

VEHICLE MILES TRAVELED (VMT) TOOL

Description

The Planning Board will receive a briefing on a recently completed project supported by MWOCG’s Transportation Land-Use Connections (TLC) program to evaluate how Montgomery County can transition its transportation impact analysis toward using VMT as a key metric. The project included the creation of a VMT tool that estimates average daily VMT based on location and land-use type.

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Summary:

- The Transportation Planning Division recently completed a project to evaluate how Montgomery County can transition its transportation impact analysis toward using VMT as a key metric.
- The project was supported by the Transportation Land-Use Connections (TLC) program.
- The project included the creation of a VMT tool that estimates average daily VMT based on location and land-use type.

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SECTION 1 – PROJECT OVERVIEW

In September of 2024, Montgomery Planning kicked off the development of a Vehicle Miles Traveled (VMT) tool. The funding for this project was provided by the Metropolitan Washington Council of Governments (MWCOC) Technical Assistance for the Transportation Land-Use Connection (TLC) program. The focus of the project was evaluating how Montgomery County can transition its transportation impact analysis process for development projects toward using VMT as a key metric. The project also included the development of a VMT tool that can be used to estimate average VMT based on location and land use type.

Tasks of the project involved a best practice literature review (see Attachment A), an analysis of existing Montgomery County processes reliant on transportation impact metrics such as Adequate Public Facilities, Transportation Demand Management (TMD), and Impact Taxes (see Attachment B), and the development of the VMT tool. The project was completed in June of 2025.

Literature Review Key Takeaways

The literature review found that adopting VMT as an impact metric better captures the effects of driving by capturing effects like land use efficiency, energy consumption, air pollution, and GHG emissions. It also found the VMT mitigations align with improving walking, bicycling, and transit networks. Additionally, VMT analysis can be less costly and time-consuming than conventional Level of Service (LOS) analysis, particularly if used to screen out analysis of projects that are likely to be low VMT generating due to location, design, or a combination of both.

However, the review also highlighted limitations to adopting VMT as an impact metric. VMT analysis requires the use of models and other tools. While screening tools can be developed to limit which projects need to evaluate VMT, VMT impact analysis typically requires the use of a Travel Forecasting Model (TFM) not only by agencies, but by the development community, which may not have a model user base. In addition, some types of models require significant resources for calibration and maintenance. Even with an established TFM, the model may not be fully calibrated and validated for VMT analysis and may not produce the desired form of analysis metrics. Another limitation noted in the literature review is that setting VMT thresholds for what constitutes an impact can be a difficult decision for jurisdictions to make, as it requires staff and elected officials to determine what is ‘good’ versus ‘excessive’ VMT.

The literature review also demonstrated that there are a variety of methodologies for measuring VMT and differing levels of complexity.

Incorporating VMT into Montgomery County Process Takeaways

The memorandum highlighted some concepts and recommendations for how VMT could be incorporated into Adequate Public Facilities, Transportation Demand Management, and Impact Taxes.

For adequate public facilities four recommendations were highlighted:

- Determine APF study areas using VMT per trip rather than trip generation thresholds.
- Establish VMT-based standards for each Policy Area to account for varying land use and transit availability.
- Identify mitigation requirements for projects exceeding VMT thresholds, emphasizing non-vehicular infrastructure investments.
- Develop a new GIS-based procedure to track every application's estimated VMT using the VMT tool, similar to the DAIC database map. The County could begin tracking how VMT is changing through development in the coming years. This could provide valuable insight into changes for the 2028-2032 GIP and beyond. This could be done for every project whether it requires a LATR Study or not.

Recommendations for Transportation Demand Management include¹:

- Expand TDM requirements to include residential and commercial developments beyond existing TDM boundaries. TDM requirements could be based on VMT thresholds. This may require modifications to the Montgomery County Code.
- Establish a framework where additional TDM measures can reduce estimated VMT impacts. Montgomery County should begin developing a structured framework that quantifies the VMT reduction potential of specific TDM strategies and allows developers to select from a menu of options to meet mitigation targets. This framework could operate as a **point-based or tiered system**, assigning values to individual measures based on their proven effectiveness in reducing vehicle trips and overall travel distance. As a starting point, the County can draw from the **California Air Pollution Control Officers Association (CAPCOA) Handbook**, which offers quantifiable VMT reduction estimates for over 30 TDM strategies.
- Require TDM site design elements in the Preliminary Plan when APF is determined to allow accurate VMT calculations and appropriate mitigation.
- The TDM requirements for development applications could be tracked in the VMT database recommended for APF. The County could create a menu of TDM measures with VMT reduction percentages in mind. This may require modifications to Montgomery County Code.

Recommendations for Impact Taxes include:

- Consider refining how VMT is incorporated into impact tax calculations for development projects.
- Ensure that low-VMT developments are not unduly burdened while maintaining sufficient funding for mobility improvements.

The memorandum also provided suggested next steps for consideration to integrate VMT into its transportation and development review process. These include:

- Finalize and Calibrate the VMT Tool.
- Launch pilot projects to evaluate VMT implementation.

¹ These recommendations were developed prior to Bill 24-25, *Transportation Demand Management – Repeal*, which would repeal Article II of Chapter 42A of the County Code.

- Establish Draft Thresholds and Screening Criteria.
- Prepare for 2028-2032 Growth and Infrastructure Policy update.

VTM Calculation Tool

The consultant team coordinated with Planning and MCDOT staff to develop a VMT calculation tool to calculate VMT for development projects. The tool is a user friendly excel-based spreadsheet tool that allows users to select the Policy Area where the development project will be located and select a development type from a large set of land uses consistent with ITE Trip Generation. Users can then input the size of their development (square footage or number of units). Instructions for how to use the tool are provided in a 'Instructions' tab.

Once the inputs are complete, the user clicks on a 'Generate Final Results' button and the tool uses a combination of ITE Trip Generation data, Policy Area Adjustment Factors, and average trip distances derived from the Travel/4 Travel Demand Model to output estimated VMT for a proposed project. Figure 1 summarizes the overall dataflow of the VMT Tool. Figures 2 and 3 provide an example of some of the outputs from the tool.

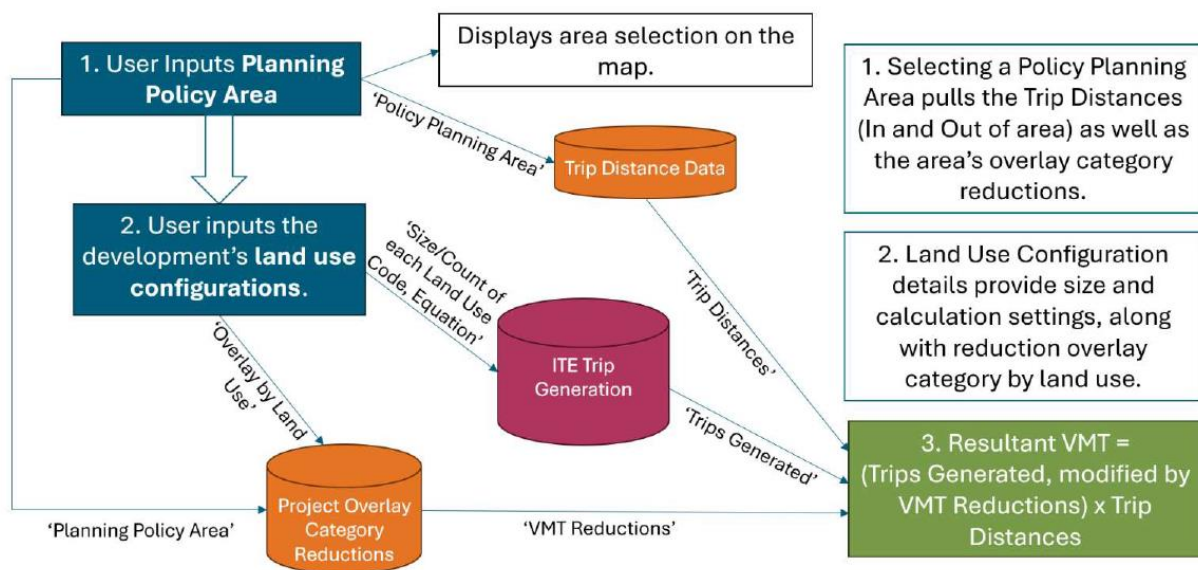


Figure 1: Overall Dataflow of VMT Tool

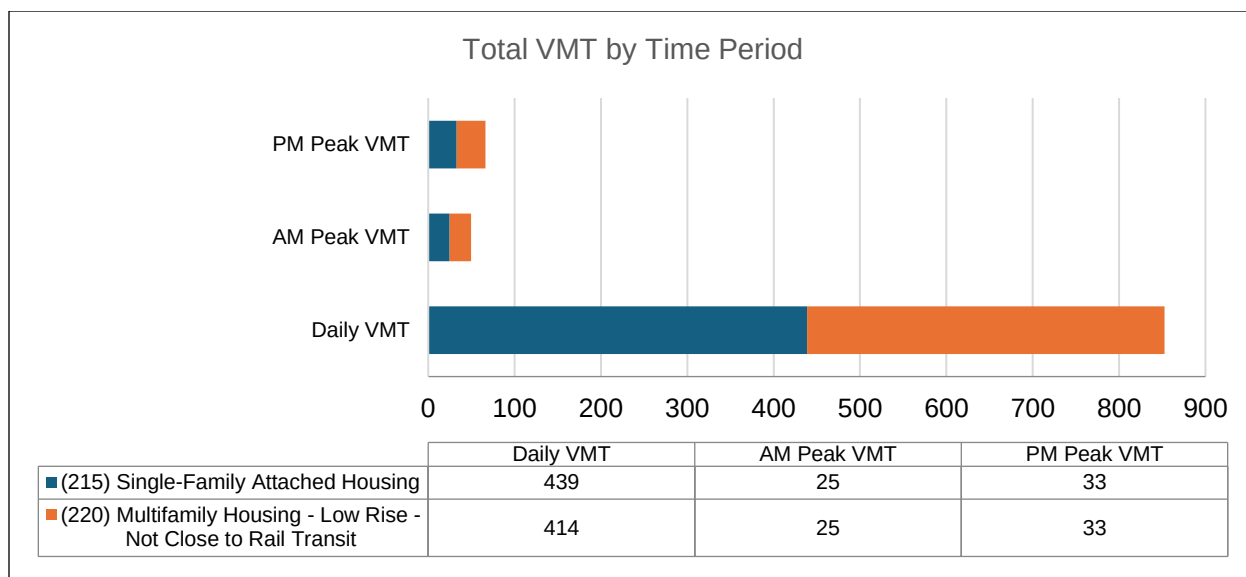


Figure 2: VMT Tool Output Example, Total VMT by Time Period

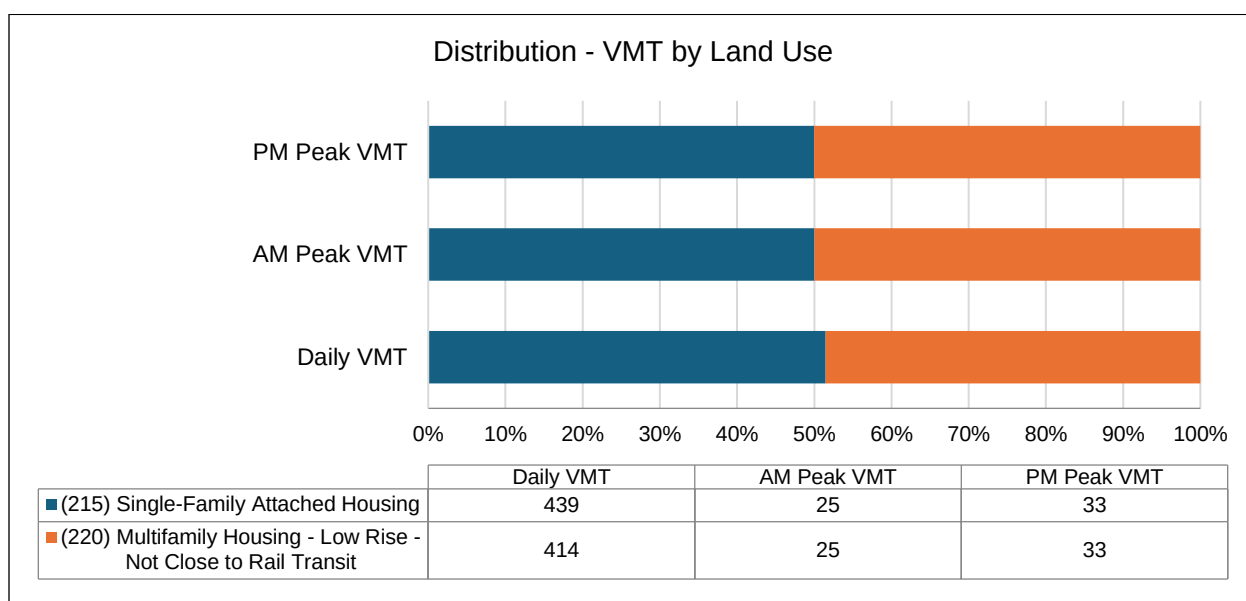


Figure 3: VMT Tool Output Example, VMT Distribution

In addition to the spreadsheet tool, a developer's guide documenting how the tool works and how it can be updated and maintained was also developed.

SECTION 2 – NEXT STEPS

The VMT study provides a first step in identifying how VMT can be incorporated into transportation impact analysis. There are both short and long-term next steps that will follow. Some are more technically focused on how to upgrade and improve the VMT tool while others will be more focused on developing and modifying existing policies. Table 1 summarizes these next steps.

Next Step	Responsibility	Status
Update the VMT Tool with ITE 12 th Edition Data	Planning Staff	In Progress
Identify Tool Improvements such as: • Add more land uses or have ability for custom land use/trip generation data. • Account for reductions like pass-by trips, internal capture, parking supply . • Account for existing use VMT without multiple files. • Consider single source for trip distances and other factors	Planning Staff	In Progress
Develop Database of Development Project VMT Outputs	Planning Staff	In Progress
Develop VMT Tool Version 2.0	Planning Staff / Consultant Support	Not Yet Started
Incorporate VMT into Adequate Public Facilities analysis, this may include: • Establish draft thresholds and screening criteria. • Develop draft APF study areas using VMT per trip rather than trip generation thresholds.	Planning Staff	Not Yet Started

• Establish VMT-based standards for Policy Areas • Adjust mitigation requirements for projects exceeding VMT thresholds		
Incorporate VMT into TDM Requirements and Approaches	MCDOT	Not Yet Started
Consider incorporating VMT into Impact Tax Calculations	MCDOT	Not Yet Started

SECTION 3 – ATTACHMENTS

Attachment A: Best Practice Literature Review

Attachment B: VMT in Montgomery County Technical Memorandum

Attachment C: Montgomery County VMT Calculation Tool v1.0