2020 community wide.

Possible implementation mechanisms might include:

- Establishing guidelines for tree planting based on the land use (residential, commercial, parking lots, etc.).
- Establishing guidelines for tree types based on species size, branching patterns, whether deciduous or evergreen, whether roots are invasive, etc.
- Establishing tree guidelines for placement, including distance from structures, density of planting, and orientation relative to structures and the sun.
- A requirement to account for trees removed and planted as part of new construction and/or establishing a goal and funding source for new trees planted on city property.
- To maximize GHG and other environmental benefits, new shade trees would be targeted to the downtown and urban areas.

This measure will reduce energy consumption and associated GHG emissions in the building energy sector by reducing the cooling and heading load of buildings shaded by trees.

Assumptions

The following assumptions were considered for the quantification of this measure.

- Tree planting programs begin in 2012. 1,000 shade trees will be planted per year.
- The following seven tree species will be planted based on the Ontario List of Trees for Streetscape: Chinese flame tree, tulip tree, southern magnolia, canary island pine, Chinese pistache, London plane tree, and the fern pine.
- The 1,000 new trees planted per year were evenly distributed among these tree species. This means that 143 new trees of each of the seven tree species listed above will be planted per year.
- The U.S. Tree Carbon Calculator was used to determine energy savings from shade trees (U. S. Forest Service 2011). The following model inputs were used:

Input Category	Value
Climate Zone	1 (North and Central Coast)
Tree Age	2 years
Tree azimuth	1 (north, default)
Tree distance Class	3 (far, default)
Building vintage	2 (1950-1980, default)
Air conditioning Equipment	1 (central air/heat pump, default)
Heating equipment	1 (natural gas, default)

- Carbon sequestration was not considered.

Analysis Details

GHG Analysis

Trees planted adjacent to buildings provide shade, which cools buildings and reduces the need for summer-time air conditioning use. As a result, less electricity is consumed. Shade trees also reduce building heading loads, reducing natural gas consumption. The energy reductions and associated GHG benefits achieved from tree planting would vary based on the species, age, and size of tree planted.

Carbon sequestration benefits from new trees were not considered because the BAU inventory does not have a BAU assessment of carbon sequestration for the city.

[12] Emissions reductions associated with reduced electricity for heating and cooling as a result of reducing the heat island effect will be achieved in the building energy sector. However, these emissions reductions are reported as part of Misc-1 as they are a direct result of tree-planting programs.

A "start" date of 2012 for Misc-3 is sufficient for purposes of GHG quantification because the city has been planting shade trees before the implementation of this measure. The city may also plant more than 1,000 trees per year in order to meet the 9,000 new tree goal by 2020 if tree planting in 2012 and 2013 is less than 1,000 per year. New developments are also likely planting trees as part of their development.

Emissions Reductions

The tree species listed above were matched to the closest tree species in the Tree Carbon Calculator (U.S. Forest Service 2011). The calculator was run for each tree species with the inputs listed above to determine annual electricity and natural gas savings from reductions in building heating and cooling associated with shade trees. Energy savings vary based on the tree age as the trees grow, and this variation was factored into the analysis. For example, a 2-year old tree planted in 2012 will be 3 years old in 2013, 4 years old in 2014, etc. The energy savings for a 2-year old tree was used for the first 1,000 trees planted in 2012, the energy savings for a 3-year old tree was used for the second 1,000 trees planted in 2013, etc. for each year until 2020.

GHG savings from electricity reductions were then calculated by multiplying the energy reductions by the appropriate utility emission factors.

Co-Benefit Analysis

The following benefits are expected from implementation of Misc-3.

Reduced Energy Use: Trees planted adjacent to buildings shade, which cools buildings and reduces the need for summer-time air conditioning use. As a result, less electricity is consumed.

Reduced Air Pollution: Reduced electricity use would contribute to reductions in regional air pollution. Trees planted adjacent to congested roadways may also help filter particulate matter and other local pollutants.

Reduced Urban Heat Island Effect: Urban heat isalnd effect occurs when the ambient temperature in urban areas increases as a result of high energy consumption (e.g., air conditioning use during the summertime). Trees provide shade, which reduces the cooling load of buildings and helps mitigate the urban heat island effect.

Increased Quality of Life: Trees improve the aesthetic quality of buildings, as well as reduce stormwater runoff during periods of heavy rain.

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C.7 References for Appendix C

C.7.1 Printed

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