ITE Transportation Capacity and Mobility Task Force - SB 743 Modeling Subcommittee

Use of ABM 1 and ABM 2 for SB 743 Related VMT Analysis in the Interim Until ABM 2+ is Completed
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SANDAG Travel Demand Model Versions

For reference, below are the most recent SANDAG travel demand model versions and some relevant information about them. For complete information on SANDAG travel demand models, go to www.sandag.org.

Series 12 (retired from service)
- 2011 Regional Plan
- First Sustainable Communities Strategy (SCS)
- Used the Series 12 Growth Forecast, Base Year 2008
- Based on 2006 travel behavior survey
- Used the old 4-step travel demand model method (trip based)

ABM 1 (previous model version)
- 2015 Regional Plan (RP)
- Second SCS
- Uses the Series 13 Growth Forecast, Base Year 2012
- Based on 2006 travel behavior survey
- Uses the new activity based model method (tour based)
- Able to be run with land use overrides.

ABM 2 (current model version)
- 2019 Federal Regional Transportation Plan (RTP)
- Does not include a SCS
- Uses the network assumptions from the 2015 Regional Plan
- Uses a previous version of the Series 14 Growth Forecast, Base Year 2016
- Based on 2016 travel behavior survey
- Not able to be run with land use overrides.

ABM 2+ (under development)
- 2021 Regional Plan (RP) (under development)
- Will include third SCS
- Will include the 5 Big Moves
- Will use networks that are currently under development
- Will use an updated version of the Series 14 Growth Forecast, Base Year 2016
- Will be based on 2016 travel behavior survey, 2018 commute behavior survey
- Will include a SCS

- Was peer-reviewed in March 2020
- Will be able to be run with land use overrides after adoption by November 2021.

Background

SB 743 requires that the metric for CEQA transportation analysis of land development projects be changed from level of service (LOS) to vehicle miles traveled (VMT). Local agencies are required to implement this change by July 1, 2020. SANDAG's regional travel demand model is the best tool available to produce the needed VMT data within the San Diego region. SANDAG produced draft VMT data from the ABM 1 Series 13 Base Year (2012) model and published draft maps that provide [resident VMT per capita](#) and [employee VMT per employee](#) by census tract, as well as the regional averages.

Since that time, the region has adopted an updated [Federal RTP (2019)](#) and is using a new model version (ABM 2 Series 14) with a base year of 2016. SANDAG plans to publish this model resident VMT per capita and employee VMT per employee data in Spring 2020 by census tract, city, City of San Diego community planning area (CPA), and the region.

SANDAG is currently working on another update to the regional model (ABM 2+ with an updated Series 14 growth forecast) and a significant update to the Regional Plan (2021) that will include the Five Big Moves and use the updated ABM 2+ model.

Problem Statement
The current (ABM 2) model cannot be run/used for development projects that require land use overrides to produce project VMT information because the necessary scripts/procedures were not developed due to time, cost, competing work efforts including development of ABM 2+ and the Regional Plan Update, staff capacity, etc. The ABM 2+ model will available in November 2021, after adoption of the 2021 Regional Plan, and will have this capability. This leaves a period of approximately 18 months during which time it may be necessary to use two different models to produce VMT data for project CEQA transportation analysis in the region. This paper outlines a recommended approach to address this issue.

Recommended Approach

1. It is recommended to use the latest published and approved model (soon to be SANDAG ABM 2) for VMT data/analysis whenever possible and use the previously published model (SANDAG ABM 1) only when necessary due to limitations related to the inability to run ABM 2 with land use overrides. This is because ABM 2 would be the most current and arguably most accurate available VMT data for several reasons including that it has a more current base year (2016 verses 2012), is based on a more current travel behavior survey (2016 verses 2006 - which was pre-TNCs and micromobility devices). The use of ABM 1 for VMT analysis for those projects that require a model run and involve land use

overrides is defensible because it would provide the best available data. In addition, the following is recommended:

a. Only compare VMT data within the same model version. CEQA transportation impact significance thresholds should be based upon percent of regional (or City) averages *within same model version*. Mixing and matching absolute VMT data values between models would not be appropriate because the underlying assumptions in each model are different.

    i. Note that the VMT analysis and significance threshold for land use plans and projects is based on a comparison (expressed as a percentage) of project VMT/capita or VMT/employee to the relevant regional or city[1] average. Therefore, regardless of whether projects use ABM 1 or ABM 2 for analysis, they would still use the same significance threshold (i.e. the same percentage). While the underlying data (VMT/capita or VMT/employee) may be different depending on whether ABM 1 or ABM 2 is used, the significance threshold which is based on a percentage relative to the regional or city[1] average, is consistent. For most projects following OPR or regional guidelines, the significance threshold will be 15% below the relevant regional or city[1] average VMT/capita or VMT/employee for residential and office employment uses.

b. Try to limit model runs. Whenever possible, use published VMT data instead. Due to the sophistication of the ABM, it requires significant run times (40-70+ hours) to produce results which may have limited or no added value for producing VMT data at the scale of individual project analyses. Exceptions to this may include large projects and projects in areas where there was not sufficient base year activity present to produce reliable data.

c. If an ABM 1 model run is needed for CEQA transportation VMT analysis, the analysis should be based on the comparison of VMT efficiency of the project (as determined from the ABM 1 land use override model run) compared to the relevant average from the SANDAG published ABM 1 data. In these cases, if needed, the "equivalent" project ABM 2 VMT could be estimated by applying this same relationship to the ABM 2 VMT average. [e.g. Fill in with an example once we have both maps and can use real data from ABM 2.]

d. If an ABM 1 model run with a land-use override is needed only to determine traffic distribution for a mobility analysis, but not for CEQA transportation VMT analysis, use the VMT per capita or VMT per employee data from ABM 2 even though the project may use an ABM 1 model run to help determine traffic distribution.

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[1] For residential land uses the OPR Technical Advisory recommends a significance threshold of 15% below the regional or city average VMT per capita. For office employment uses the recommended threshold is 15% below the regional average VMT per employee.

e. ABM 1 and ABM 2 will report different forecast traffic volumes. Determining the most appropriate estimates for forecast traffic volumes (when future year analysis is needed) will require engineering judgement, as it always has.

f. VMT and ADT information is often needed for other CEQA impact analysis issue areas such as GHG, air quality, and noise. Practitioners should document sources and rationale when it is appropriate to draw information from multiple models.

Options Considered and Rejected

Several options were evaluated in order to arrive at the recommended approach described in the previous section. Those options considered and rejected are briefly described below along with an explanation of why they were not selected.

Using the Series 13 ABM 1 for all VMT data and modeling for CEQA land use project transportation analysis was one approach that was considered. Although this would provide consistency to use only one model for all CEQA transportation analysis, it would not be the most current and most accurate VMT data available because the base year for ABM 1 is 2012 (verses 2016 for ABM 2) and ABM 1 is not based on the current RTP.

Another approach considered was to use ABM 2 to determine average regional, City, and CPA values for VMT/capita and VMT/employee regardless of which model is used for analysis. This would provide a consistent basis for comparison (i.e. significance threshold VMT value) for all projects, however would be making an "apples to oranges" comparison (by determining VMT/capita and VMT/employee results from one model (ABM 1) and comparing it to averages based on a different model (ABM 2). This would not be appropriate because the base year for ABM 1 is 2012 (verses 2016 for ABM 2) and ABM 1 is based on the 2015 RP (where ABM 2 is based on the 2019 RTP).

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