FEHR PEERS

VMT

Summary of Agency Decisions, Options, and Considerations

The following table provides a framework for thinking about the available options for using VMT to evaluate the effects and impacts of land use projects/plans and transportation network modifications. VMT is a recommended metric for environmental impacts as well as system performance because it is an indicator of mobility (for automobile trips), land use efficiency, and emissions from the transportation system. It is also correlated with other key outcomes, such as accessibility, safety, and traffic congestion. VMT tends to rise with incomes and with reliance on automobiles; it tends to decline with improved proximity to destinations and access to multimodal transportation options.

Decisions	Land Use Projects/Plans	Transportation Projects	Common Limitations	Recommendations
What form of VMT metric should be used?	Evaluate both absolute VMT and an efficiency metric version of VMT: 1 Total VMT (by speed bin) for the model area. 2 VMT per capita (or appropriate denominator) to evaluate land use projects and plans: Total VMT per capita (or service population), home-based VMT per resident, home-based work VMT per employee	Evaluate both absolute VMT and an efficiency metric: 1 Total VMT on the corridor 2 Total VMT for the area of effect including by speed bin for emissions analysis.	Metrics other than total VMT, such as home-based VMT per resident, represent only partial VMT (i.e., some vehicle types and trip purposes may be excluded). This helps analysts understand how much VMT may be generated by a plan or project, but does not evaluate a plan or project's overall effect on VMT.	***Project/Area analysis*** 1 Total VMT (by speed bin) 2 Total VMT per capita 3 Home-based VMT per resident 4 Home-based work VMT per employee ***Corridor-level*** 1 Total VMT (by speed bin) for the area of effect
What methodology to use in monitoring VMT?	1 Mobile device data within a defined boundary 2 Household travel survey responses 3 Highway Performance Monitoring System (HPMS) data (example: https://www.oregon.gov/odot/data/pages/road-assets-mileage.aspx)	1 Same as land use.	Mobile device data can vary in its accuracy, particularly at the project or corridor level. Household travel surveys are conducted every 10-15 years; data is often aggregated at higher geographic scale than may be desired; access to disaggregated data is limited. Observed data may appear to overestimate VMT when compared to travel models, which truncate trips at model boundaries.	Validate big data products against household travel surveys and corridor-level counts. ○ https://www.streetlightdata.com/sb-743-vmt-solutions/

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What methodology to use in forecasting VMT?	1 Regional travel demand model 2 City travel demand model 3 Sketch planning tool or spreadsheet (e.g. VisionEval - https://visioneval.org/)	1 Same as land use. 2 Elasticity methods based on lane mile changes. Resource: https://ncst.ucdavis.edu/research-product/induced-travel-calculator	Regional models have limited sensitivity and accuracy for local scale applications off the shelf. Regional and local models often truncate trips at model boundaries. Sketch and spreadsheet tools do not capture the 'project effect on VMT.' Models commonly have limited sensitivity to active transportation project effects on VMT.	Statically and dynamically validate models and make refinements to improve sensitivity and reasonableness within the study area and for the type of project under analysis. For transportation projects, also include elasticity methods to compensate for any model limitations.
What is the VMT performance standard for projects?	1 Agency discretion consistent with comprehensive plan. 2 Set based on agency's goals for emissions or energy consumption reduction. 3 Any increase above baseline for the study area. 4 Identify specific project types that are required to conduct VMT analysis.	Same as land use.	Difficult for agencies to determine what level of VMT change is unacceptable when viewed solely through a transportation lens. Uncertainty of VMT trends contributes to difficulty in setting thresholds. Connecting a VMT reduction expectation to baseline helps to reduce uncertainty associated with future conditions.	If VMT is already used in air quality, GHG, and energy impact analysis, review thresholds for those analyses to inform new thresholds exclusively for transportation purposes. Consider national and regional VMT trends and the potential influence of new and emerging mobility options such as autonomous vehicles (AVs).

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What VMT reduction mitigation strategies are effective and feasible?	Data on efficacy of specific built-environment and transportation demand management (TDM) mitigation strategies: http://www.airquality.org/air-quality-health/climate-change/ghg-handbook-caleemod Local and regional travel models may have some sensitivity to these strategies.	Same as land use.	Models may lack full sensitivity to built-environment and TDM. Sensitivity testing through dynamic validation may be required prior to model application. Some demand management strategies are building tenant dependent that may require off-model processing along with on-going monitoring to verify performance.	Strategies applied at a regional or community level offer greater VMT reduction potential than on-site only strategies. As such, develop a VMT mitigation program at the city, county, or regional scale. More details available at https://www.fehrandpeers.com/wp-content/uploads/2020/04/VMT-Fees_Exchanges_Banks-White-Paper_Apr2020.pdf