FEHR PEERS

Memorandum

Date: May 6, 202, Revised October 21, 2022

To: Steven Stewart, Public Works, Fleet & Facilities Department, City of Carlsbad

From: Katy Cole and Mahdie Hasani, Fehr & Peers

Subject: Orion Center Operations and Maintenance Facility SB 743 Vehicle Miles Traveled (VMT) Analysis

SD20-0377

This memorandum evaluates VMT for transportation impact purposes of the proposed Orion Center project (the "project). The VMT analysis was conducted consistent with the methodologies described in the City of Carlsbad's *VMT Analysis Guidelines*, September 2020.

The project consolidates four existing City of Carlsbad maintenance and operation centers and relocates them within the City of Carlsbad at 2600 Orion Way, as shown in **Figure 1**. The proposed project includes the following uses:

- 41,800 gross square-foot (GSF) operations office building
- 9,800 GSF utilities warehouse/shop
- 9,800 GSF general service warehouse/shop
- 5,900 GSF parks warehouse/shop
- 93,500 square-foot (SF) 4-level parking structure with police storage
- 11,230 SF covered outdoor storage
- 2,300 SF fueling station canopy
- 4,000 SF vehicle storage shelter

The number of future employees will be the same with and without the project. In addition, 2600 Orion Way has previously operated as a vehicle maintenance facility and fueling island that will be maintained with the addition of site improvements. The project will not replace employees at the four sites that are being consolidated and there are no current plans for others to occupy those sites.

Note that the City will be modifying the Fleet Maintenance Building which is northwest of the Orion Center project. While this modification is **NOT** part of the Orion Center project, it is

adjacent to the Orion Center project and will be implemented concurrently. The changes to the Fleet Maintenance Building include minor modifications/remodeling to the existing building and will not result in new employees or otherwise increased activity affecting the VMT analysis for the Orion Center project presented within this document.

The findings of the VMT analysis (presented in detail below) are that the Orion Center project is not expected to result in a net increase in total regional VMT compared to the no project condition. Accordingly, the project will have a less-than-significant VMT transportation impact per the City of Carlsbad guidelines for regional public facilities.

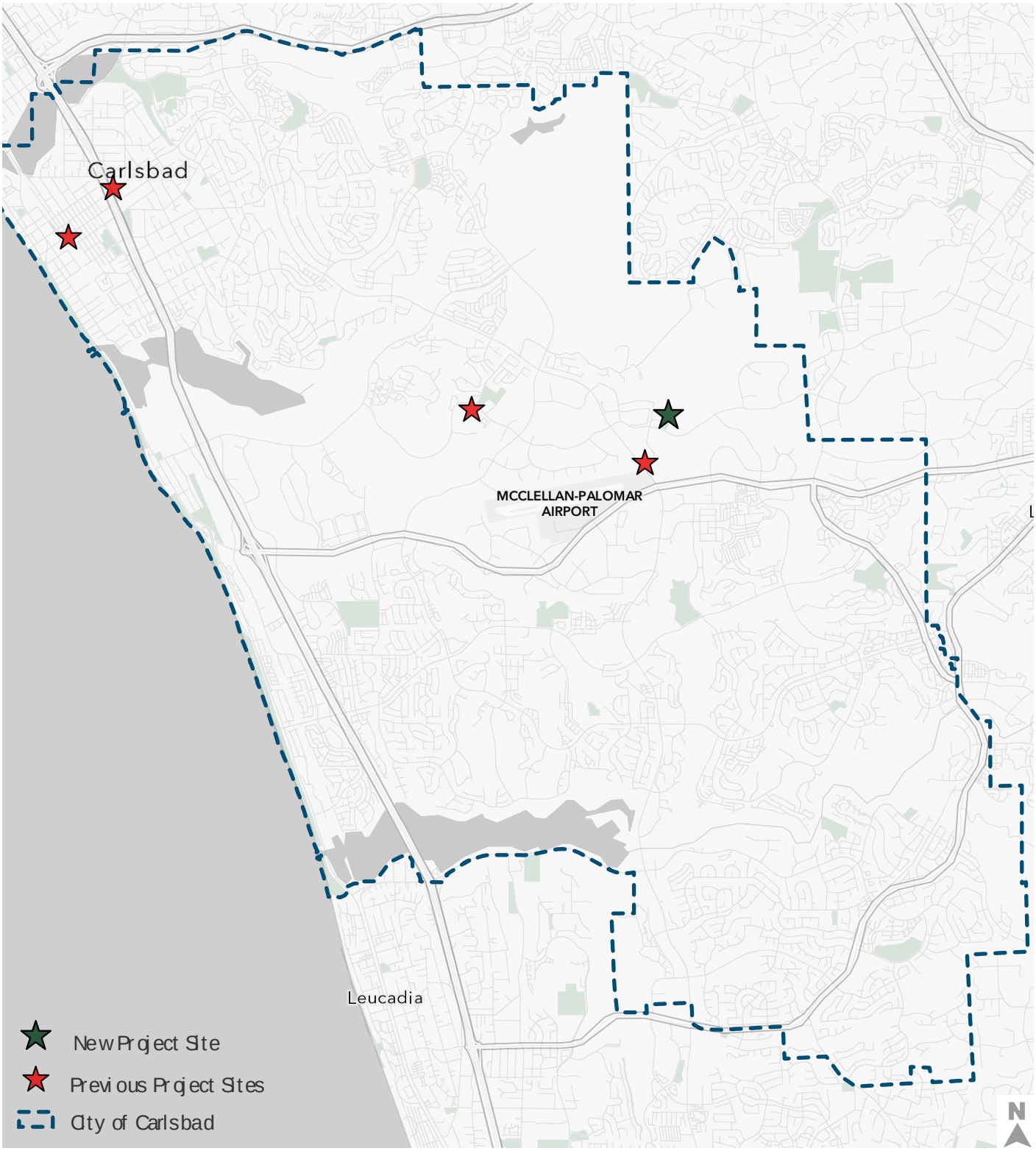

Figure 1

Orion Center Operations and Maintenance Facility Location

Detailed VMT Analysis

The City of Carlsbad has prepared guidelines for performing VMT analysis per SB 743 that are generally consistent with the OPR Technical Advisory.

The project does not propose to increase the number of employees; instead, it will centralize various maintenance and operations centers throughout the City and move all employees to the new consolidated location. Therefore, the project will only redistribute existing trips and will not add any new trips to the roadway network. In addition, the project will actually result in fewer vehicle trips since the project consolidates the operations to a single site and employees will no longer need to travel between sites for operations activities. The methodology and analysis to determine the effect that the project has on VMT are as follows:

Step 1: Project Screening

The first step in performing transportation VMT impact analysis is to compare the project characteristics to the City of Carlsbad's screening criteria to determine if the project can be presumed to have a less than significant impact. The screening criteria are detailed in **Table 1**.

Table 1: Orion Center VMT Screening Analysis

Screening Criteria	Analysis	Is the Project Screened?
Small Project	A small project is defined in the City of Carlsbad guidelines as generating less than 110 daily trips after applying trip-reduction strategies. *The project-generated trips are greater than 110 daily trips; therefore, the project is not considered a small project.*	No
Projects Located Near Transit	The City of Carlsbad guidelines state that projects proposed within ½ mile of the Carlsbad Village Coaster Station, the Carlsbad Poinsettia Coaster Station, or the Plaza Camino Real transit center would be presumed to have a less than significant VMT impact as long as project features do not otherwise indicate high VMT generation. *The project is farther than ½ mile from each of the listed transit stops and therefore is not located near transit.*	No
Local-Serving Retail	Local-serving retail is defined in the City of Carlsbad guidelines as retail development under 50,000 SF in size; or larger than 50,000 SF development with an approved market primarily serving local uses. *The project is not retail and therefore this screening category does not apply to Orion Center.*	No

Table 1: Orion Center VMT Screening Analysis

Screening Criteria	Analysis	Is the Project Screened?
Local-Serving Public Facility	Local-serving public facilities are defined in the City of Carlsbad guidelines as facilities that serve the local public parks and public schools. *According to the criteria of local-serving public facilities in the City of Carlsbad VMT guidelines, the project is not considered to be local-serving per Section 3.2.4 of the City guidelines. This is because, as a citywide maintenance and operations center, the facility will serve the entire City and is not locally serving.*	No
Affordable Housing	*The project is not a residential development and therefore this screening category does not apply to Orion Center.*	No
Redevelopment Project	The City of Carlsbad guidelines state that a redevelopment project can be screened out from preparing a VMT analysis if the proposed project's total VMT is less than the existing land use's total VMT. *The proposed project will close and vacate the existing four sites and relocate all employees to a consolidated location (2600 Orion Way). Therefore, the VMT generated by 2600 Orion Way will increase over existing conditions and, accordingly the project does not meet the screening criterion.*	No

Source: Fehr & Peers, 2021.

As shown in **Table 1**, the project does not meet the City of Carlsbad's VMT screening. Therefore, a VMT analysis is necessary to determine if the project has VMT transportation impacts.

Step 2: VMT Analysis Calculations

Since the project does not meet the screening criteria, a VMT analysis is performed consistent with the City of Carlsbad's *VMT Analysis Guidelines*.

For regionally serving public facility land uses, an evaluation of the effect that the project has on regional VMT is required as described in Section 3.2.4 and Appendix A of the VMT Analysis Guidelines. The project was evaluated based on the net increase in total regional VMT. As described in the Guidelines: Public facilities that *do not meet the screening criteria…are considered regional…projects and require a model.* [Note that a sketch model is appropriate for this project as described below.] *Regional…projects that result in a net increase in VMT compared to the no project condition would have a significant transportation impact.*

The VMT analysis for the project was prepared using a sketch model based on detailed information regarding employee home location/commute travel characteristics and project

operations. Use of the sketch model is more accurate than using a regional travel demand model because it evaluates actual employee home and commute patterns, and a regional travel demand model is not sensitive enough to evaluate the relatively small number of employees associated with the project. Therefore, a regional travel demand model would not accurately capture travel behavior and the nuances of consolidating employees from other locations for this project.

The regional change in total VMT attributed to the Orion Center project for a typical weekday (the day when a public facility generates the most VMT) is described in the following sections and summarized in **Table 2**. This analysis is considered a worst-case scenario in that it does not account for additional efficiencies that are expected to occur at the new location, which are discussed in the sections entitled *"Other VMT Considerations."*

VMT Change Due to Land Use Location

The change in employee commute VMT is the biggest contributing factor to the effect that the project has on regional VMT. By relocating employees from their current locations to the new location, each employee's commute distance will change: some may have shorter commutes and some may have longer commutes. A summary of the locations that are being consolidated and the number of employees associated with each location is:

- 1635 Faraday Avenue; 14 Employees
- 405 Oak Street; 38 Employees
- 1166 Carlsbad Village Drive; 24 Employees
- 5950 El Camino Real; 56 Employees

Detailed zip code data of current employee home locations and current work location is in **Appendix A**. Geospatial analysis was performed to determine the driving distance from the centroid of each zip code to the location where each employee currently works and the distance to the project location. These two sets of distances were used to calculate the difference in commute VMT generated by each employee on making one round-trip for their current work location and for the project location.

The number of employees that the existing facilities (and proposed project) will accommodate is 143. The commute patterns for the 143 employees are based on the home location and work location of the existing employees. Note that 131 employee records were analyzed to determine the weighted average commute distance and the results of the analysis were applied to the 143 employees.

Figure 2 shows the changes in employee commute distance (round trip) based on the home location zip codes of the existing employees with the proposed project. The commute distances (and typical commute route) were determined for the AM commute hour and PM commute hour independently based on congested conditions; therefore, the analysis considers that employees

may change their route to work or from work based on typical congestion conditions. Zip codes colored in green indicate the home locations of employees have a shorter commute distance with the project compared to their current work location. The yellow shows locations with longer commute distance. Each round-trip is assumed to be made by a single occupant car, such that these average distances are equivalent to vehicle miles traveled.

The analysis determined that the total VMT generated by employees commuting to the new project location would be 72 miles *less* than commuting to the four existing locations, as shown in **Table 2**.

The analysis also considers that employees might make mid-day trips, such as over a lunch break. However, these trips are expected to be local, such as to a nearby restaurant or other locally-serving retail, such that the nature of these trips not substantially change in length due to the relocation to the consolidated project site; therefore, would not contribute to a change in VMT.

Based on this analysis, the project has a less-than-significant transportation VMT impact. In addition, there are other project features that are expected to reduce VMT further.

Table 2: Orion Center Typical Weekday VMT Estimates

	Employee VMT If Commuting to Current Sites	Employee VMT if Commuting to Proposed Project	Net Change
Number of Employees	143	143	0
Weighted Average VMT per Employee Round-trip	25.42 miles	24.92 miles	-0.50 miles
Total Weekday VMT from Employees	**3,635 miles**	**3,563 miles**	**-72 miles**

Source: Data provided by City of Carlsbad; Fehr & Peers, 2021.
Notes:
Employee VMT is calculated by multiplying VMT per round trip between a zip code and a project site by the number of employees commuting that route on a weekday. For example, 19.02 VMT per employee round trip from zip code 92084 to the new project site x 14 employees doing this commute = 266.34 VMT generated by employees commuting from zip code 92084 on a weekday.

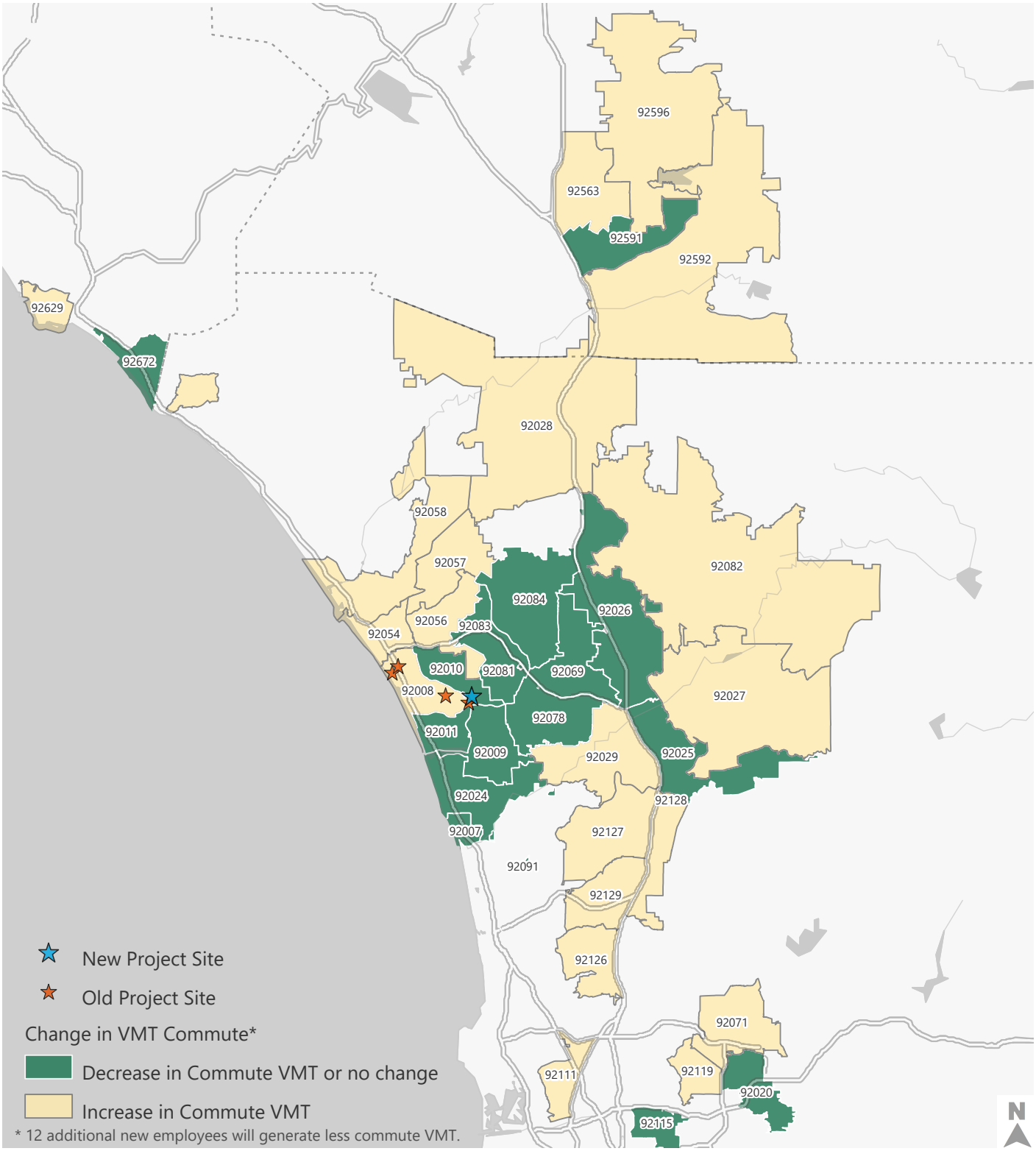

Figure 2

Change in Employee Commute VMT by Zip Code

Other VMT Considerations

In addition to the reduction in commute VMT, the project will further reduce regional VMT as compared to the existing sites due to the consolidated site improving the efficiency of operations by reducing/eliminating other types of trips currently occurring between the four existing facilities that will be consolidated.

For example, the project site currently serves as a vehicle maintenance yard. Therefore, City vehicles needing maintenance are driven from their operations center to the maintenance yard for service. By consolidating all sites in one location, the internal trips between operations centers and the maintenance facility will be eliminated. VMT associated with delivery trips will also benefit from the consolidation of project sites because a delivery vehicle that currently goes to multiple facilities to drop off/pick up items will now only go to the consolidated location. However, to present a worst-case scenario, the efficiency of consolidating the facilities from an internal trip and delivery perspective were not accounted for in the calculation.

Even though we do not expect the new project site to attract many customers, customer trips may slightly affect regional VMT. To the extent that the public and customers are coming to the new site, in some cases their trips to the new site may be longer depending on their home locations, while in some other cases it may be shorter. Using the employee home location (and especially those that live and work in Carlsbad) as a proxy for where people live in relation to these sites, we generally expect the new consolidated location to produce lower VMT for customer trips.

Another outcome of consolidating employees is that there may be more potential for employees to carpool together. This is because by having employees consolidated at one site there is a larger employee base and the likelihood of two or more employees living near one another and sharing the same work schedule is increased.

Additionally, the new facility will be subject to the TDM Ordinance and required to prepare a Tier 3 TDM plan (see City of Carlsbad TDM Ordinance[1]). Compliance with the TDM Ordinance will likely result in additional VMT reduction that has not been accounted for in the calculation.

Cumulative Analysis

The proposed project relocates existing uses that are already included in future conditions of the SANDAG regional travel demand model. Therefore, the same land use characteristics will be relocated by a short distance (within the same City). This is not expected to affect regional travel behaviors; therefore, the cumulative findings can be assumed to be the same as the project-level findings presented in this report without performing a separate cumulative analysis.

[1] City of Carlsbad's Transportation Demand Management Handbook: https://www.carlsbadca.gov/civicax/filebank/blobdload.aspx?BlobID=39379

Step 3: Compare to the Significance Threshold

As a regional public facility project, the City of Carlsbad's *VMT Analysis Guidelines* (September 2020) state that the proposed project would be considered to have a significant transportation impact if it results in a net increase in VMT compared to the no project condition. As shown in **Table 2**, the new project location is expected to generate 72 fewer VMT on a weekday as compared to the existing project locations. The project has a less-than-significant transportation VMT impact.

Appendix A: Employee Zip Code Data and VMT Analysis with and without the Project

Table 1: City of Carlsbad Employee Data – 2020

Zip	Project Site	Number of Employee
92056	Utilities	7
92008	Utilities	4
92054	Utilities	7
92058	Utilities	1
92027	Utilities	2
92083	Utilities	1
92084	Utilities	6
92591	Utilities	1
92029	Utilities	1
92081	Utilities	3
92596	Utilities	2
92592	Utilities	2
92011	Utilities	2
92028	Utilities	1
92082	Utilities	1
92078	Utilities	1
92025	Utilities	1
92069	Utilities	2
92018	Utilities	3
92129	Utilities	1
92126	Utilities	1
92128	Utilities	1
92057	Utilities	2
92672	Utilities	1
92119	Utilities	1
92127	Utilities	1
NA*	Utilities	6
92008	Parks Maintenance	4
92054	Parks Maintenance	2
92009	Parks Maintenance	1
92018	Parks Maintenance	2
92057	Parks Maintenance	2
92056	Parks Maintenance	4
92069	Parks Maintenance	1
92083	Parks Maintenance	1
92058	Parks Maintenance	1
92563	Parks Maintenance	1
92084	Parks Maintenance	2
92078	Parks Maintenance	1
92025	Parks Maintenance	1
NA*	Parks Maintenance	2
92010	Oak/Transportation	2
92084	Oak/Transportation	2
92011	Oak/Transportation	2

92008	Oak/Transportation	2
92083	Oak/Transportation	3
92081	Oak/Transportation	1
92115	Oak/Transportation	1
92057	Oak/Transportation	2
92028	Oak/Transportation	1
92069	Oak/Transportation	1
92592	Oak/Transportation	1
92056	Oak/Transportation	1
92020	Oak/Transportation	1
92054	Oak/Transportation	1
92024	Oak/Transportation	1
NA*	Oak/Transportation	1
92026	Oak/Facilities	1
92008	Oak/Facilities	1
92084	Oak/Facilities	2
92058	Oak/Facilities	1
92081	Oak/Facilities	1
92018	Oak/Facilities	1
92024	Oak/Facilities	1
92056	Oak/Facilities	2
92069	Oak/Facilities	1
92057	Oak/Facilities	2
92011	Oak/Facilities	1
92007	Oak/Facilities	1
92091	Oak/Facilities	1
92111	Faraday	1
92054	Faraday	2
92084	Faraday	2
92028	Faraday	1
92071	Faraday	1
92083	Faraday	1
92596	Faraday	1
92008	Faraday	1
92026	Faraday	1
92011	Faraday	1
92629	Faraday	1
92009	Faraday	1
NA*	Faraday	3
	Future Total Employees	***143***

Note:

* Home location zip code of 12 future employees is unknown.