MEMORANDUM

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DATE: November 21, 2023
TO: Tracy Zinn, T&B Planning, Inc.
FROM: Alex So, Urban Crossroads, Inc.
JOB NO: 14539-01 VMT - Mitigation

IE DISTRIBUTION CENTER #14 VEHICLE MILES TRAVELED (VMT) MITIGATION ASSESSMENT

Urban Crossroads, Inc. has prepared the following Vehicle Miles Traveled (VMT) Mitigation Assessment for the IE Distribution Center #14 (**Project**), which is located at 5355 E. Airport Drive in the City of Ontario.

BACKGROUND

The IE Distribution Center #14 Vehicle Miles Traveled (VMT) Analysis (Urban Crossroads, Inc. January 3, 2023) (**VMT Analysis**) previously evaluated a single 270,377 square foot warehouse building.

The VMT Analysis concluded that the Project would result in a potentially significant VMT impact based on project generated VMT. More specifically, the Project was found to exceed the City's adopted impact threshold by 22.6% under baseline conditions, while the horizon year buildout condition would exceed the impact threshold by 28.5%. The purpose of this assessment is to evaluate potential trip reduction measures to reduce VMT to the extent feasible.

VMT REDUCTION MEASURES

The effectiveness of trip reduction measures that have the ability to reduce VMT has been determined based on the California Air Pollution Control Officers Association (CAPCOA) Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity (December 2021) (**Handbook**) (1). The Handbook provides methods to quantify reductions in greenhouse gas emissions and for transportation related measures associated reductions in VMT. This evaluation will focus on relevant transportation measures as described by the Handbook.

SELECTING MEASURES

When considering which transportation measures are applicable from the Handbook, factors such as project type, scale and locational context are each important considerations for determining measure applicability. Users of the Handbook must review the measure factsheets to determine those measures that align and are applicable with project characteristics.

PROJECT TYPE

Project type is an important consideration when determining which measures are applicable for review. For example, measures associated with neighborhood design are likely not applicable to employment generation land use projects, whereas trip reduction programs to reduce employee commute VMT would not be applicable to a residential land use project.

SCALE

It is important to note that measures can be applied at different scales or geographic levels. The Handbook states that, "some measures may only be applicable at the project-level, whereas others may be more appropriate within a broader planning context such as for a general plan or climate action plan." The geographic levels considered in the Handbook include Project/Site and Plan/Community. Project/Site applies to measures that can reduce VMT at the scale of an individual development project or employer. Plan/Community refers to measures that reduce VMT at the scale of a specific plan, general plan or climate action plan. Transportation measures can be quantified at either the Project/Site scale or the Plan/Community scale, but never both.[1]

LOCATIONAL CONTEXT

The Handbook states locational context is "used to identify trip reduction measures within the transportation sector that are appropriate in certain types of neighborhoods differentiated by transportation characteristics and level of development (e.g., urban, rural, suburban)." More specifically, rural, suburban and urban are defined as follows:

Rural: An area characterized by little development. Compared to urban and suburban areas, rural areas have a lower density of residences, higher numbers of single-family residences, and higher numbers of vehicle dependent land use patterns. Where applicable, the Handbook provides three land use distinctions within the rural locational context category—R_a, R_b, and R_c. R_a refers to rural areas within a master-planned community. These rural areas often include a broad offering of amenities and services, which may be accessed by walking or other alternative forms of transportation. R_b refers to rural areas adjacent to a commuter rail station with convenient rail service to a major employment center. As the name implies, these rural areas have greater access to commuter rail as an alternative mode of transportation. R_c refers to rural areas with transit service and that are near jobs/services.

Suburban: An area characterized by dispersed, low-density, single-use, automobile dependent land use patterns, usually outside of the central city. Also known as a suburb.

Urban: An area located within the central city with higher density land uses than in the suburbs. Often characterized by multi-family housing, tall office buildings and dense retail.

The Project's locational context is determined to be suburban.

TRANSPORTATION MEASURES

As noted in the Handbook, transportation measures "promote transit and alternative transportation, support use of alternatively fueled vehicles, or encourage land use planning

[1] Handbook, Page 37

practices that reduce vehicle trips and vehicle miles traveled (VMT). Measures within the transportation sector are separated into six subsectors: Land Use, Neighborhood Design, Parking or Road Pricing Management, Transit, Trip Reduction Programs, and Clean Vehicles and Fuels."[2] For the purposes of this evaluation, the Trip Reduction Programs subsector is most applicable to reducing employee commute VMT and would apply to the Project's industrial land use.

TRIP REDUCTION PROGRAMS SUBSECTOR

Attachment A lists the measures within the Trip Reduction Programs subsector (i.e., T-5 through T-13 and T-23) as described in the Handbook along with each measure's applicability to the Project. As the Project is being developed as a speculative building without a known tenant (i.e., employer), measures associated with commute trip reduction (CTR) programs and their related commute trip reduction strategies (e.g., have been excluded as they are not quantifiable, nor can their implementation be guaranteed and enforced.

The Project does have the ability to provide design features that would promote non-motorized transportation alternatives such as measure T-10 End-of-Trip Bicycle Facilities.

T-10 END-OF-TRIP BICYCLE FACILITIES

Measure T-10 Provide End-of-Trip Bicycle Facilities is listed in the Handbook as available to projects in a suburban setting. As described in the Handbook, "the measure will install and maintain end-of-trip facilities for employee use. End-of-trip facilities include bike parking, bike lockers, showers, and personal lockers. The provision and maintenance of secure bike parking and related facilities encourages commuting by bicycle, thereby reducing VMT and GHG emissions."[3] The Fact Sheet for T-10 Provide End-of-Trip Bicycle Facilities was utilized to calculate the Project's potential VMT reduction.

TABLE 2: T-10 CALCULATION VARIABLES

ID	Variable	Value	Unit	Source
A	Percent reduction in GHG emissions from project/site employee commute VMT	0.1-4.4	%	calculated
User Inputs				
	None			
Constants, Assumptions, and Available Defaults				
B	Bike mode adjustment factor	1.78 or 4.86[1]	unitless	Buehler 2012
C	Existing bicycle trip length for all trips in region	2.2	miles	FHWA 2017a
D	Existing vehicle trip length for all trips in region	11.7	miles	FHWA 2017a
E	Existing bicycle mode share for work trips in region	0.4	%	FHWA 2017b
F	Existing vehicle mode share for work trips in region	95.3	%	FHWA 2017b

[1]The bike mode adjustment factor should be provided by the user based on type of bike facility. A study found that commuters with showers, lockers, and bike parking at work are associated with 4.86 times greater likelihood to commute by bicycle when compared to individuals without any bicycle facilities at work. Individuals with bike parking, but no showers and lockers at the workplace, are associated with 1.78 times greater likelihood to cycle to work than those without trip-end facilities.

$$A = \frac{C \times \left(E - (B \times E)\right)}{D \times F}$$

[2] Handbook, Page 30
[3] Handbook, Page 133

$$0.1\% = \frac{2.2 \times \left(0.4\% - (1.78 \times 0.4\%)\right)}{11.7 \times 95.3\%}$$

The Project will include building elements for bicycle trip end facilities (i.e., parking) for commuters that choose to bicycle as a mode of travel. This will promote an alternative mode choice of commuting for employees. As calculated, the Project will reduce VMT by 0.1%.

TOTAL VMT REDUCTIONS

The 2021 Handbook states that effectiveness levels for multiple measures within a subsector may be multiplied to determine a combined effectiveness level. Because the combination of measures and independence of measures are complicated, the 2021 Handbook recommends that measure reductions within a subsector be multiplied unless the user can provide substantial evidence indicating that emission reductions are independent of one another and that they should therefore be added. Each subsector has a maximum allowable reduction. These were derived by combining the maximum allowable reduction of each individual non–mutually-exclusive measure within the subsector. As all the Project Design features above fall under the Subsector of "Trip Reduction Programs", the 2021 Handbook states that the "Trip Reduction Subsector" has a maximum reduction of 45%. Therefore, a project cannot exceed the maximum allowable reduction. 2021 Handbook provides the following equation for combining Subsector reductions:

$$Reduction_{Subsector} = 1 - [(1 - A) \times (1 - B) \times (1 - C) \dots]$$

Project's VMT reduction are as follows:

$$0.1\% = 1 - [(1 - 0.1\%)]$$

As outlined through the VMT reduction calculations presented above, with the inclusion of the VMT mitigation measure the Project is estimated to reduce its VMT impact by 0.1%, which would continue to exceed the City's VMT impact threshold.

Even with the inclusion of feasible VMT reduction measures, the Project is not able to reduce project generated VMT to a level of less than significant.

If you have any questions, please contact me directly at aso@urbanxroads.com.

REFERENCES

1. **CAPCOA.** *Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity .* December 2021.

ATTACHMENT A
TRIP REDUCTION PROGRAMS SUBSECTOR

TABLE A-1: TRIP REDUCTION PROGRAMS SUBSECTOR

Subsector	Measure	Scale of Application	Applicable Locational Context	Applicability to Project
Trip Reduction Programs	**T-5 Implement Commute Trip Reduction Program (Voluntary)** This measure will implement a voluntary commute trip reduction (CTR) program with employers.	Project/ Site	Urban, Suburban	Reduction is not quantifiable nor enforceable due to a speculative building with an unknown employer.
	T-6 Implement Commute Trip Reduction Program (Mandatory Implementation and Monitoring) This measure will implement a mandatory CTR program with employers. CTR programs discourage single-occupancy vehicle trips and encourage alternative modes of transportation such as carpooling, taking transit, walking, and biking, thereby reducing VMT and GHG emissions.	Project/ Site	Urban, Suburban	Reduction is not quantifiable nor enforceable due to a speculative building with an unknown employer.
	T-7 Implement Commute Trip Reduction Marketing This measure will implement a marketing strategy to promote the project site employer's CTR program. Information sharing and marketing promote and educate employees about their travel choices to the employment location beyond driving such as carpooling, taking transit, walking, and biking, thereby reducing VMT and GHG emissions.	Project/ Site	Urban, Suburban	Reduction is not quantifiable nor enforceable due to a speculative building with an unknown employer.
	T-8 Provide Ridesharing Program This measure will implement a ridesharing program and establish a permanent transportation management association with funding requirements for employers.	Project/ Site	Urban, Suburban	Reduction is not quantifiable nor enforceable due to a speculative building with an unknown employer.
	T-9 Implement Subsidized or Discounted Transit Program This measure will provide subsidized or discounted, or free transit passes for employees and/or residents.	Project/ Site	Urban, Suburban	Reduction is not quantifiable nor enforceable due to a speculative building with an unknown employer.
	T-10 Provide End-of-Trip Bicycle Facilities This measure will install and maintain end-of-trip facilities for employee use. End-of-trip facilities include bike parking, bike lockers, showers, and personal lockers.	Project/ Site	Urban, Suburban	Applicable and Quantifiable
	T-11 Provide Employer-Sponsored Vanpool This measure will implement an employer-sponsored vanpool service. Vanpooling is a flexible form of public transportation that provides groups of 5 to 15 people with a cost-effective and convenient rideshare option for commuting.	Project/ Site	Urban, Suburban, Rural	Reduction is not quantifiable nor enforceable due to a speculative building with an unknown employer.
	T-12 Price Workplace Parking This measure will price onsite parking at workplaces. Because free employee parking is a common benefit, charging employees to park onsite increases the cost of choosing to drive to work	Project/ Site	Urban, Suburban	Reduction is not quantifiable nor enforceable due to a speculative building with an unknown employer.
	T-13 Implement Employee Parking Cash-Out This measure will require project employers to offer employee parking cash-out. Cash-out is when employers provide employees with a choice of forgoing their current subsidized/free parking for a cash payment equivalent to or greater than the cost of the parking space. This encourages employees to use other modes of travel instead of single occupancy vehicles.	Project/ Site	Urban, Suburban	Reduction is not quantifiable nor enforceable due to a speculative building with an unknown employer.
	T-23 Provide Community-Based Travel Planning This measure will target residences in the plan/community with community-based travel planning (CBTP). CBTP is a residential-based approach to outreach that provides households with customized information, incentives, and support to encourage the use of transportation alternatives in place of single occupancy vehicles.	Plan/ Community	Urban, Suburban	Does not apply at the Project/Site scale.

Source: Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity , California Air Pollution Control Officers Association (CAPCOA), December 2021.

Notes:

1. Per CAPCOA Handbook, the combined maximum for each subsector or total across subsectors is calculated as:
1 - ((1-A)*(1-B)*(1-C)*(1-D)…); where, A, B, C, and D… represent the percent reduction for individual measures or subsectors.