Fehr & Peers

Transportation Study Guidelines

CEQA Vehicle Miles Traveled (VMT)

Level of Service (LOS)

Safety and Multimodal Operations Assessment

Prepared for:
City of Palm Desert

Submitted on:
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1. Introduction

1.1 Background Information

Consistent with SB 743, CEQA transportation impacts must be identified using vehicle-miles-traveled (VMT) as the preferred metric. CEQA implementation guidelines published by the Governor's Office of Land Use and Climate Innovation (LCI) (and formerly known as the Office of Planning and Research or OPR) state that local agencies are encouraged to formally adopt significance thresholds that are used to determine the significance of environmental impacts. These guidelines list the City's significance thresholds, which are in line with recommendations from the state and intend to improve the efficiency of the transportation system.

The City also maintains a level of service (LOS) goal and safety/multimodal access goals, which are intended to understand changes in traffic conditions because of development projects and maintain acceptable traffic conditions.

The purpose of these guidelines is to provide specifications related to methodologies, tools, and other key assumptions that should be considered for both VMT assessment and LOS assessment when evaluating projects in the City of Palm Desert.

The City's Department of Public Works reserves the right to modify these guidelines based on project-specific characteristics. Practitioners completing VMT assessments should have sufficient expertise in SB 743 requirements and travel demand forecasting models to ensure accurate and updated assessments.

1.2 Guidelines Organization

The remainder of this guidelines document is organized as follows:

Section 2: City of Palm Desert Thresholds outlines the adopted thresholds used by the City to determine CEQA transportation impacts and non-CEQA LOS deficiencies.

Section 3: Analysis Scoping Process summarizes the process for communicating with the City to determine the appropriate analysis scope and procedures. This section also documents when a transportation study is required.

Section 4: VMT Analysis – CEQA Assessment details the preferred methodology for analyzing VMT generated by a project. This includes screening criteria, methodology for non-screened projects, and potential mitigation.

Section 5: LOS Analysis – Non-CEQA Assessment describes the preferred methodology for analyzing LOS deficiencies at intersections and along roadway segments. This section includes procedures for analysis and improvements to address LOS deficiencies.

Section 6: Safety and Multimodal Analysis – Non-CEQA Assessment describes the preferred methodology for evaluating potential safety deficiencies and addresses multi-modal accessibility to a Project.

2. City of Palm Desert Thresholds

2.1 CEQA VMT Thresholds

A project would result in a significant "project-generated" VMT impact if it exceeds the thresholds listed in **Table 1**.

Table 1: City of Palm Desert "Project Generated" VMT Thresholds of Significance

Project Type	Metric	VMT Threshold
Residential	Home Based VMT per Resident	Below General Plan Buildout county-average VMT per resident
Non-Residential	VMT per Service Population OR Home Based Work (Commute) VMT per Employee[1]	Below General Plan Buildout county-average VMT per service population
Mixed Use Developments[1]	VMT per Service Population	Below General Plan Buildout county-average VMT per service population
Transportation Project	Total VMT	Consistent with the SCAG RTP/SCS and/or City General Plan. If not consistent with the SCAG RTP/SCS and or City General Plan, no net change in city-wide VMT compared to the General Plan Buildout condition

[1]Note that service population is the sum of residents and employees. For non-residential projects where a high share of overall trips are generated by visitors, it may be appropriate to include visitors, customers, and/or overnight guests as part of the service population to show VMT per capita. Alternatively, the analyst can focus only on home-based-work (commute) VMT generated per employee. The appropriate VMT metric(s) should be determined during the project scoping phase in consultation with City staff.

Projects must also evaluate their overall effect on city-wide VMT (known as "project-effect VMT") using the "boundary" method. The project's impact on VMT would also be considered significant if the link-level boundary VMT per service population within the City of Palm Desert[2] increases under the "plus project" condition compared to the "no project" condition.

[1] "Mixed use" is defined as a project on a single site with two or more distinct land uses.

[2] Note that for most projects, the City limit boundary should be sufficient. However, for larger projects or projects located near the City limit, a larger boundary should be applied to ensure that the true project effect is not truncated. Typically, this would be double the average trip length to/from the site if the City limit is not appropriate.

2.2 Level of Service Standard

Intersections

CITY CENTER AREA

Within the City Center area (see **Figure 1**), a project would result in an intersection LOS deficiency if the added project traffic results in an intersection operating worse than LOS E (LOS F) during any peak hour in the peak season (November–April) AND the project increases total intersection volume by two percent or more. The purpose of this more congested threshold is to promote a walkable downtown and reduce the need for widening roadways in the City Center. Improvement recommendations should be context sensitive and prioritize improvements to existing infrastructure when possible (e.g. traffic signal timing updates).

OTHER AREAS

Outside of the City Center area, a project would result in an intersection level of service (LOS) deficiency if the added project traffic results in an intersection operating worse than LOS D (e.g. LOS E or F) during any peak hour in the peak season (November–April) AND the project increases total intersection volume by two percent or more.

The City will review any identified LOS deficient locations to determine if improvements should be considered at these locations. The City may determine that improvements are not recommended due to right-of-way constraints or other contextual factors.

Roadway Segments

A project would result in a roadway segment LOS deficiency if the added project traffic results in a roadway segment operating worse than LOS D (LOS E or F). If a roadway segment under "no project" conditions operates at LOS E or worse, an LOS deficiency would occur if the added project traffic increases the volume-to-capacity (V/C) ratio along that roadway segment by 0.02 or more. Roadway segments should be analyzed using average daily traffic in the peak season (November–April).

Note that in cases where both intersection and roadway segment analysis are conducted, the results of the intersection analysis supersede the roadway segment analysis. In other words, if a roadway segment is operating at LOS E and the intersections along that roadway segment are operating at LOS D or better, there would not be a LOS deficiency.

2.3 Safety and Multimodal Thresholds

A project would result in a safety deficiency if it adds at least 50 peak hour vehicle trips to an intersection or roadway segment that already has a higher-than-average crash rate. Locations with higher-than-average crash rates are those with a positive Critical Crash Rate (CCR) differential as defined in the City's Local Road Safety Plan (LRSP).

Projects should meet all requirements listed in the multimodal operations assessment checklist (see **Table 5**).

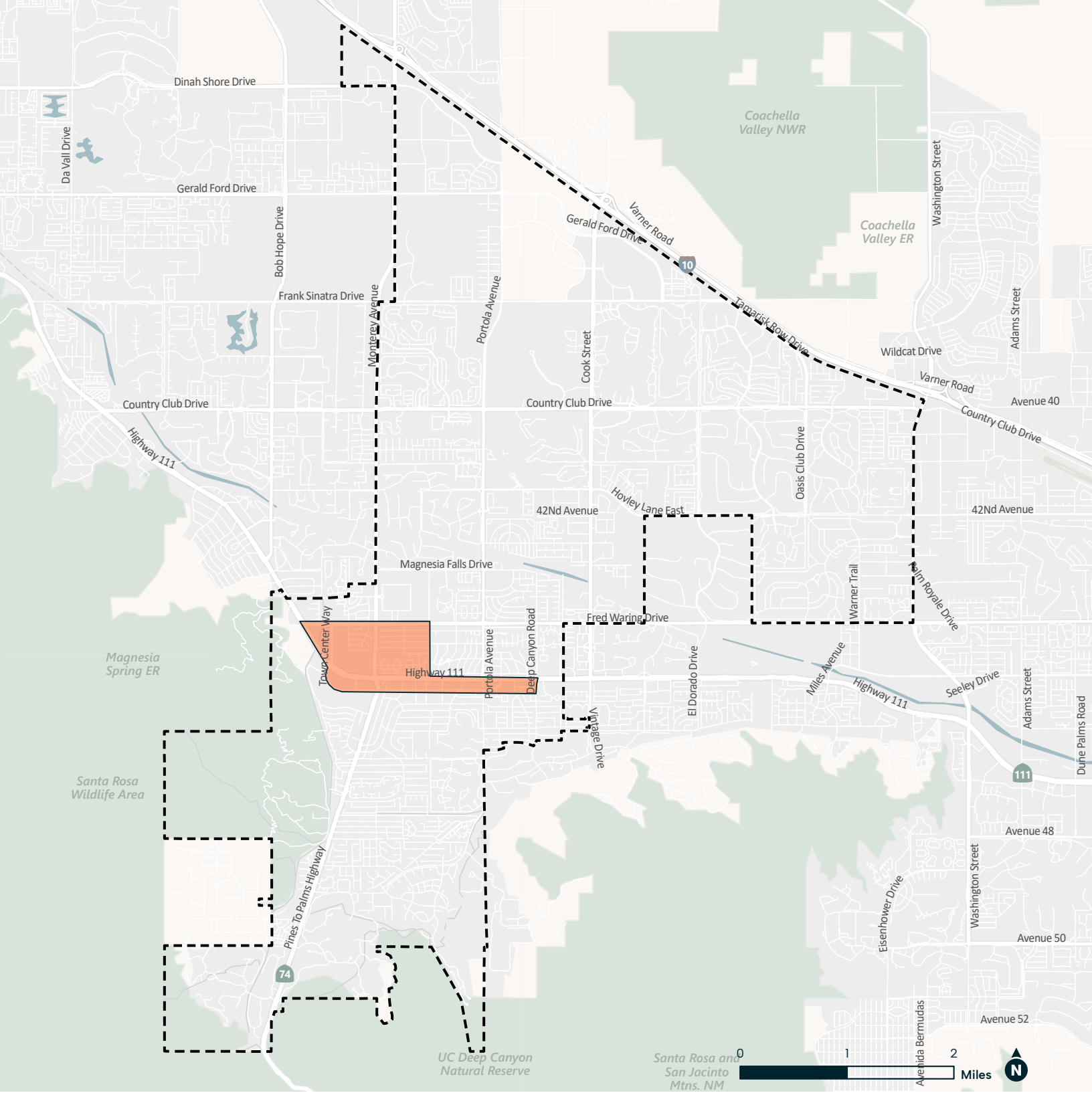

FIGURE 1

City Center Area

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3. Analysis Scoping Process

3.1 Need for a Transportation Study

Any proposed project that is subject to discretionary approval by the City Council is subject to CEQA and should follow the requirements for VMT Screening or VMT Analysis as outlined in Section 4.

The requirement for an LOS, safety, and multimodal assessment will be based upon, but not limited to, the following criteria:

1. If a new development project generates 100 or more peak hour trips, a full study is required for the proposed project.
2. If a new development project generates between 50 and 100 peak hour trips, a focused traffic impact memo is required to address specific issues at the discretion of the City Engineer.
3. If a new development project generates less than the total peak hour trips associated with the previous existing or approved land use, a focused traffic impact memo is required to address specific issues at the discretion of the City Engineer.
4. The City Engineer may require a project to complete a transportation study at their discretion.

3.2 Scoping Agreement

A scoping agreement between the City, project applicant, and consultant/representative completing the analysis shall be made to ensure the analysis is comprehensive and aligns with City guidelines.

The project applicant and their consultant shall complete the scoping agreement form (see **Attachment A**) to outline the project and analysis procedures. The scoping agreement form should include:

- Project study area, including intersections and roadway links being analyzed for LOS
- Project trip generation, distribution, and assignment
- Proposed travel demand model used for forecasting. The preferred travel demand forecasting model is the Riverside Country Travel Demand Model (RIVCOM) but, if that model is upgraded in the future, the most accurate forecasting tool for estimating VMT in Palm Desert should be utilized
- Use of other approved projects for background traffic, traffic growth assumptions, or integration with RIVCOM
- Identification of unique transportation issues that may be specific to a project's design or location (e.g. queueing, sight distance, pedestrian/bike access)
- Documentation of proposed VMT assessment, including if the project is eligible to be screened from VMT assessment. For projects requiring a full VMT assessment, the scoping memorandum should document the planned procedure for estimated project generated and project effect VMT

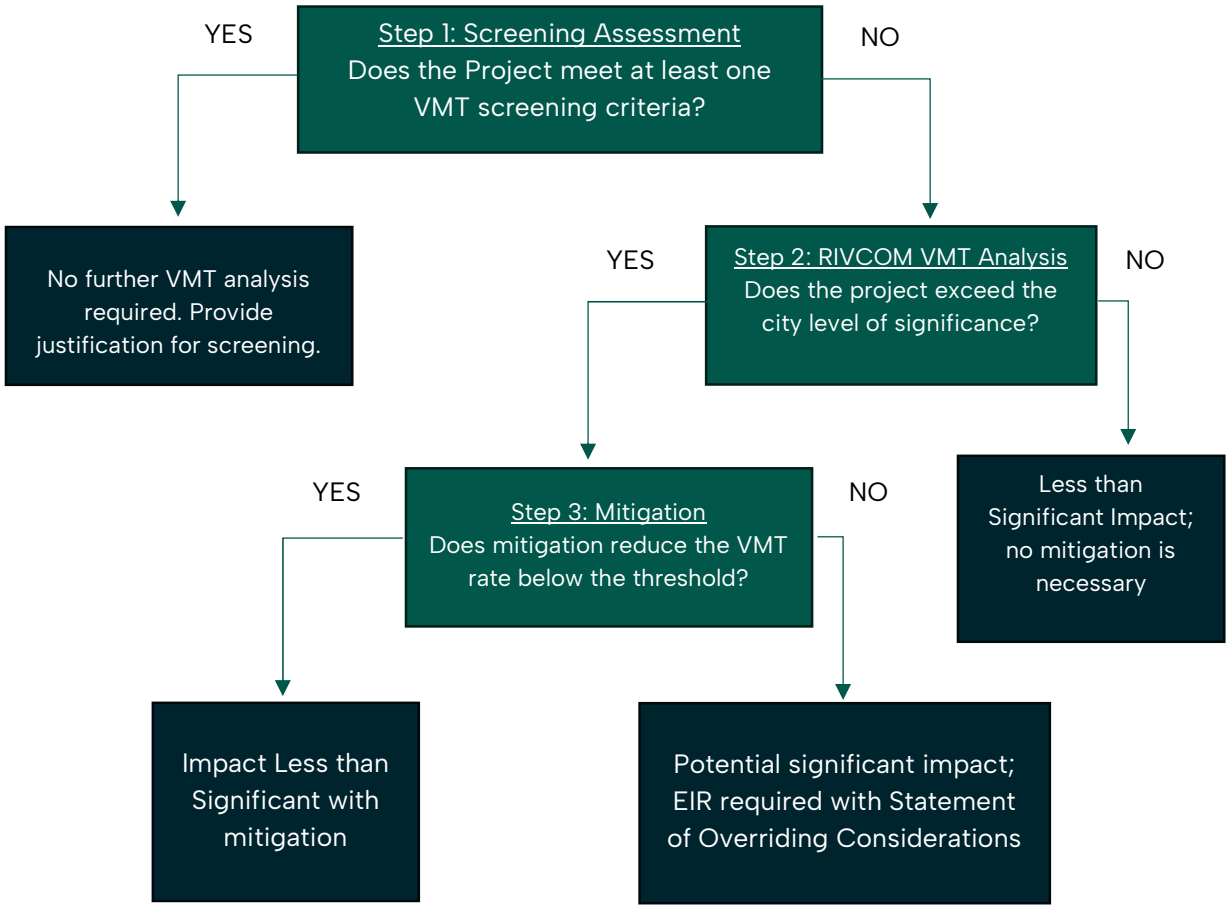
The applicant shall submit a scoping agreement form to the City for review and obtain approval before preparing the transportation assessment.

4. VMT Analysis – CEQA Assessment

In accordance with SB 743, a VMT analysis should be conducted for land use and transportation projects deemed necessary by the City Engineer.

4.1 Analysis Methodology

Projects should be analyzed in a three-step process, which is outlined in the flow chart below:



4.2 VMT Screening Criteria

The City has established a set of screening criteria to determine whether a project's VMT would be expected to cause a less than significant CEQA transportation impact without having to conduct a detailed VMT analysis.

Land Use Projects

Land use projects can be screened from further VMT assessment if they meet one or more of the following criteria:

1. **Projects Located in a Low VMT Area** – Projects in areas with VMT per service population below the County average VMT per service population would be presumed to be less than significant. These areas are shown in **Attachments B through D**.
2. **Projects Located in Transit Priority Areas** – Projects located within a ½ mile of a high-quality transit stop/route would be screened from VMT assessment. "High-quality transit stop/route" is defined as a rail station or a bus stop with at minimum 20-minute frequencies during peak commute hours. Currently, the area along Town Center Way is classified as a transit priority area. Transit services adjacent to a project site should be reviewed using the most up-to-date transit schedules. Projects must also meet the following design standards to be presumed to less than significant:
    a. The Project land use is consistent with the predominant land use type in the area
    b. Has a Floor Area Ratio (FAR) greater than or equal to 0.75
    c. Does not provide additional parking supply beyond City minimum requirements
    d. Is consistent with the Sustainable Communities Strategy
    e. Does not replace affordable residential units with a smaller number of moderate- or high-income residential units
3. **Local Serving Land Use Projects** –Local serving land uses provide more opportunities for residents and employees to shop, dine, and obtain services closer to home or work. These types of projects tend to shorten trips that are already occurring rather than generating new trips. This lowers the average trip length and VMT.

    The following local serving uses may be presumed to have a less than significant impact on VMT unless the City determines otherwise:
    a. Libraries, civic centers, community centers, and other civic buildings
    b. Police/fire stations
    c. Local parks
    d. K-12 public schools
        i. Charter schools, private schools and magnet schools are not considered local-serving schools
    e. Daycare centers
    f. Medical/dental office buildings (excluding hospitals)
    g. Auto repair/tire shops, gas/vehicle service stations
    h. Gyms/health clubs or fitness studios
    i. Grocery stores and other local retail[3]

[3] Consistent with the Office of Land Use and Climate Innovation SB 743 Technical Advisory https://lci.ca.gov/docs/20190122-743_Technical_Advisory.pdf. A screening memorandum should be submitted providing justification for how the commercial use is "local serving."

j. Local serving assembly uses (places of worship, community organizations)
k. Local serving hotels
l. Assisted living facilities, senior housing

Mixed use projects with non-locally serving components would not be screened from further analysis. The ultimate determination of "local serving" will be made on a case-by-case basis by City staff.

4. **Affordable Housing Projects** – Affordable housing within existing communities generally improves the jobs-housing match, which lowers commutes and VMT. Furthermore, low-income households typically generate less VMT on a per-household basis. Based on guidance from LCI, 100% affordable residential development is presumed to have a less than significant transportation impact. For projects that are less than 100% affordable, each affordable unit shall be deemed to have no VMT generation. The remaining units shall be analyzed as traditional residential units.

Project applicants or their consultants/representatives wishing to screen their project from VMT assessment shall submit a VMT screening memorandum that explains how the proposed project satisfies one or more of the screening criteria. The City will review projects and determine if they can be screened from further VMT analysis. If a proposed project is found to not need a full VMT analysis to satisfy CEQA, an LOS Traffic Study may still be required.

Transportation Projects

Transportation projects that increase roadway capacity can alter trip patterns, trip length, and trip generation, increasing VMT (a phenomenon known as "induced demand"). Consistent with LCI guidelines, transportation projects that do not increase roadway capacity can be presumed to not have a significant transportation impact and can be screened from VMT assessment. Note that roadway widening projects that are consistent with the RTP/SCS or General Plan shall be considered less than significant subject to consideration of other substantial evidence.

If a project is not included in the RTP/SCS or General Plan, the City shall review proposed transportation project descriptions to determine if they satisfy one or more of the project types listed below:

- Roadway rehabilitation and maintenance
- Safety improvement projects and installation of roadside safety devices (median barriers, guardrails, etc.)
- Transportation System Management field elements (cameras, message signs, traffic signal improvements)
- Roadway shoulder enhancements, so long as they are not used as automobile travel lanes
- Addition of an auxiliary lane of less than one mile in length designed to improve roadway safety
- Installation, removal, or reconfiguration of intersection turning lanes, two-way left turn lanes, or emergency breakdown lanes. These lanes shall not be utilized as through lanes
- Addition of roadway capacity on local or collector streets (so long as the project also substantially improves conditions for pedestrians and cyclists)
- Conversion of general-purpose lanes to managed lanes or transit-only lanes
- Addition of transit-only lanes

- Reduction in the number of through lanes
- Grade separation of a roadway facility from rail, pedestrians, or bicyclists
- Installation, removal, or reconfiguration of traffic control devices (including traffic signals and traffic signal priority)
- Retiming of traffic signals
- Installation of roundabouts or traffic circles
- Installation of traffic calming devices
- Implementation of new transit service
- Conversion of streets from one-way to two-way operation with no net increase in the number of travel lanes
- Removal/relocation of off-street or on-street parking spaces
- Adoption/modification of on-street parking or loading restrictions (such as parking meters, time limits, accessible spaces, permit parking, etc.)
- Addition of new or enhanced bike and pedestrian facilities on existing streets or within existing public rights-of-way
- Addition of Class I bike paths, multi-use paths, or other off-road facilities that serve non-motorized travel
- Installation of publicly available EV charging infrastructure

Projects that do not conform to any of the project types listed above will be required to complete a full VMT assessment.

4.3 VMT Analysis for Non-Screened Projects

Land Use Projects

Projects not screened through the steps above or not exempt under CEQA will be required to complete a VMT analysis. This can be completed by forecasting VMT through the RIVCOM model to determine if they have a significant VMT impact. For projects with similar land use to adjacent parcels, the use of the VMT maps by TAZ (**Attachments B through D**) may be used to estimate a Project's VMT in lieu of a model run. The analysis methodology shall be confirmed during the Project scoping phase and shall include 'project generated VMT' and 'project effect on VMT' estimates for the project TAZ (or TAZs).

1. **Project generated VMT** is the sum of daily VMT of all vehicle trips, for all vehicle types and trip purposes, for all project land uses, divided by the service population (i.e., sum of residents plus employees, and in some cases, visitors/overnight guests) in the analysis area generating the VMT. Total project generated VMT is calculated by summing the "VMT from" and "VMT to" the project site (or a larger area when the project is a plan, such as a Specific Plan or General Plan). These calculations are usually performed using outputs from a travel forecasting model. For residential projects, VMT should be isolated to account for home-based VMT only. For non-residential projects, VMT may be isolated to account for home-based-work (commute) VMT only.
2. **Project's effect on VMT** is the total boundary VMT that occurs within a selected geographic boundary (e.g., City, County, or region) by any type of vehicle, for any trip purpose, and includes local trips as well as trips that pass through the area without stopping (such as regional freeway trips). The total boundary VMT captures the project's combined effect on

new VMT, shifting of existing VMT to/from other neighborhoods, and/or shifts in existing VMT to alternate travel routes or modes.

The following scenarios shall be evaluated in the VMT assessment:

- **Baseline Conditions** – Data is available in the RIVCOM model.
- **Baseline Plus Project** – The project land use must be incorporated into the RIVCOM model either by isolating it in its existing TAZ or by creating a new TAZ specifically for the project
    - A full base year model run must be performed, and changes in VMT should be evaluated both at the project TAZ level and across the entire model network
- **Cumulative No Project** – Data is available in the RIVCOM model.
- **Cumulative Plus Project** – The project land use must be incorporated into the RIVCOM model either by isolating it in its existing TAZ or by creating a new TAZ specifically for the project
    - If the project is substantial, the analysis should include a reallocation of equivalent land uses from other TAZs to avoid inflating regional growth assumptions
    - If reallocation is not performed, the methodology must clearly state this limitation and acknowledge that the VMT effects may be overestimated due to the additive approach

The model output should also include total VMT, which includes all vehicle trips and trip purposes and must include reasonableness checks, such as validation of trip production and attraction balancing, to ensure that the project's effect on VMT is accurately captured. It is incumbent upon the consultant to ensure that the VMT results are appropriate in terms of magnitude and direction of change.

In some cases, it may be appropriate to extract the "project generated" VMT using the production-attraction (P/A) trip matrix instead of the origin-destination trip matrix (e.g. pulling VMT from the model at a step when trips can be tracked by trip purpose). This may be appropriate when a project is entirely composed of retail or office uses and there is a need to isolate the home-based-work (HBW) VMT for the purposes of isolating commute VMT. For most projects in the City, and especially for "mixed use" (i.e. composed of both residential and retail/office uses) projects, "project generated" VMT should be extracted using the origin-destination method to provide consistency of reported VMT with the VMT used in the air quality, GHG, and energy sections of the environmental document. The City should evaluate the appropriate methodology based on the project land use types and context.

Transportation Projects

For transportation projects that increase roadway capacity and are not screened, a finding of a significant impact would be determined if the project results in a net increase in City-wide VMT using the "boundary" method compared to the General Plan Buildout conditions. Regional-scale transportation projects should also evaluate County-wide VMT changes.

VMT estimates for transportation projects on applicable facilities could utilize the National Center for Sustainable Transportation (NCST) California Induced Travel Calculator that estimates the percent change in VMT for every percent change in miles to the roadway system (known as "elasticity"). Consistent with LCI findings, an elasticity of 1.0 should be used on these facilities.[4] If the project is not on one of these facilities, the RIVCOM model should be utilized as it is the best available tool to

[4] An elasticity of 1.0 means that for every percent change in lane miles, there is an expected one percent increase in VMT.

evaluate facilities that are not consistent with these classifications. If NCST is applied, appropriate reductions to discount truck VMT should be incorporated and documented in the assessment.

If the proposed project is a new roadway, VMT should be estimated using the RIVCOM model to understand trip redistribution. Near term elasticities should be estimated by holding the HBW and HB-School trip matrices constant. Cumulative analysis should include full model runs. RIVCOM parameters, including number of iterations and convergence criteria should be modified by the consultant to minimize model "noise." Consultant shall be responsible in validating that the induced travel results are reasonable in both magnitude and direction of change.

Note that for transportation improvements within Caltrans right-of-way, it is required that the analysis of those improvements be consistent with Caltrans SB-743 analysis guidelines.

The roadway analysis should compare the VMT associated with the no project condition (e.g. General Plan Buildout) to the VMT associated once the project is completed. The increase in VMT would be considered a significant impact and would be subject to mitigation.

4.4 Mitigation

Projects that exceed the VMT threshold(s) are required to mitigate their VMT impact to the extent feasible. To mitigate VMT impacts, the following choices are available:

1. Modify the project description to reduce VMT generated by the project. This could include higher residential density, additional mixture of land uses, or a reduction in added lane miles
2. Implement transportation demand management (TDM) measures to reduce VMT generated by the project.
3. Participate in a VMT fee program and/or VMT mitigation exchange (if they exist) to reduce VMT from the project

TDM measures promote the use of non-automobile modes to/from the project site. Potential TDM measures and quantification formulas are documented in the California Air Pollution Control Officers Association *Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity* (CAPCOA Handbook). Projects may apply any of the VMT reduction measures outlined in the CAPCOA Handbook or identify project-specific VMT reduction measures.

Regional mitigation programs including the VMT mitigation toolbox currently[5] under development by the Coachella Valley Association of Governments (CVAG) may also be used. The City will assess the ability to use regional programs on a project-by-project basis once the mitigation toolbox is adopted by CVAG.

The availability, applicability, and effectiveness of VMT mitigation measures will vary based on project type, location, and post-construction operations. When VMT mitigation measures are selected for a project, the analyst should consider these and other aspects and adjust the expected VMT reduction to align with project-specific conditions. The City may determine on a case-by-case basis that certain VMT reduction measures may not be feasible for a specific project and/or that ongoing monitoring may be required.

[5] As of June 2025

Projects that do not mitigate their VMT to below the City threshold would result in a significant and unavoidable transportation impact which would require a full environmental impact report with a statement of overriding considerations.

5. Level of Service (LOS) Analysis – Non-CEQA Assessment

While no longer considered a CEQA impact, the City of Palm Desert requires that land use and transportation projects conduct a LOS traffic assessment to understand if a project will deteriorate traffic conditions on the City's roadways and identify potential improvements that would improve traffic operations.

Preparation of the LOS report is the responsibility of the project applicant and must be prepared by a qualified professional. Prior to beginning the LOS analysis, the applicant shall submit a scoping agreement (see Section 3) which documents the trip generation, trip distribution, and study methodology, including identifying study intersections and roadway segments. The City may request a meeting with the applicant and/or preparer of the LOS report to discuss the methodology prior to initiating work on the analysis.

5.1 Types of Studies

Projects generating greater than 100 net new peak hour trips are required to complete a full LOS assessment.

Projects generating 50-100 net new peak hour trips or having fewer peak hour trips than the previous existing or approved land use may complete a focused transportation study in lieu of a full LOS assessment. The focused transportation study should include the following:

- Project Description – this includes the project location, project size, existing and proposed land use, site plan, and proposed opening year
- Project Trip Generation and Distribution – this should include a table with daily and peak hour trip generation estimates and figure(s) detailing trip distribution.
- Project Frontage Operations Assessment –LOS intersection analysis of project access intersections for the following scenarios only:
    - Existing Conditions
    - Opening Year No Project
    - Opening Year Plus Project
- Site Access Analysis – refer to Section 5.6

5.2 Scope of LOS Study

Study Area Boundaries

The minimum area to be studied shall include any intersection of two or more "collector" or higher classification streets, at which the proposed project will add 50 or more peak hour trips, not exceeding a five-mile radius from the project site. The Public Works Department may require deviation from these requirements based on the location and their discretion. Roadway segments classified as arterials adjacent to the project frontage shall also be evaluated.

The list of study intersections and roadway segments shall be confirmed with the City Engineer during the scoping agreement process.

Analysis Scenarios

The following study scenarios shall be included for roadway and intersection capacity analysis:

1. **Existing Conditions**– Existing traffic will be counted to determine current conditions. Traffic count data shall be new or less than two years old.
2. **Opening Year No Project.** Existing traffic volumes should be adjusted using growth rates proposed by the developer's consultant and accepted by the City. For intersections outside of the City, the growth rate shall be approved by the affected jurisdiction. Typically, the growth rate can be derived from the regional travel demand model using linear growth assumptions. Background traffic should also include a manual assignment of all approved development projects that are within a two-mile radius of the project.
3. **Opening Year Plus Project.** Opening Year No Project volumes from Scenario 2 plus project trip assignment for the opening year. In some cases, the project trip assignment will vary between opening year and future year.
4. **Horizon Year No Project Conditions**– This represents traffic conditions at an identified horizon year (typically coinciding with the forecast horizon year of the RIVCOM travel demand forecasting model).
5. **Horizon Year plus Project Conditions**– Project traffic added to Scenario 4 identified above (Horizon Year No Project).

Depending on project conditions and phasing, the City may require additional analysis scenarios be studied.

Study Periods

The transportation study shall include at least the following commute periods:

1. Morning (7:00 AM to 9:00 AM)
2. Afternoon (3:00 PM to 6:00 PM)

Midday and school-release peak hours, other peak hours, off-peak hours, weekend, or special event periods may also be required based on the project location and type of use or as directed by the Public Works Department.

5.3 Data Collection

Data for existing traffic conditions shall be collected for the project using the following guidelines:

- Peak period turning movement counts at all study intersections and/or driveways, including bicycle and pedestrian counts at intersections
- 24-hour daily traffic for all study roadway segments including vehicle classification counts in areas with a high percentage of truck use
- Traffic counts shall not be used if more than two years old
- Traffic data shall be collected between November through April to account for traffic during the peak season
- Traffic counts shall be collected on Tuesdays, Wednesdays, or Thursdays, unless other study periods are also warranted (e.g. weekend)
- Traffic data shall not be collected on weeks that include a holiday and non-school session time period unless approved by the Public Works Department

- For congested conditions, back of queue estimates by approach (and turning movement) should be conducted every fifteen minutes

Count data shall be included in the study appendices.

5.4 Project Characteristics

Trip Generation

Trip generation shall be estimated using the latest edition of the Institute of Transportation Engineers' (ITE) Trip Generation Manual unless otherwise directed by the City. In accordance with the City's General Plan, all truck trips from industrial, warehouse and some retail commercial site shall be converted into Passenger Car Equivalents (PCE) for the capacity analysis. The proposed trip generation shall be listed in the scoping agreement for review and approval by the Public Works Department.

Trip Distribution

The project trip distribution should represent travel patterns representative of the project during the study peak scenarios. The project team should justify the proposed trip distribution with project data, typical commute patterns, and in some cases origin-destination data or a select-zone analysis using the latest travel demand forecasting model[6] or big data source may be appropriate. The proposed trip distribution shall be listed in the scoping agreement for review and approval by the Public Works Department.

The trip distribution may be further refined, after consultation with the Public Works Department, based on consideration of the following factors:

- Type of proposed development
- Location and intensity of development
- Conditions on the roadway network in the vicinity
- Similar land use in the vicinity
- Truck route system
- As directed by the Public Works Department

Trip Assignment

Generally, project trips are expected to be manually assigned to the study area using the approved trip generation and trip distribution. For larger projects, the travel demand forecasting model may be used to account for redistribution. This type of assignment should be specified in the scoping agreement and approved by the Public Works Department.

[6] At the time these guidelines were published, the most appropriate travel demand forecasting model for use in City of Palm Desert and Riverside County is the Riverside County Model (RIVCOM). However, the appropriate travel demand model should be verified in the scoping agreement.

5.5 Traffic Analysis Methodology

Traffic Forecasting

The latest version of the Riverside County Travel Demand Model (RIVCOM) consistent with the most recent Southern California Association of Governments Regional Transportation Plan and Sustainable Communities Strategy (SCAG RTP/SCS) is recommended for traffic forecasting efforts in City of Palm Desert. The model version should be identified in the scoping agreement. The model should be reviewed to confirm that all pending and approved development projects that could affect the project study area are accounted for in the model. The list of appropriate development projects shall be obtained from the City planning department, and coordinating with neighboring jurisdictions may also be required.

Opening Year base traffic volumes shall be derived from interpolating straight line growth rate between the existing and Future Year traffic volumes from the travel demand forecasting model[7]. The growth rate should be identified in the transportation study.

Future Year traffic volumes shall be derived from the updated model by applying growth from the base to future models to the traffic counts, also known as the Difference method. Other forecasting methods may be appropriate, but should be documented.

Intersection Analysis

Intersection analysis shall be conducted utilizing the current edition of the Transportation Research Board, Highway Capacity Manual (HCM) methodology. Closely spaced intersections are to be analyzed using analysis tools capable of accounting for turn lane storage, queue length, blockage, etc. such the Synchro software package. Any other software should be confirmed through the scoping agreement.

Traffic signal timing data shall be provided by the City (or appropriate jurisdiction if traffic signal is not operated by the City) and incorporated into the existing and opening-year analyses. Traffic signal splits should be optimized for future year analyses or if substantial changes are made at a study intersection in the opening year.

Peak hour factor should be collected in the field and utilized in the existing and opening-year analyses. In cases where traffic is added from a significant number of cumulative projects, the consultant shall use their engineering judgement in the application of peak hour factors to maintain consistency with the existing conditions analyses. A peak hour factor of 0.95 shall be applied to buildout traffic conditions, except in locations where using the observed peak hour factor may be more appropriate (e.g. adjacent to a school).

The following input parameters shall be put in place for signalized intersection analysis:

- **Base Saturation Flow Rate**– 1900 pc/hr/ln.
- **Heavy Vehicle Factor**– Determine the percentage of heavy vehicles in existing traffic stream based on count data or consultation with the Public Works Department. Truck intensive

[7] For small projects (generate fewer than 100 gross peak hour trips) and focused TIAs, a two percent annual growth rate can be used as approved by the Public Works Department.

development projects must convert project trips to passenger car equivalents (PCE=2 for medium duty vehicles, PCE=3 for heavy duty vehicles).

- **Grade**– Include as appropriate.
- **Protected Left Turn Phasing**– Add for future year scenarios when left turn volume > 240 vph.
- **Minimum Green Time**– Seven seconds each movement in areas of light pedestrian activity. In areas of heavy pedestrian activity, the minimum green shall be calculated based on the methodology in the HCM.
- **Cycle Length**– 60 seconds to 120 seconds.

The City utilizes the following intersection LOS thresholds:

- LOS D or better shall be maintained for all roadway intersections
- LOS E will be permitted for intersections in the Downtown Area (see **Figure 1**).

See **Table 2** for descriptions of LOS grades and thresholds.

Table 2: Intersection LOS Criteria

Level of Service	Description	Signalized Delay (Seconds)	Unsignalized Delay (Seconds)
A	Operations with very low delay occurring with favorable progression and/or short cycle length.	≤ 10.0	≤ 10.0
B	Operations with low delay occurring with good progression and/or short cycle lengths.	> 10.0 to 20.0	>10.0 to 15.0
C	Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	> 20.0 to 35.0	>15.0 to 25.0
D	Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop and individual cycle failures are noticeable.	> 35.0 to 55.0	>25.0 to 35.0
E	Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences.	> 55.0 to 80.0	>35.0 to 50.0
F	Operation with delays unacceptable to most drivers occurring due to over saturation, poor progression, or very long cycle lengths.	> 80.0	>50.0

Source: Highway Capacity Manual, 7th Edition, 2022.

Roadway Segment Analysis

Roadway segment analysis is to be performed by analyzing vehicle-to-capacity (V/C) ratios which compare the Average Daily Traffic (ADT) projected for a segment with the maximum capacity the road can provide. The available roadway capacity depends on the functional classification and number of vehicle lanes provided and is consistent with current HCM methodology (see **Table 3** below).

Table 3: Maximum Daily Motor Vehicle Volumes

Roadway Classification	Number of Lanes	Maximum Acceptable Volume[1]
Enhanced Arterial	6	48,900
Vehicle Oriented Arterial	6	48,900
	4	34,100
Balanced Arterial	4	34,100
Enhanced Secondary Roadway	4	34,100
	2	17,900
Secondary Street	4	34,100
	2	17,900
Collector Street	2	17,900
Downtown Collector	2	17,900
El Paseo[1]	4	26,000

Note:
1. Reduced capacity on El Paseo due to high pedestrian activity and on-street parking turnover. Volume represents the capacity from when LOS D transitions to LOS E.

Source: City of Palm Desert, 2025.

The City utilizes an LOS D threshold for roadway segments. See **Table 4** for roadway segment LOS thresholds.

Table 4: Roadway Segment Level of Service Thresholds

Level of Service	Volume-to-Capacity (V/C) Ratio
A	≤0.6
B	0.61–0.7
C	0.71–0.8
D	0.81–0.9
E	0.91–1.0
F	>1.0

Source: Highway Capacity Manual, 7th Edition, 2022.

5.6 Site Access Analysis

Traffic Signal Warrant Analysis

A traffic signal warrant analysis should be performed at all unsignalized study intersections forecasted to operate at LOS E or worse for any study scenario as part of the traffic impact analysis. Warrant analysis should utilize the most appropriate of the eight warrants listed in Section 4 of the latest edition of the California Manual on Uniform Traffic Control Devices (CA MUTCD).

The need for traffic signals should also include an analysis for Warrant 6 (Coordinated Signal Systems). This warrant should be applied to locations where adjacent traffic signals do not provide the necessary degree of platooning and where the addition of a new traffic signal will assist in providing progressive signal operation. Normally, this should be considered only at locations that are between 1,300 and 2,600 feet from existing or future traffic signal installations. At locations that are less than 1,300 feet from adjacent traffic signals, new traffic signals will not generally be permitted.

Where applicable, the need for traffic signals should also include an analysis for Warrant 8 (Roadway Network). The signal warrant may be met by an intersection that has a total existing or immediately projected entering volume of at least 1,000 vehicles per hour during the peak hour of a typical weekday or has a total existing or immediately projected entering volume of at least 1,000 vehicles per hour for each of any 5 hours of a non-normal business day (Saturday or Sunday).

If a signal warrant is satisfied, the assessment should not default to recommending a traffic signal at the location; rather, the analyst should identify the best traffic control solution at this location accounting for other factors (such as safety, traffic progression, parcel accessibility, roadway speeds, etc.).

Site Access and Parking Analysis

During the scoping agreement process, the City will identify potential site access considerations that should be analyzed as part of the transportation study. The following analyses may be required (not exhaustive):

1. **Intersection Sight Distance**– All on-site intersections, project access driveways or streets to public roadways should provide adequate sight distance.
2. **Driveway Length and Gated Entrance**– Primary project driveways should have a throat of sufficient length to allow vehicles to enter the project area without causing subsequent vehicles to back up into the public street system.
3. **Limit Driveway Impacts**– Driveway and local street access on arterial streets should be limited to minimize the impacts on arterial streets. Driveways should be located to maintain a reasonable distance from an adjacent intersection and/or driveway. Whenever possible, driveways should be consolidated with adjacent properties (e.g. implement access management to reduce conflict points and improve safety). When proposed driveways are located across from an existing driveway, the centerlines of the driveways should be aligned with each other
4. **Corner Clearance**– A driveway should be a sufficient distance from a signalized intersection so that right-turn egress movements do not interfere with the right-turn queue at the intersection. In addition, every effort should be made to provide right-turn egress movements with sufficient distance to enter the left-turn pocket at the adjacent intersection.
5. **Right Turn Lanes at Driveways**– If the project right turn peak hour volume is 50 or more vehicles, a right-turn deceleration lane should be reviewed for appropriateness on all driveways accessing major arterial and secondary streets. The length of the right turn lane should be sufficient to allow a vehicle traveling at the posted speed to decelerate before entering the driveway as outlined in the Caltrans Highway Design Manual.
6. **On-Site Circulation**– Strategies should be identified to manage speeds on long drive aisles, improve connectivity, and circulation on-site.

7. **Bicycle and Pedestrian Access**- Ensuring pedestrians, bicyclists, and other non-auto users can safely access the site and managing conflicts between vehicles and other road users
8. **Parking**- Adequate parking supply should be provided on-site according to City standards. Shared parking between land uses and other parking considerations (e.g. on-street parking) may be evaluated as needed.

5.7 Project Fair Share

In cases where a project contributes to an existing or anticipated LOS deficiency, the City may require the project to pay a fair share contribution toward the cost of needed improvements. Fair share for intersection improvements shall be calculated as the ratio of the increase in peak hour turning movement volumes from the project divided by the total forecasted growth in peak hour turning movements.

$$Fair\ Share\ \% = \frac{Project\ Peak\ Hour\ Trips}{Future\ Total\ Peak\ Hour\ Trips - Existing\ Peak\ Hour\ Trips} \times 100$$

Fair share for street segments shall be calculated as the ratio of the increase in average daily trips from the project divided by the growth in average daily traffic.

Fair share cost of mitigation shall be calculated using the Project Fair Share percentage (P) multiplied by the total cost of mitigation. Site access improvements should be

6. Safety and Multimodal Operations Assessment

6.1 Safety Assessment

The purpose of this assessment is to document potential deficiencies to roadway safety generated by a Project's added traffic. This assessment is required for projects that generate 100 or more net new peak hour trips as an additional component to the full LOS assessment.

Existing Conditions Review

5-year historical crash data shall be collected for all study intersections and roadway segments, including information on injuries and fatalities. This data should also include crash rates, evaluated on a per million vehicle miles traveled basis. Collision data should be collected using the California Crash Reporting System (CCRS) database maintained by the California Highway Patrol.

Intersection and roadway safety data reported in the City's latest Local Road Safety Plan (LRSP) should also be documented, including the local critical crash rate (CCR) differential.[8]

Project Assessment

The safety assessment should analyze and document the following:

- Expected changes in multimodal volumes at study intersections and roadway segments that would be caused by the project
- Proposed physical modifications to the roadway system including new driveway points, intersection modifications, etc.
- Potential for geometric design hazards or other safety concerns including inadequate sight distance, driveway spacing, and on-street queueing
- Quantify number of new vehicle conflict points introduced, including unprotected or unsignalized vehicle conflict points
- Discussion on conformance to current design standards outlined in the Caltrans Highway Design Manual (HDM) and City Standard Plans.

Mitigation

Projects that add at least 50 net new peak hour vehicle trips to a roadway segment or intersection that was identified in the LRSP with a positive CCR differential shall document potential safety countermeasures. The City may require the project to pay a fair share contribution toward the cost of needed improvements, based on the same formula provided in Section 5.7.

[8] The Critical Crash Rate (CCR) compares the observed crash rate to the expected crash rate at a particular location based on facility type and volume using a locally calculated average crash rate for the specific type of intersection or roadway segment being analyzed. A positive CCR differential indicates that the observed crash rate is higher than the expected crash rate.

6.2 Multimodal Operations Assessment

All projects subject to a full transportation study or a focused transportation study should complete the checklist in **Table 5** to demonstrate sufficient multimodal accessibility:

Table 5: Multimodal Operations Assessment Checklist

Study Element	Evaluation Criteria	Documentation
Parking	Compare the project parking plan with City standards and expected demand. Justify how the development will make use of shared on-site parking, if applicable.	Table comparing parking supply with minimum requirements and demand
On-Site Circulation	Review and evaluate site access locations, turning radii, emergency access, and other site characteristics with respect to operations and safety for all modes of transportation. The City may require other analyses based on specific uses (e.g. drive-thru queueing). School transportation studies will require an on-site circulation plan based on their preferred routes to the school.	Annotated site plan with information on access and circulation. Figures with truck turning templates may be requested.
Driveways	Indicate whether driveways are proposed on or adjacent to the following facilities: • High-injury networks • High-pedestrian activity zones (>50 pedestrians/hour) • Existing or planned Class IV cycle tracks • Major transit stops Driveways are not prohibited on these streets; however, they should be avoided when possible and prioritize safety and movement of people walking, bicycling, and riding transit when avoidance is infeasible. Driveways should be located on minor streets or consolidated when possible. Driveway width shall be minimized to reduce the exposure of people crossing the driveway. Indicate whether the project meets the City's driveway standards as specified in the City's Standard Plans.	Brief discussion on project driveway locations and confirmation that driveways meet City driveway standards.
Pedestrian Facilities	Pedestrian access routes and pedestrian site access points shall be identified and conflicts between vehicles and pedestrians along these routes should be minimized. Identify any existing or planned pedestrian facilities that may be affected by the project	Map with pedestrian access points and routes.

Study Element	Evaluation Criteria	Documentation
Bicycle Facilities	Projects shall accommodate planned bicycle projects as specified in the City's General Plan. Indicate whether there are any existing or planned bicycle facilities through or adjacent to the project site and whether the project accommodates access to these facilities. Bicycle access routes and bicycle site access points shall be identified and conflicts between vehicles and bicyclists along these routes should be minimized. Where possible bicycle access routes should be on streets with adequate bicycle facilities.	Map with bicycle access points and routes.
Transit	Identify any existing or planned transit facilities that may be affected by the project. For projects within one-half mile of a transit stop (as the crow flies), indicate the pathway to transit and whether it meets Americans with Disability Act standards. Bus turnouts – Coordinate potential bus stop locations on arterial streets adjacent to the proposed project site with SunLine Transit Agency. Provide bus turnouts for each of the identified bus stop locations.	Map with transit access routes and adjacent stop(s), if applicable
Trucks (or Other Large Vehicles)	For relevant industrial projects, identify the number of truck trips that will be generated and design facilities necessary to accommodate these trucks.	Truck trip generation table
Passenger Loading and Pick-up/Drop-off	For projects that may have a large concentration of pick-up/drop-off activity, the project site circulation and pick-up/drop-off areas must be reviewed to ensure sufficient passenger/freight loading space and circulation routes are provided. Modifications to the site circulation and/or pick-up/drop-off may be recommended. This analysis should include a discussion of transportation network companies (TNC) activity as appropriate.	Map with passenger pick-up/drop-off routes and loading/unloading areas. A vehicle queueing and storage assessment may be required.
Other Issues	The City may require review of other issues on a case-by-case basis (e.g., construction deficiencies, queuing between closely spaced intersections, emergency access, special event traffic).	To be determined by City staff.

Attachment A: Transportation Study Scoping Form

SCOPING AGREEMENT FOR TRAFFIC IMPACT STUDY

This agreement acknowledges the City of Palm Desert requirements for traffic impact analysis of the following project. The analysis must follow Riverside County Transportation Analysis Guidelines for Level of Service Vehicle Miles Traveled dated December 2020 and subsequent revisions.

Case No.: _____
Other Related Cases: _____
Project Name: _____
Assessor's Parcel Number(s): _____
Project Description: _____
_____

	Consultant	Developer
Name:	_____	_____
Address:	_____	_____
Telephone:	_____	_____
Email:	_____	_____

A. Trip Generation Source: (ITE Current Edition)

Current GP Land Use: _____ Proposed Land Use: _____
Current Zoning: _____ Proposed Zoning: _____

	Current Trip Generation				Proposed Trip Generation		
	In	Out	Total		In	Out	Total
AM Trips	_____	_____	_____		_____	_____	_____
PM Trips	_____	_____	_____		_____	_____	_____

Internal Trip Allowance: ___ Yes ___ No (_____ % Trip Discount)
Pass-by Trip Allowance: ___ Yes ___ No (_____ % Trip Discount)

A pass-by trip discount of 25% is allowed for appropriate land uses. The pass-by trips at adjacent study area intersections and project driveways shall be indicated on a report figure.

Additional Information (Include attachments as needed): _____
_____
_____
_____
_____
_____

B. Trip Geographic Distribution: N ____ % S ____ % E ____ % W ____ %
(attach exhibit for detailed assignment)

C. Background Traffic:
Project Build-out Year: _____
Annual Ambient Growth Rate: _____
Phase Year(s): _____
Other area projects to be analyzed: _____
Model/Forecast methodology: _____

D. Study intersections: (*NOTE: Subject to revision after other projects, trip generation/distribution are determined, or comments from other agencies. Map is required. In general, the minimum area to be studied shall include any intersection of 2 or more "Collector" or higher classification streets, at which the proposed project will add 50 or more peak hour trips, not exceeding a 5-mile radius from the project site. The Public Works Department may require deviation from these requirements based on the location.)*

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____

E. Study Roadway Segments: (*NOTE: Subject to revision after other projects, trip generation/distribution are determined, or comments from other agencies. Map is required. In general, the minimum area to be studied shall include any intersection of 2 or more "Collector" or higher classification streets, at which the proposed project will add 50 or more peak hour trips, not exceeding a 5-mile radius from the project site. The Public Works Department may require deviation from these requirements based on the location.)*

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____

F. Other Jurisdictional Impacts:
Is this project within a one-mile radius of City boundaries? ___ Yes ___ No
If so, name of City jurisdiction: _____

G. Site Plan (Please attach reduced copy)

H. Existing Conditions: *(Traffic count data must be less than 2 years old. Provide traffic count dates if using other than 2-year-old counts.* U*nless otherwise approved by the City Engineer, counts shall be performed during 7-9 a.m. and 4-6 p.m., midday when nearby schools". Seasonal peak factor may be required to be applied to counts taken during the offseason in the Coachella Valley.)*

Date(s) of traffic counts: _____

I. Specific issues to be addressed in the Study (in addition to the standard analysis described in the Guideline) (To be filled out by City)

(NOTE: If the traffic study states that "a traffic signal is/appears to be warranted" (or similar statement) at an existing unsignalized other specific items to be addressed under existing conditions, 8-hour approach traffic volume information must be submitted in addition to the peak hourly turning movement counts for that intersection. Specific items to be addressed are warrant analysis, site access, on-site circulation, parking, consistency with plans supporting bicycles, pedestrians, and transit, and others. Attach proposed analysis scenarios (years plus proposed forecasting approach) and attach a proposed phasing approach if the project is phased.)

Recommended by: **Approved Scoping Agreement:**

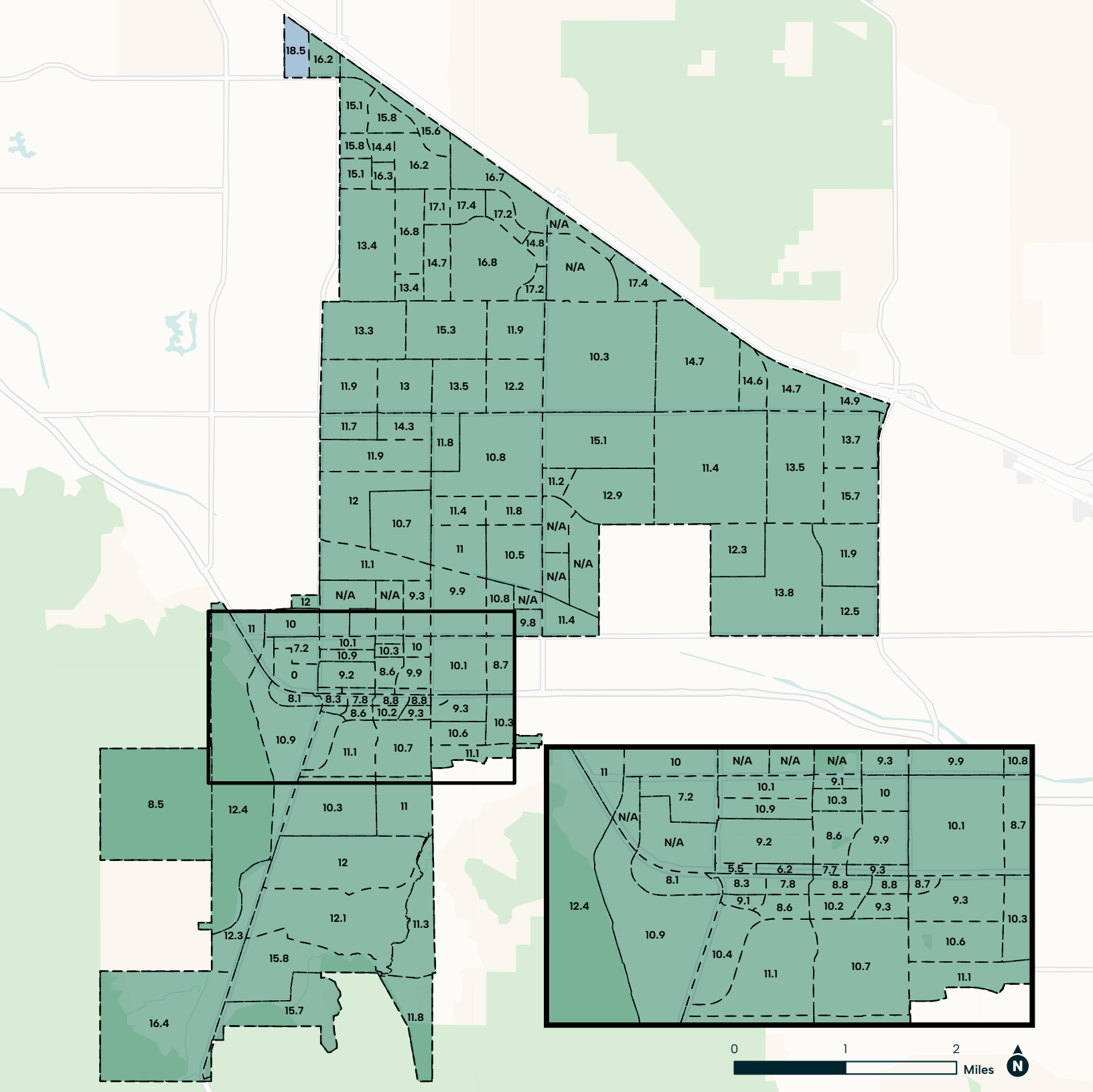
Consultant's Representative	Date	Department of Development Services	Date
		Department of Public Works	Date

Scoping Agreement Submitted on: _____ Revised on: _____

The City of Palm Desert reserves the right to use, share, and reproduce the information including, but not limited to, traffic counts, exhibits, and surveys provided in all submitted traffic studies and VMT assessments. Changes to the scope of work, site occupancy or use, square footage, and/or permitted activities may require a resubmittal or amendment to the scoping agreement.

NOTE* Traffic Study Submittal Form and the appropriate fee must be submitted with, or prior to the submittal of this form. Department of Development Services staff will not process the Scoping Agreement prior to receipt of the fee.

Attachments B–D: Low VMT Zones



TAZs labeled N/A do not have Residents, therefore no HB VMT/Resident.

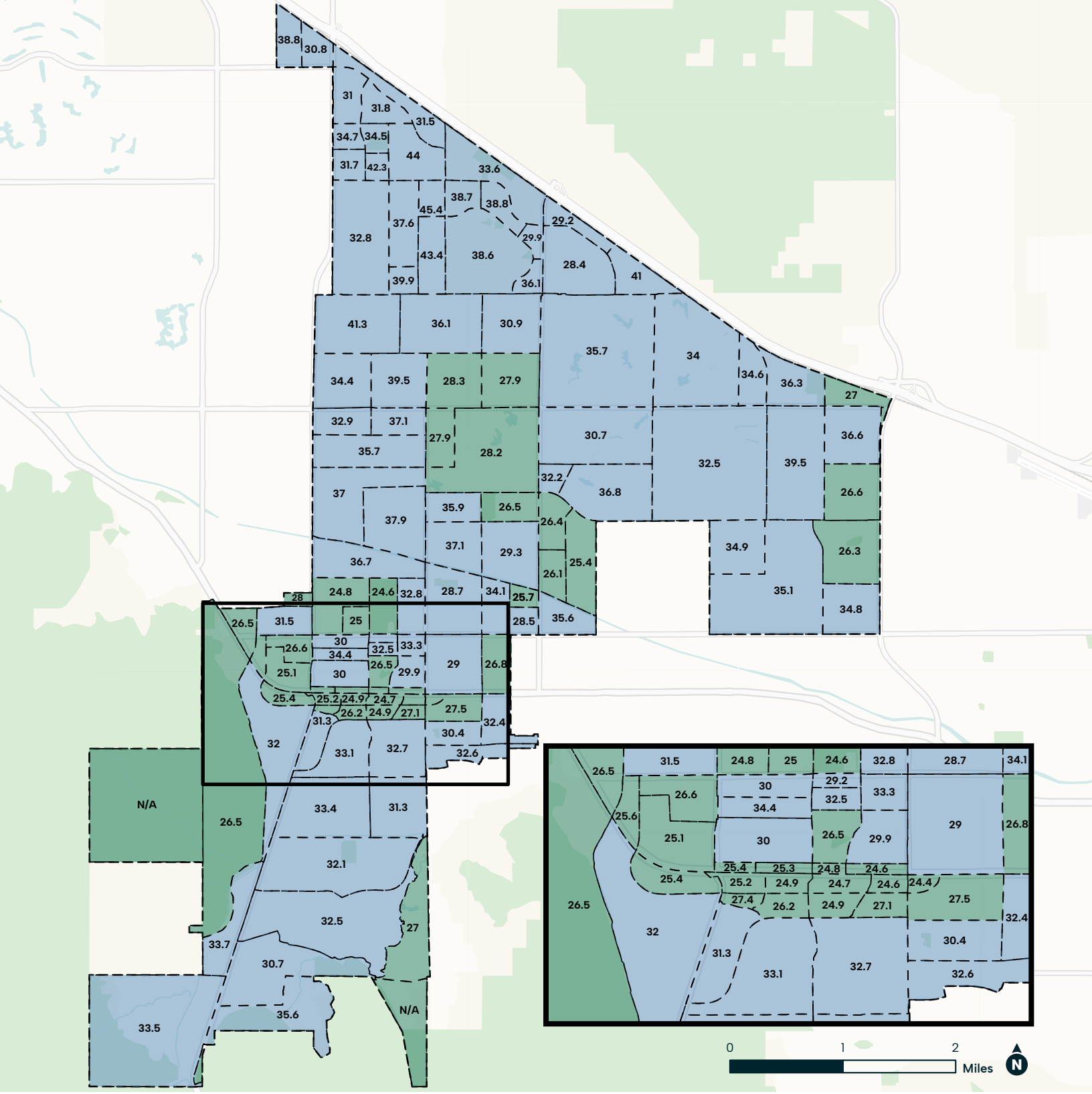
HB VMT/Res by TAZ

- Below County Average (<18.2)
- Above County Average (>18.2)
- City Boundary

ATTACHMENT B

2040 HB (Production) VMT per Resident by TAZ

Fehr & Peers



TAZs labeled N/A do not have Employees, therefore no HBW VMT/Employee.

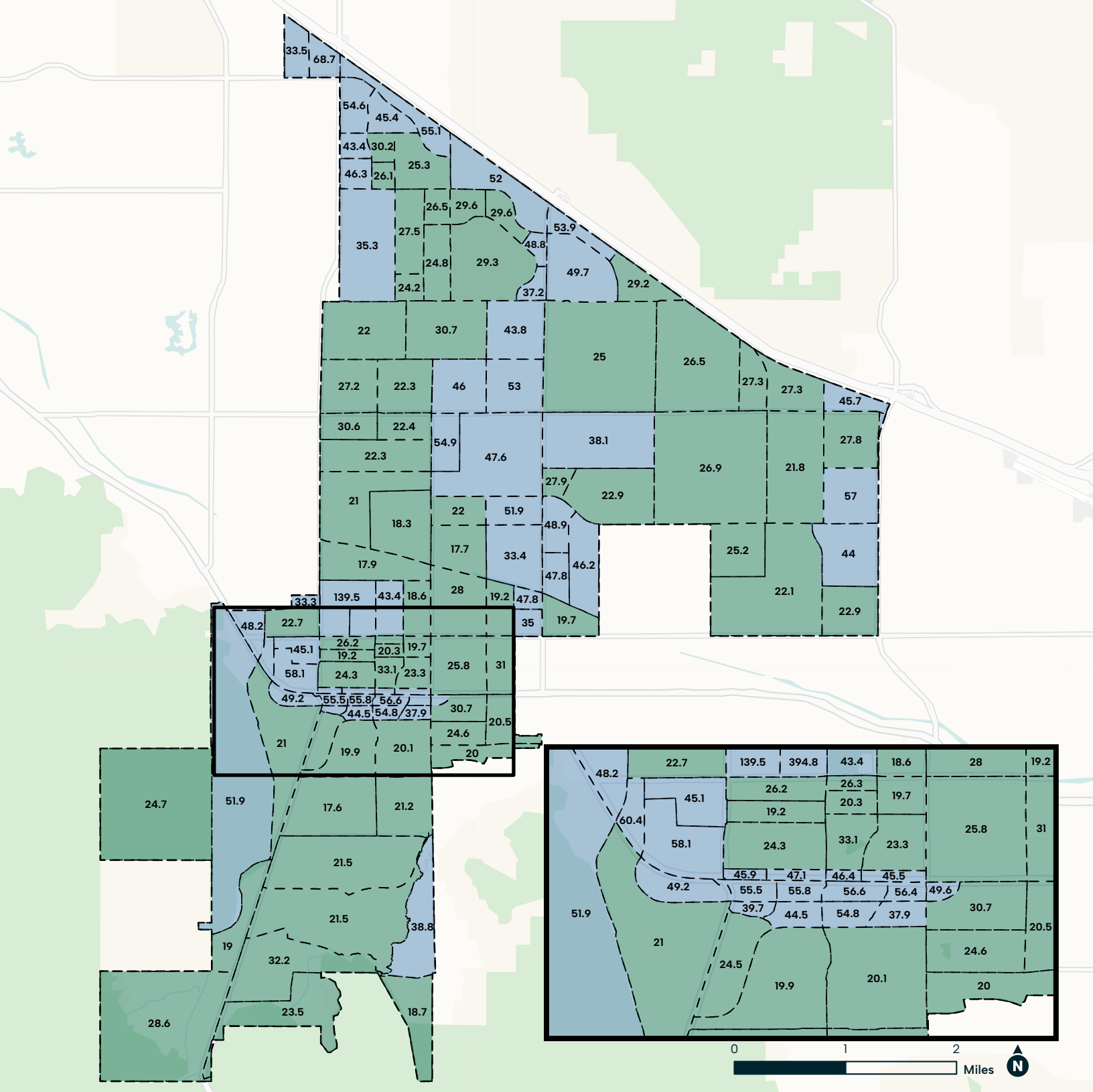
HBW VMT/Emp by TAZ

- Below County Average (<28.3)
- Above County Average (>28.3)
- City Boundary

ATTACHMENT C

2040 HBW (Attraction) VMT per Employee by TAZ

Fehr & Peers



ATTACHMENT D

2040 OD VMT per Service Population by TAZ

Fehr & Peers