

# San Diego Mobility Evaluation Tool (MET): User Guide - DRAFT

Prepared for:  
City of San Diego

# Table of Contents

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<b>Introduction</b> .....	<b>1</b>
<b>What Does the MET Do?</b> .....	<b>2</b>
<b>Limitations of the MET</b> .....	<b>4</b>
<b>How to use MET</b> .....	<b>5</b>
Welcome Page .....	5
Select Project Area.....	6
Select Parcels.....	6
Project Information Form (PIF) .....	7
Project Information .....	7
Preliminary Screening Criteria .....	9
VMT Impact Table .....	9
VMT Reduction Calculator.....	10
Mobility Choices Ordinance Tracking.....	13
<b>Reading the Report</b> .....	<b>14</b>
<b>For More Information</b> .....	<b>15</b>

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# Introduction

The City of San Diego developed a Mobility Evaluation Tool (MET) to conduct vehicle miles traveled (VMT) screening<sup>1</sup>, VMT reduction analysis, and Complete Communities Mobility Choices VMT Reduction Measures tracking for land use projects in the City of San Diego. The MET is publicly available, meaning members of the public, technical analysts, other consultants, and staff can access the MET. The MET covers all parcels that fall within the City of San Diego's jurisdictional boundary. The demo version of the MET can be accessed at:

<https://webmaps.sandiego.gov/MET>

The MET assists users in compliance with:

- Land Development Manual Transportation Study Manual (TSM)
- Complete Communities Mobility Choices Regulations

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<sup>1</sup> The concept of project screening is that some projects have characteristics that readily lead to the conclusion that they would not cause a VMT impact, and therefore could be screened out of doing a detailed VMT analysis. For a complete list of Screening Criteria, please see City of San Diego Land Development Manual: Transportation Study Manual (TSM).



# What Does the MET Do?

The MET performs multiple functions as follows:

- Provides parcel-level information including:
  - Assessor Parcel Number (APN)
  - Complete Communities: Mobility Choices Mobility Zone number
  - SANDAG Master Geographic Reference Area (MGRA) zone
  - SANDAG Traffic Analysis Zone (TAZ)
  - Census Tract ID
  - Locational Context (Urban, Suburban, and Rural)<sup>2</sup>
  - 2035 Transit Priority Area (TPA) based on current SANDAG Regional Plan
  - City of San Diego Community Plan Area (CPA)
  - VMT/Capita and VMT/Employee according to current SANDAG Regional Travel Model.
- Provides a semi-automated screening tool based on user input and guidance provided in the City of San Diego Transportation Study Manual (TSM).
- Provides preliminary VMT information using the current SANDAG ABM 2+ Travel Demand Model outputs.
- Estimates VMT reductions based on methods described in the *Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity (2021 CAPCOA GHG Handbook)* for use in VMT analysis and to determine the VMT inputs for the Active Transportation In-Lieu Fee (for Mobility Zone 4 projects).
- Provides tracking of Complete Communities Mobility Choices VMT Reduction Measures for Zone 2 and Zone 3 projects.

The types of land use projects addressed by the MET include the following:

- Residential
- Commercial Employment
- Industrial Employment
- Retail, Public Facility, or Recreational Project
- Mixed-Use projects containing the above land uses

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<sup>2</sup> Locational context is used as a variable input to some of the travel demand management measures acknowledging that some measures are more effective in urban environments as compared to suburban or rural environments.



Four separate modules are contained in the MET:

- **Project Area Selection** – The module allows the user to select parcels within the City of San Diego boundary and provide parcel level data including APN, Mobility Zone, MGRA Zone, TAZ, Census Tract, Locational Context, TPA, and CPA of each selected parcel. The information is used in the next module for the screening process and VMT impact calculations.
- **Project Information Form (PIF)** – The PIF component in the MET is a semi-automated version of the PIF document found in Appendix A of the TSM. Based on the user-selected parcels and input, the PIF module populates information in the preliminary screening criteria to the extent possible and identifies screened-out land uses. The PIF module also includes a VMT table that determines the VMT impact for land uses that are not screened out based on the outputs from the SANDAG Regional Travel Model. The applicant has the option to overwrite the project's estimated VMT metrics but will be required to provide backup documentation to support the need to change default values such as SANDAG model run outputs.
- **VMT Reduction Calculator** – For land use types that are not screened out and the project-generated VMT metric is calculated to be higher than the required threshold, the applicant has the option to use a select number of VMT reduction measures identified in the VMT Reduction Calculator page to reduce the VMT impact. Some of the input variables for measures provided in the VMT Reduction Calculator are prepopulated based on the local data.
- **Mobility Choice Ordinance Tracking** – The component is only applicable to projects located in Mobility Zone 2 and 3. The module allows the applicant to track the number of points required in each zone to comply with the Mobility Choices Regulations as provided in San Diego Municipal Code (SDMC) section 143.1103(b)(1) or (b)(2).

The backend of this web application is powered by ESRI's GIS architecture and includes a Python-based geoprocessing service and JavaScript-based interface. The results can be exported to PDF, which can be printed out and used as documentation of the results and may be attached to a technical memo, report, or contract.



# Limitations of the MET

The MET is limited to providing estimates based on all the existing land uses included in the SANDAG regional travel demand model. Certain project types may require separate SANDAG model runs to determine the VMT impact.

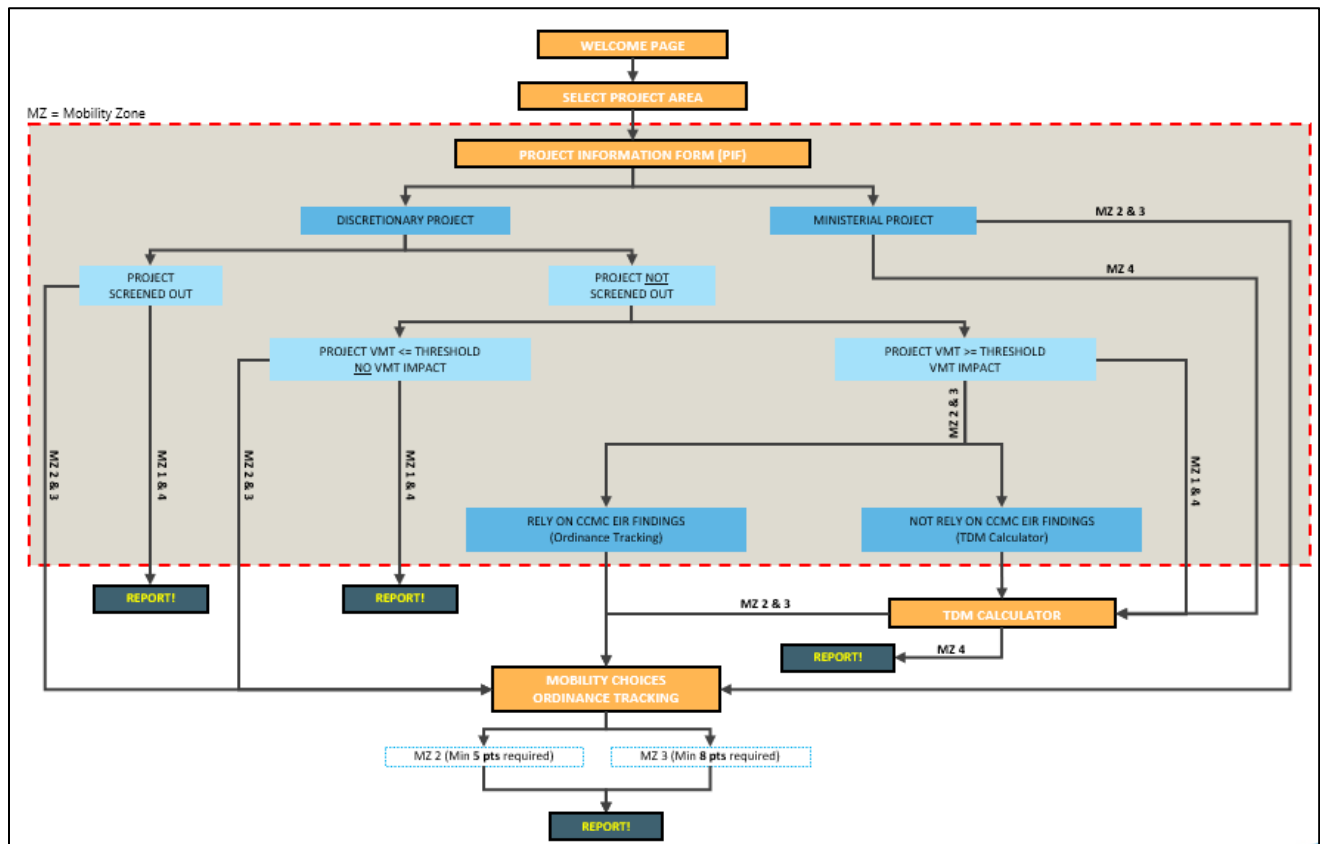
The MET does not allow users to select parcels from multiple census tracts. In such cases, the tool may be used separately for each group of parcels that fall in the same census tract. However, the approach must be reviewed and deemed appropriate by the City of San Diego.

The MET does not save the user inputs. If the tool is closed, all user inputs are erased. The user may use the output report to re-create an analysis in the tool by inputting all the information.



# How to use MET

The following flowchart shows the MET tool workflow. A step-by-step guide to performing a screening and VMT reduction analysis in the MET is described in the next section.




## Welcome Page



When opening the MET, a welcome page will pop up including a description of the tool and a quick start guide. Navigate through the pages using the "Next" **NEXT** and "Back" **BACK**. The pop-up window will close after the last page.



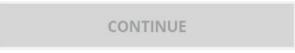


## Select Project Area

### Select Parcels

1. There are three ways to locate parcels in the MET:
  - a. Zoom in to the desired area (the "Parcels" layer is only visible on street zoom level).
  - b. Type in the APN in the search bar (see **1**) to locate the parcels (The APN should be entered as a number without including dashes).
  - c. Type in the project address and locate the parcels (see **2**).
2. Click "Add"  and then select all parcels located from the previous step. Selected parcels are shaded in Blue color. Selected parcels must be within the same census tract. Turn on the "Census Tract" layer to see the boundaries (see **3**).

*Important Note! The City of San Diego parcel layer includes parcels that share the same shape, size, and location; however, their APN numbers are unique. When selecting such locations, the tool will automatically select all the parcels that fall under the selection point.*
3. To remove a selected parcel, click "Remove"  and then select the parcels to be removed.
4. To remove all selected parcels, click "Clear Selection" .
5. Turn layers on and off and adjust visibility to aid in project parcel selection (see **4**).

*Important Note! Some of the layers require significant loading time due to the number of shapes in the active extent. Such layers are set to turn on only at street zoom level. If a layer is turned on but is not visible, make sure to zoom in on the street layer and wait for a few seconds before the layer appears on the screen.*
6. To see parcel-level information associated with each parcel, select the "Information Icon"  next to the parcel number (see **5**). The information includes the following:
  - Parcel Number
  - SANDAG TAZ Number
  - Locational Context: 1 = Urban, 2 = Suburban, 3 = Rural
  - Located in TPA?: Binary entry a value of "1" = Yes, the project is in a TPA, and a value of "2" = No the project is not located in a TPA
  - Complete Communities: Mobility Choices Mobility Zone Number
  - City of San Diego: Community Plan Area (CPA)
  - Census Tract
  - SANDAG MGRA Zone Number
  - VMT/Capita and VMT/Employee per SANDAG Screening Map
7. Once all desired parcels are selected, click on the "Continue" button  to move to the next module. If the "Continue" button is in gray color , no parcels are selected. The button will not turn blue until at least one parcel is selected.





The screenshot displays the 'SD Mobility Evaluation Tool' interface. On the left, the 'Select Project Area' panel includes instructions on how to zoom in and select parcels, with a search box containing '2'. Below this are 'ADD', 'REMOVE', and 'CLEAR' buttons, and a 'SELECTION' section with a search box containing '1'. A 'Selected APNs' list shows '4233502000' with a red '5' and '4233502100'. The 'Enrich Map with Layers 4' panel lists various map layers with their visibility percentages and a '+' icon to toggle them. The 'Census Tract' layer is highlighted with a red dashed box and a red '3'. A 'CONTINUE' button is at the bottom of the panel. The main map area shows a street grid with various colored overlays representing different zones and boundaries.

Layer	Visibility	Toggle
Parcels	60%	+
Mobility Zone	50%	+
MGRA Zone	100%	+
TAZ	100%	+
Census Tract	100%	+
Neighborhood Type	60%	+
TPA	50%	+
Community Plan Area	100%	+
San Diego Boundary	100%	+
Project Area	100%	+

## Project Information Form (PIF)

The project information Form (PIF) page has three components:

- Project Information
- Preliminary Screening Criteria
- VMT Impact Table

### Project Information

Project information fields are as follows:



- **Project Name** – Type in the project name.
- **Project Description** – Type in a short description for the project (maximum 250 characters).
- **Project Type** – Select one of the two options “Ministerial” or “Discretionary”. For definitions of each project type, please refer to the San Diego Municipal Code (SDMC).
- **Project Mobility Zone** – the Mobility Zone number is determined by the tool based on the location of the project.  
*Important Note! If selected parcels fall within multiple mobility zones, the lowest mobility zone is assumed for calculations. For example, if some parcels fall under Mobility Zone 3 and some parcels fall under Mobility Zone 4, the project is assumed as Mobility Zone 3. See San Diego Municipal Code (SDMC) Chapter 14, Article 3, Division 11 (§143.1103).*
- **The number of parking spaces (Vehicles)** – Type in the total number of vehicle parking spaces.
- **The number of parking spaces (Accessible)** – Type in the total number of parking spaces that meet requirements of the City of San Diego Accessible Parking Design requirements.
- **The number of parking spaces (Bicycle)** – Type in the total number of bicycle parking spaces.
- **The number of parking spaces (Motorcycle)** – Type in the total number of motorcycle parking spaces.
- **Project Mitigation or Mobility Choices Ordinance Tracking** – For projects that are in Mobility Zone 2 & 3, the applicant has the option to select one of the two options:
  - Select VMT Reduction Calculator if you wish to proceed to reduce VMT impact by implementing a selection of VMT reduction measures as described in the (CAPCOA GHG Handbook). The module is followed by the Mobility Choices Ordinance Tracking page.
  - Select Ordinance Tracking if you wish to rely on the measures provided through the Mobility Choices Ordinance Tracking regulation.  
*Important Note! If the project is in Mobility Zone 1 or 4, skip the field. The tool will auto-populate the field based on information provided in the Screening Criteria section and VMT table.*
- **Land Use 1: Residential (Dwelling Units)** – Type in the total number of proposed dwelling units.
- **Affordable Units (Residential)** – Type in the percentage of affordable units as defined by the Land Development Manual: Transportation Study Manual.
- **Market Rate Units (Residential)** – Type in the percentage of market-rate units. The value is equal to (1 - affordable units %). The sum of affordable unit % and market rate unit % must equal 100%. Otherwise, the page will not move to the next module.
- **Land Use 2: Commercial Employment** – Type in the size of commercial employment land use in 1,000 square feet (KSF)
- **Land Use 3: Industrial Employment** – Type in the size of industrial employment land use in 1,000 square feet (KSF)
- **Land Use 4: Retail, Public Facility, Recreational** – Type in the size of the combined land uses in 1,000 square feet (KSF)





*Important Note! If the project does not include any of the Land Use types 1 to 4, please type in 0 in the field. The tool does not move to the next page until all fields are populated. In addition, if the value is 0, the preliminary screening criteria will be greyed out automatically since they are not included in the project.*

## Preliminary Screening Criteria


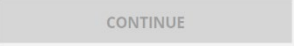
The preliminary screening criteria are used to determine if the proposed project meets any of the screening criteria identified in the TSM. Questions 2a, 3a, and 4a of the screening criteria are prepopulated based on the outputs from the SANDAG VMT Screening Map. The applicant is responsible to answer the remaining questions. When submitted to the City, the information contained is subject to verification by the City staff.

## VMT Impact Table

The VMT Table is updated based on the input from the Preliminary Screening Criteria section. The VMT Table includes only land uses that are not screened out. The "Project VMT" column includes the estimated VMT based on the SANDAG VMT/Capita and VMT/Employee outputs. The "Regional Mean VMT" column is populated based on the census tract that the project is located. The "VMT Impact" column identifies if the project is identified to have VMT impact based on thresholds identified in the TSM (also found under each land use type in the VMT Table).

The applicant has the option to override the Project VMT. Overriding the Project VMT will require providing backup documentation. To override a value, select the pen icon  next to the VMT number. After overriding the default value, select the double-checkmark icon  to save your change. The overridden values are highlighted in the report for City staff to review.

*Important Note! If the project includes Retail/Public Facility/Recreational. The applicant must include the total regional VMT plus the proposed project under the "Project VMT" column and the total regional VMT in the "Regional Mean VMT" column. If the total regional VMT plus project is more than the total regional VMT, the project is identified to have a VMT impact. Overriding the number is done as described above.*

Once all information is complete, click on the "Continue" button  to move to the next module. If the "Continue" button is in gray color , hover over the button to see the missing information. The button will not turn blue until all required fields are filled.



## VMT Reduction Calculator

VMT Reduction measures are provided based on the 2021 California Air Pollution Control Officers Association Green House Gas emissions handbook (in short, CAPCOA GHG Handbook). The MET includes only measures that apply on a project-site scale. A select number of VMT reduction measures are categorized into three groups similar to the categories provided in the GHG Handbook.

To open each category, click on the category name. Select each measure by checking the box next to each measure. Click on the "CAPCOA 2021" link on the top right corner of the screen to see visit the GHG Handbook page for more details.

Each measure includes the following information:

The screenshot shows a measure card for "Limit Residential Parking Supply (P/S)". The card is annotated with red dashed boxes and numbers 1 through 4. Box 1 highlights the measure title. Box 2 highlights the note: "Note: Must confirm applicability with city staff. On-street parking must be managed or not available." Box 3 highlights the applicable land use and VMT metric: "(Applicable Landuse:Residential;Applicable VMT Metric:Residential VMT)". Box 4 highlights the input variables: "Residential parking demand (parking space)", "Project residential parking supply (parking space)", and "Percentage of project VMT generated by residents (%)" with a value of 100.

- 1. Measure Title** – It includes the name of the measure as described in the CAPCOA GHG Handbook.
- 2. Applicable Land Use** – The applicant must select a measure that corresponds to the proposed project land use.
- 3. Applicable VMT Metric** – Each measure applies to one of the following three VMT metrics: Residential VMT, Employee VMT, and a portion of Residential VMT that is commute related. Table below includes a summary of the select measures and their applicable VMT metric. VMT reductions that apply to the same VMT metric are combined based on the methodology described in the CAPCOA GHG Handbook.
- 4. Input Variable** – Each measure has input variables. Some of the variables are prepopulated (and can not be overridden) ; therefore, no input is required from the applicant.For more information on the inpur variable definitions see the GHG Handbook:

[https://www.airquality.org/ClimateChange/Documents/Final%20Handbook\\_AB434.pdf](https://www.airquality.org/ClimateChange/Documents/Final%20Handbook_AB434.pdf)

**The following provides a sample of a prepopulated variable:**

The screenshot shows a section titled "PARKING OR ROAD PRICING MANAGEMENT". It lists the measure "T-15 Limit Residential Parking Supply (P/S)" with a note: "Note: Must confirm applicability with city staff. On-street parking must be managed or not available. (Applicable Landuse:Residential;Applicable VMT Metric:Residential VMT)". To the right, there are three input fields: "Residential parking demand (parking space)", "Project residential parking supply (parking space)", and "Percentage of project VMT generated by residents (%)". The value "100" is prepopulated in the third field, which is highlighted with an orange box.



There are also fields that require that the variable be within a certain numerical range. This is displayed when the user hovers over the input field. For example, for measure T-07, for a residential project, the percent of residents eligible for the program is between 0-50%. As shown in the image and described in the following table.



Measure	Applicable VMT Metric		
	Residential VMT	Employee VMT	Residential Commute-Related VMT
<i>LAND USE</i>			
T04 - Integrate Affordable and Below Market Rate Housing	X	-	-
<i>TRIP REDUCTION PROGRAM</i>			
T05 - Implement Commute Trip Reduction Program (voluntary)	-	X	-
T06 - Implement Commute Trip Reduction Program (mandatory)	-	X	-
T07 - Implement Commute Trip Reduction Marketing (Res) <sup>1</sup>	-	-	X
T07 - Implement Commute Trip Reduction Marketing (Emp)	-	X	-
T08 - Provide Ride-Sharing Program (Res) <sup>2</sup>	-	-	X
T08 - Provide Ride-Sharing Program (Emp)	-	X	-
T09 - Implement Subsidized or Discounted Transit Program (Res)	X	-	-
T09 - Implement Subsidized or Discounted Transit Program (Emp)	-	X	-
T10 - Provide End-of-Trip Bicycle Facilities	-	X	-
T11 - Provide Employer-Sponsored Vanpool	-	X	-
T12 - Price Workplace Parking	-	X	-
T13 - Implement Employee Parking Cashout	-	X	-
<i>PARKING OR ROAD PRICING MANAGEMENT</i>			
T15 - Limit Residential Parking Supply	X	-	-
T16 - Unbundle Residential Parking Costs from Property Cost	X	-	-

Res = Residential Project  
Emp = Employment Project


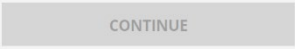
Notes:

<sup>1</sup> The maximum percent of residents eligible for this measure is set at 50%. This is an estimated number to account for the fact that not all residents are employees and residents work in a variety of fields and locations making trip reduction marketing less effective.

<sup>2</sup> The maximum percent of residents eligible for this measure is set at 25%. This is an estimated number to account for the fact that not all residents are employees and residents work in a variety of fields and locations making ride-sharing options less effective in a residential setting (as compared to at an employee, where all employees work in a common location).



For measures that have potential overlap when calculating the overall VMT reduction, the selection of one deactivates the overlapping measure. For example, if an applicant selects measure *"T-05 Implement Commute Trip Reduction Program – voluntary"*, the overlapping measure *"T-06 Implement Commute Trip Reduction Program - mandatory"* is deactivated.

Once all information is complete, click on the "Continue" button  to move to the next module. If the "Continue" button is in gray color , hover over the button to see the missing information. The button will not turn blue until all required fields are filled.



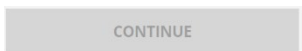
## Mobility Choices Ordinance Tracking

For projects in Mobility 2 & 3, the City requires compliance with Mobility Choices Ordinance Tracking and meeting the minimum number of points required in SDMC section 143.1103(b)(1) or (b)(2) by choosing between a select number of measures provided in the *Mobility Choices Regulations: Implementation Guidelines, Appendix T*. A link to the Complete Communities Mobility Choices is provided in the instructions section at the top of the module. Note that if a project exceeds the minimum parking requirements the minimum number of points required increases. The tool will not automatically track if the larger point requirement is met. See SDMC Section 143.1103 for additional information on when additional points are required.

If a project parcel falls under Mobility Zone 2 or 3, the applicant is automatically directed to the Mobility Choices Ordinance Tracking page. The applicant must meet the minimum number of points to be able to go to the next module.

To select each measure, provide input in the User Input column and the tool will automatically calculate the number of points received. The tool does not provide an output until all fields are filled out.

Once the minimum number of points is achieved, click on the "Continue" button



to move to the next module. If the "Continue" button is in gray color, it means that minimum points are not achieved. Hover over the button to see the number of points required.



# Reading the Report

The MET provides all the inputs and outputs in a formatted printable document at the end and can be downloaded using the appropriate browser functions.

Key information to look for in the report / PDF:

- **Report Page: Selected Parcels** – The page provides the project name, screening status, project description, and SANDAG model data used in the process. The page also includes a snapshot of the selected parcels as well as a table with a list of selected parcels and the data used in the back end for calculations.
- **Report Page: Project Information Form (PIF)** – The page provides all user inputs in the PIF module including project information, and preliminary screening criteria, followed by the VMT table.
- **Report Page: VMT Reduction Calculator** – The page provides all user inputs in the VMT Calculator module including selected measures, input variables, and the calculated effectiveness. The table is followed by a summary table that provides combined measured effectiveness applicable to each VMT type.

*Important Note! The tool estimates Residential VMT and Employee VMT after reduction. For measures that are only applicable to the **commute-related** portion of the Residential VMT, the calculation must be performed outside of the tool. To complete this analysis, a user will need to identify the portion of the VMT/resident that is commute related and provide documentation of the data and calculation for City staff review.*

- **Report Page: Mobility Choices Ordinance Tracking** – The page provides all user-selected measures including user inputs and calculated points. The table appears in the report when the project is in Mobility Zone 2 & 3. If the project site is in Mobility Zone 1 & 4, the table will be empty.





# For More Information

If you have questions about the MET, you may email [Sustainability@sandiego.gov](mailto:Sustainability@sandiego.gov).

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