Washington State Department of Transportation

VEHICLE MILES OF TRAVEL (VMT) TARGETS – INTERIM REPORT

June 2022

Roger Millar, Secretary of Transportation

Kerri Woehler Director of Multimodal Planning and Data

Executive summary

In 2021, the Washington Legislature directed the Washington State Department of Transportation (WSDOT) to develop a process for establishing local vehicle miles traveled reduction targets, recommend a suite of options for local jurisdictions to achieve the targets, recommend changes to laws and rules to support reduction in vehicle miles of travel, and identify funding requirements for state and local jurisdictions.

> *"$500,000 OF THE MULTIMODAL TRANSPORTATION ACCOUNT-STATE APPROPRIATION IS PROVIDED SOLELY FOR THE DEPARTMENT TO PARTNER WITH THE DEPARTMENT OF COMMERCE IN DEVELOPING VEHICLE MILES TRAVELED TARGETS FOR THE COUNTIES IN WASHINGTON STATE WITH (A) A POPULATION DENSITY OF AT LEAST 100 PEOPLE PER SQUARE MILE AND A POPULATION OF AT LEAST 200,000; OR (B) A POPULATION DENSITY OF AT LEAST 75 PEOPLE PER SQUARE MILE AND AN ANNUAL GROWTH RATE OF AT LEAST 1.75 PERCENT AS DETERMINED BY THE OFFICE OF FINANCIAL MANAGEMENT. GIVEN LAND USE PATTERNS ARE KEY FACTORS IN TRAVEL DEMAND AND SHOULD BE TAKEN INTO CONSIDERATION WHEN DEVELOPING THE TARGETS, THE DEPARTMENT AND THE DEPARTMENT OF COMMERCE SHALL PARTNER WITH LOCAL JURISDICTIONS, REGIONAL TRANSPORTATION PLANNING ORGANIZATIONS AND OTHER STAKEHOLDERS TO INVENTORY EXISTING LAWS AND RULES THAT PROMOTE TRANSPORTATION AND LAND USE, IDENTIFY GAPS AND MAKE RECOMMENDATIONS FOR CHANGES IN LAWS, RULES AND AGENCY GUIDANCE, AND ESTABLISH A FRAMEWORK FOR CONSIDERING UNDERSERVED AND RURAL COMMUNITIES IN THE EVALUATION. THE DEPARTMENT AND THE DEPARTMENT OF COMMERCE SHALL PROVIDE AN INITIAL TECHNICAL REPORT BY DECEMBER 31, 2021, AN INTERIM REPORT BY JUNE 22, 2022, AND A FINAL REPORT TO THE GOVERNOR AND APPROPRIATE COMMITTEES OF THE LEGISLATURE BY JUNE 30, 2023, THAT INCLUDES A PROCESS FOR ESTABLISHING VEHICLE MILES TRAVELED REDUCTION TARGETS, A RECOMMENDED SUITE OF OPTIONS FOR LOCAL JURISDICTIONS TO ACHIEVE THE TARGETS, AND FUNDING REQUIREMENTS FOR STATE AND LOCAL JURISDICTIONS.[1]"*

[1] *Washington State Legislature. 2022. Supplemental Transportation Budget; Engrossed Substitute Senate Bill 5689 Sec. 219(3). Retrieved from https://lawfilesext.leg.wa.gov/biennium/2021-22/Pdf/Bills/Session%20Laws/Senate/5689-S.SL.pdf on June 13, 2022.*

A focus on vehicle miles of travel (VMT) reduction is necessary even if the state can achieve a rapid transition to an all-electric fleet to meet climate goals. Fleet conversion cannot happen quickly enough to reduce emissions so it must be coupled with a reduction of VMT. Aside from greenhouse gas (GHG) reduction, VMT reduction supports other community goals around safety, accessibility, affordability, congestion relief, and equity.

At this midpoint in the process, WSDOT has completed foundation analysis and initiated stakeholder engagement necessary to define VMT reduction tools and develop a process for local target setting. In the first report[2], submitted in December 2021, background information on VMT in Washington along with the land use and transportation connection were discussed.

The purpose of this report is to lay the groundwork for developing a local target setting process and to provide tools to local jurisdictions for VMT reduction. In this report, the topics listed below are addressed.

A partner survey, interviews, and workshops

The Department of Commerce (Commerce) and WSDOT surveyed planners across the state, receiving input from nearly 100 jurisdictions. The survey provided insights on successes, challenges, and needs with respect to VMT work. It was augmented by interviews which unveiled several successful case studies across the state that could be used as models for others.

Suggested tools to reduce VMT for cities and counties to incorporate into their comprehensive plans

WSDOT developed new materials on VMT broadly, micro mobility, transportation network companies, autonomous vehicles, and goods movements. These materials were added to the Transportation Efficient Communities and Land Use and Transportation webpages. Commerce's "Your Community's Transportation System: A Guide to Reviewing, Updating and Implementing Your Transportation Element" (TE Guidebook) is highlighted as an existing strong resource.

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[2] *WSDOT. 2021. VMT Technical Report. Retrieved from https://wsdot.wa.gov/sites/default/files/2022-01/VMT-Targets-Technical-Report-December2021.pdf on April 3, 2022.*

Recommendations

WSDOT offers two recommendations for consideration with respect to the baseline VMT value and the types of vehicles included in the tracking of VMT. The recommendations carry forward recommendations from the 2021 State Energy Strategy and suggest moving to observed 2019 data with a value of 62.5 billion miles as a more accurate baseline than the 75-billion-mile benchmark currently used in RCW 47.01.440. The second recommendation is to consider including all vehicles in the tracking of VMT, and not only light-duty vehicles. This would provide a simplification that would facilitate local target setting, recognize that light-duty and heavy-duty is not a consistent proxy for commercial travel, and open up consideration of solutions that would improve business operations by improving the optimization and efficiency in the goods movement system.

Next steps

WSDOT will continue to partner with Commerce as well as cities, counties, Regional Transportation Planning Organizations (RTPOs), Metropolitan Planning Organizations (MPOs), and other interested parties as this work progresses. Ahead of the final report in June 2023, WSDOT will develop a process for local target setting including consideration of rural and underserved communities, a fiscal analysis for that work, and a set of potential rule changes to better facilitate VMT reduction.

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Survey, interviews and workshops

The proviso directing this effort specifically calls for robust engagement with local partners. This project has already benefited immensely and has been strengthened by reflecting local and regional perspectives. WSDOT reached out to learn:

- What VMT reduction actions are included within existing plans or other efforts?
- Of those actions, which have been successful and could be used as case studies?
- What challenges exist to implementing VMT reduction strategies?
- What tools would be most useful for the state to provide to local partners?

Share this:

State Seeks Input on Its Vehicle Miles Traveled Reduction Strategy

January 27, 2022 by Celeste Gilman
Category: Climate Change, Comprehensive Planning-Growth Management, Guest Author

As part of MRSC's Local Climate Response Project, we are inviting guest authors to share options and ideas for local climate action related to preparing for and adapting to the impacts of climate change. This blog describes state-based efforts to reduce transportation sector greenhouse gas emissions by proposing reductions in vehicle miles traveled.

WSDOT collaborated with Commerce on a partner survey. Commerce sent it to city and county planning directors. RTPOs shared it with their members. The Municipal Research and Services Center (MRSC) promoted it via blog post[3]. The survey was promoted, and the topic discussed at multiple Statewide planning meetings.

WSDOT invited anyone who indicated their willingness to engage further to participate in an interview. Commerce and WSDOT staff targeted outreach at cities and counties who did not participate in the survey, and particularly with locations identified through partners, research, or the popular press as having notable success stories.

WSDOT received 130 complete responses representing 97 unique organizations. Responses came from 56 cities, 14 counties, nine RTPOs, three transit agencies, four state agencies, and 11 from other organizations including think-tanks and advocacy groups. All 10 counties identified in the proviso were engaged. Thirty-two of the 56 cities that responded are in proviso-identified counties. The average population of responding non-proviso cities is 6,500, and 78,500 for proviso cities.

VMT reduction in existing plans

All cities and counties address VMT reduction in some manner within the transportation element and other parts of their comprehensive plans. Indeed, the Commerce's guidebook for comprehensive plan transportation elements[4] includes detailed descriptions of land use considerations including for rural areas, as well as transit, pedestrian, bicycle, demand management and system management strategies.

Although the tools that are effective at reducing VMT are known and already included in plans, funding strategies, and regulations, there is often little or no explicit mention of VMT in plans—e.g., while transit is discussed, it is not from the standpoint of VMT. During the survey and interview process, WSDOT scanned plans in Washington state, corresponding with the jurisdictions who responded to the survey or participated in an interview. The review was not

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[3] *Gilman, Celeste. 2022. State Seeks Input on Its VMT Reduction Strategy. Retrieved from https://mrsc.org/Home/Stay-Informed/MRSC-Insight/January-2022/State-Seeks-Local-Input-on-Climate-Strategy.aspx on April 3, 2022.*

[4] *Washington State Department of Commerce. 2012. Your Community's Transportation System. Retrieved from https://deptofcommerce.app.box.com/s/erocgtpv3acyxv2m9bcb59c38s13qgjb on April 3, 2022.*

meant to be exhaustive. Instead, a highlighted list of items in the Appendix demonstrate instances where VMT is explicitly mentioned in planning documents. A main takeaway is that most, if not all items, are ones that are considered and included in transportation plans regardless of explicit mention of VMT.

Successes

Of respondents that indicated inclusion of VMT strategies within their plans, the most frequently observed success came from transit, followed by active transportation, telework, and land use measures, (see Figure 1). These measures, along with the less frequently reported ones, are reflected in guidance on which tools jurisdictions should consider using to reduce VMT.

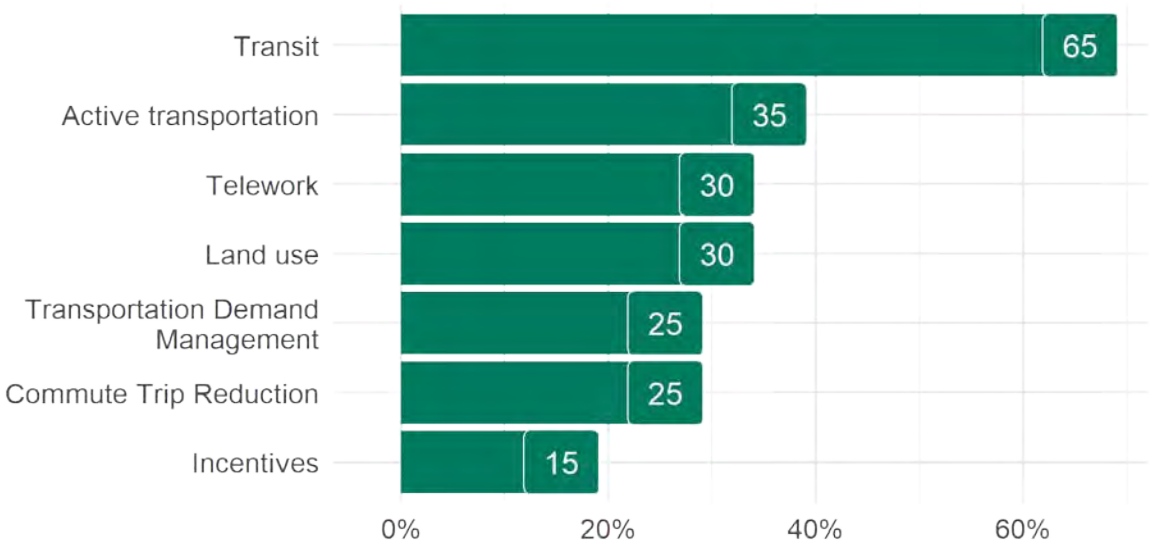

Figure 1: Successful strategies identified through partner survey

1. **Transit**: Specific tools to achieve higher transit use include removing fares, integrating corridor and land use plans with transit, focusing growth near centers with transit service, building park & ride lots, and improving service and operations.
2. **Active transportation**: Successful tools include planning for, building out new, and completing existing parts of the bicycle and pedestrian network.

3. **Telework**: Prior to the COVID-19 pandemic, pre-established policies supported telework. The pandemic demonstrated the ability of many workers to reduce trips by working from home. Most participants' comments on telework supported its continuance.
4. **Land use**: While acknowledging that land use changes take significant time, successful strategies have included locating opportunities for living and working close to each other, focusing growth in areas that can be served by transit, concentrating on compact communities, and limiting development to occur within urban growth boundaries.
5. **Transportation Demand Management (TDM), Commute Trip Reduction (CTR), and incentives**: There is a general sense that the CTR program, which requires large employers to adopt demand management strategies, has been successful in addressing commute trips. This is particularly because of marketing, incentives, rewards programs, establishment of carpools and vanpools, trip tracking, and raising awareness. There is an overall desire to expand the program beyond commute trips and large employers and to consider demand management more broadly. Participants suggested expanding the program by including large mixed-use facilities with transportation management plans, residential demand management, corridors, human services transportation, and park and rides. There is also widespread sentiment that while the overall program is productive and a way for jurisdictions to engage with employers, some of the requirements—e.g., the biennial survey, are outdated, and if removed could free up staff time to work on trip reduction. The data gathered from the survey has been valuable over the past few decades, but some locations such as Whatcom County already choose to fulfill their requirements without it. Demand management strategies outside the CTR program were not mentioned often.
6. **Other**: Respondents also mentioned other VMT reduction strategies such as improving access, complete streets, connectivity, intelligent transportation systems, multi-modal connectivity, parking requirements, and transportation systems management and operations.

Challenges

The main challenges associated with VMT reductions include a lack of transit, political will, funding, and historical land use patterns (see Figure 2). The information gathered about

challenges informed the selection of existing and development of new materials that highlight tools for local jurisdictions to adopt into comprehensive plans for VMT reduction.

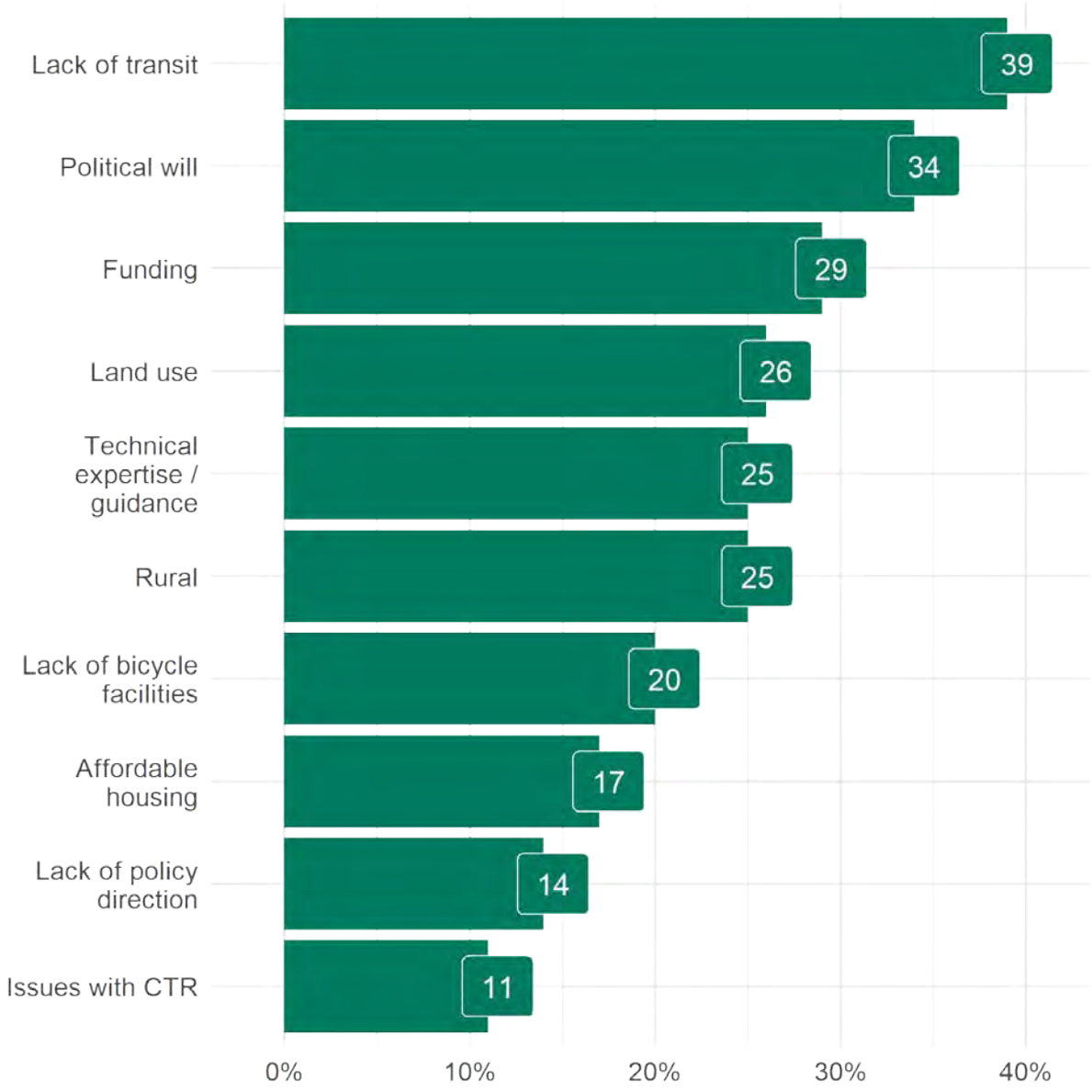

Figure 2: Challenges identified through partner survey

1. **Transit**: While transit is identified as the most frequent and successful tool in reducing VMT, it is also identified as the biggest challenge. In some locations, there is a complete lack of service because of the rural or exurban nature of the location, lack of funding, or both. Other locations suffer from insufficient service in terms of frequency or time of day

when the service is provided, which makes transit service less attractive as compared to driving, especially when parking is plentiful and the overall cost of driving is considered inexpensive. An additional current challenge is a post-COVID fear of using transit because of proximity to other people.

2. **Political will, lack of policy direction, and communication**: There is a perception that driving is more convenient, takes less time, and requires less pre-planning than other options. The perception is exacerbated by land use development continuing in places away from amenities that are not easily served by other transportation options and require long distances of driving. Further, transportation decision-making continues to emphasize free flowing car travel over other modes. Communicating about VMT reductions is difficult. The public and elected officials frequently respond well to the potential for additional options and not to the removal of lanes or car facilities. Language about enhanced options is met favorably, while discussing VMT reduction can be difficult to understand and gain support. Lay language is also more productive than planning jargon—e.g., people do not understand the nuance and difference between Commute Trip Reduction and Transportation Demand Management. Finally, location matters. In more rural and exurban communities, there may be an agreement on reducing greenhouse gases (GHG), but not on miles of travel.
3. **Funding and guidance**: Funding issues generally fall into two categories. Places that have incorporated VMT reduction strategies into their plans generally require funding for projects. Places that have not yet incorporated VMT reduction into their plans require technical assistance and funding to conduct planning level work—e.g., staff time may not be available to complete simple grant applications. In both cases, funding is lacking for multimodal enhancements as jurisdictions struggle with preservation and maintenance of the existing system. This is especially true for active transportation projects.
4. **Land use, rural areas, and affordable housing**: In urban settings, compact development, higher densities, and mixed uses fosters transportation options. However, the regional nature of travel, combined with historical land use patterns that favor low-density, single-family development, lead to activities that are spread out. This, in turn discourages shorter trips via alternative modes and encourages more driving. Sufficient housing options and affordable housing are also lacking in all parts of the state leading workers to move further away from job centers, have longer commutes, and where

transit is available, it often cannot compete with cars with respect to travel time. In rural areas where small populations are diffused, and jobs and basic needs require lengthy travel, transit service is expensive and unattractive, especially with little congestion and ample free parking.

5. Other: Other challenges reported include lack of bicycle facilities, issues with the commute trip reduction program, first and last mile connections, and parking requirements.

Tool options for local jurisdictions

Commerce and WSDOT have a long history of partnering on guidance materials for local jurisdictions. The state agencies work with local agencies and other stakeholders to produce materials that will be useful to practitioners. WSDOT updated several resources to reflect tools and language cities and counties can adopt into their comprehensive plans that are either new since the development of existing documents—e.g., e-bikeshare is novel, or to specifically address VMT reduction as directed in the proviso. Rather than developing a new guidebook, we intend to provide a new focus on VMT within resources that planners across the state are already familiar with. Three online resources are highlighted and updated including WSDOT Land Use and Transportation, Transportation Efficient Communities, and Commerce's Guidebook. In addition, WSDOT coordinated with MRSC to help promote this effort and VMT reduction. Specific additions and edits include the following:

CASE STUDIES

We have provided a few brief VMT reduction strategy implementation and development descriptions from interviews in the Appendix. They highlight some, but certainly not all, of the excellent work being done by local jurisdictions.

Transportation Efficient Communities

A new section was added to the website addressing VMT broadly and directs readers to all the existing materials on the site and in other documents that are relevant for reducing VMT. Priority was given to this focus because attention to VMT as a planning metric, as opposed to level of

service, has demonstrated benefits for VMT and GHG reductions[5]. In other words, a focus on measuring all modes as opposed to the flow of traffic for passenger cars yields benefits. Within this new section, there is special focus on strategies for rural areas and smaller jurisdictions, as well as to resources on standards and model codes. New sections were also added to address micromobility (e.g., bicycle or scooter share), as well as vehicle sharing and autonomous vehicles, which require special attention as they may increase VMT. Finally, a section was added to address urban goods movement and VMT as it relates to freight and goods movement delivery in urbanized settings.

Commerce Guidebook

Commerce's guide to reviewing, updating, and implementing comprehensive plan transportation elements is robust. The existing Guidebook addresses VMT in statewide goals (12), compact and mixed-use development (28), combining multiple strategies (33), and demand and system management (34). The guide also includes many sections on existing tools including land use with a discussion on rural areas (35), accessibility, active transportation, demand and system management, and transit. There are a series of white papers being written on topics to be added in the next round of revisions to the guidebook. The materials added to the Transportation Efficient Communities site serve as additional white papers for this purpose and have been linked to the webpage where the guidebook resides.

WSDOT's Land Use and Transportation webpage

A new section was added to provide links to the aforementioned resources.

Additional considerations

It is worth noting that not all new technologies contribute to a reduction in VMT and that we should retain focus on land use, transit, and active transportation, as well as demand management. New technologies such as Transportation Network Companies (TNCs—e.g., Lyft

[5] *Lee, A., and Handy, S. 2018. Leaving level-of-service behind: The implications of a shift to VMT impact metrics. Research in Transportation Business & Management. 29:14—25.*

and Uber), and autonomous vehicles frequently increase VMT. However, electric vehicles seem to generate similar VMT to that of their gasoline powered contemporaries[6].

Reduction of VMT is necessary even if the state can achieve a rapid transition to an all-electric fleet to meet climate goals[7]. Fleet conversion cannot happen quickly enough to reduce emissions so must be coupled with a reduction of VMT. In addition, there are safety advantages to reduced VMT—e.g., people driving electric vehicle can still collide with another vehicle or people walking or riding a bicycle. The following sections highlight recent research on these topics.

Incorporating multiple VMT strategies together is beneficial. As part of the on-going highway system plan update, WSDOT tested multiple scenarios using VisionEval, a framework for strategic planning[8]. This modeling effort highlights benefits from utilizing a combination of strategies at once and shows that using a single strategy is much less impactful.

For proximity to transit, transit-oriented developments generate far shorter and fewer trips than transit adjacent developments[9]. Further, transit-oriented developments, which include increases in density, reduce VMT even in gentrifying regions that may push lower-income people further away[10]. There is a strong case for mixed-income housing developments for both equity and VMT reduction strategies[11] as they result in more equitable outcomes. Locations within a half mile of station areas, regardless of development type, show much lower VMT and GHG

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[6] *Chakraborty, D., Hardman, S., and Tal, G. 2022. Integrating plug-in electric vehicles (PEVs) into household fleets- factors influencing miles traveled by PEV owners in California. Travel Behaviour and Society. 26:67—83.*

[7] *Eikenberry, S. 2020. Hybrids are an effective transitional technology for limiting US passenger fleet emissions. Environmental Science. 7(2):117—139.*

[8] *VisionEval. 2022. VisionEval. Retrieved from https://visioneval.org/ on May 11, 2022.*

[9] *Park, K., Ewing, R., Scheer, B., Khan, S. 2018. Travel behavior in TODs vs. non-TODs: Using cluster analysis and propensity score matching. Transportation Research Record. 2672(6)31—39.*

[10] *Chatman, D., Xu, R., Park, J., and Spevack, A. 2019. Does transit-oriented gentrification increase driving? Journal of Planning Education and Research. 39(4):482—495.*

[11] *Boarnet, M., Bostic, R., Rodnyansky, S., Burinskiy, E., Eisenlohr, A., Jamme, H., and Sanitago-Bartolomei, R. 2020. Do high income households reduce driving more when living near rail transit? Transportation Research Part D. 80:102244.*

emissions than other areas[12,13]. At the same time, compact development, regardless of transit access still has benefits with respect to lower VMT because of access to activities[14]. Finally, the biggest potential reduction in VMT is not in the densest urban cores, but rather in locations with modest density[15] or in suburban areas with proximity to job centers[16]. These are places where multimodal transportation, demand and system management, and a stronger jobs-housing balance have the largest potential to grow. Nonetheless, a person moving to a dense urban core that is well served by transit will generate far less VMT than the same person in a suburban setting where activities are further apart.

Established strategies continue to perform well and even have additional surprising benefits. A recent study using Puget Sound data found that commute trip reduction programs not only reduce VMT for the commute trips but also influence the behavior of commuters in their non-work travel as well[17]. Unlike car share programs, bike share programs reduce VMT, especially because the substitution of trips is from cars, not transit or other modes[18].

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[12] Boarnet, M., Bostic, R., Eisenlohr, A., Rodyansky, S., Santiago-Bartolomei, R., and Jamme, H. 2018. The joint effects of income, vehicle technology, and rail transit access on greenhouse gas emissions. Transportation Research Record. 2672(24):75—86.

[13] Cao, X. 2019. Examining the effect of the Hiawatha LRT on auto use in the Twin Cities. Transport Policy. 81:284—292.

[14] Sardari, E., Hamidi, S., and Pouladi, R. 2018. Effects of traffic congestion on vehicle miles traveled. Transportation Research Record. 2672(47):92—102.

[15] Lee, S., and Lee, B. 2020. Comparing the impacts of local land use and urban spatial structure on household VMT and GHG emissions. Journal of Transport Geography. 84:102694.

[16] Boarnet, M., and Wang, X. 2019. Urban spatial structure and the potential for vehicle miles traveled reduction: the effects of accessibility to jobs within and beyond employment sub-centers. The Annals of Regional Science. 62:381—404.

[17] Shin, E. 2020. Commuter benefits programs: Impacts on mode choice, VMT, and spillover effects. Transport Policy. 94:11—22.

[18] Fukushige, T., Fitch, D., and Handy, S. 2021. Factors influencing dock-less E-bike-share mode substitution: Evidence from Sacramento, California. Transportation Research Part D. 99:102990.

Transportation Network Companies (TNCs)—e.g., Lyft, Uber, generally increase VMT because of deadheading (traveling between customers) and mode shift away from transit[19,20]. Improvements to VMT for TNCs, such as shared rides across users, are not widely adopted because they are seen as inferior service due to interactions with other customers and longer trip times[21,22] even when allowing users to book in advance and optimizing matching and routing[23].

Autonomous vehicles will likely increase VMT as well[24], particularly as the driving user-base can increase to include people who did not previously drive—e.g., elderly or disabled[25,26]. On one hand, a growing user base could be seen as a benefit, providing more options for people who previously did not have them. On the other hand, more users mean more vehicles on the road with the associated burdens. For autonomous vehicles, mode split suffers in favor of vehicles, with transit being particularly hurt[27]. In addition, autonomous vehicles are likely to increase

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[19] Wu, X., and MacKenzie, D. 2021. Assessing the VMT effect of ridesourcing services in the US. Transportation Research Part D. 94:102816.

[20] Henao, A;., and Marshall, W. 2019. The impact of ride-hailing on vehicle miles traveled. Transportation. 46:2173—2194.

[21] Morris, E., Zhou, Y., Brown, A., Khan, S., Derochers, J., Campbell, H., Pratt, A., and Chowdhury, M. 2020. Are drivers cool with pool? Driver attitudes towards the shared TNC services UberPool and Lyft Shared. Tranport Policy. 94:123—138.

[22] Alonzo-Gonzales, M., Cats, O., Oort, N., Hoogendoorn-Lanser, S., and Hoogendoorn, S. 2021. What are the determinants of willingness to share rides in pooled on-demand services? Transportation. 48:1733—1765.

[23] Ma, Z. and Koutsopoulos, H. 2022. Near-on-demand mobility. The benefits of user flexibility for ride-pooling service. Transportation Research Part C. 135:103530

[24] Asmussen, K., Mondal, A., and Bhat, C. Adoption of partially automated vehicle technology features and impacts on vehicle miles of travel (VMT). Transportation Research Part A. 158:156—179.

[25] Kaplan, S., Gordon, B., El Zarwi, F., Walker, J., and Zilberman, D. 2019. The future of autonomous vehicles: Lessons from the literature on technology adoption. Applies Economics Perspectives and Policy. 41(4):583—597.

[26] Massar, M., Reza, I., Rahman, S., Abdullah, S., Jamal, A., and Al-Ismail, F. 2021. Impacts of autonomous vehicles on greenhouse gas emissions—positive or negative? International Journal of Environmental Research and Public Health. 18:5567.

[27] Soteropoulos, A., Berger, M., and Ciari, F. 2019. Impacts of automated vehicles on travel behaviour and land use: an international review of modeling studies. Transport Reviews. 39(1):29—49.

residential parking demand and increase VMT due to empty miles[28,29,30]. Finally, there are implications for more dispersed land-use patterns as the time and fatigue penalty of long-distance driving are reduced.

People are far more likely to shop in person in dense urban areas where shops are close to home or work. In suburban environments, online shopping deliveries are more efficient with respect to VMT than people shopping for themselves[31]. Put simply, assuming that infrastructure is in place, when it is easy to walk or bicycle to shopping, people are more likely to choose to do so, whereas in areas with less concentrated activities, people are more likely to shop online. Further, roughly two thirds of on-line shopping deliveries substitute rather than supplement personal shopping trips, highlighting the benefits of deliveries in reducing overall VMT[32,33]. To truly gauge the benefits of on-line shopping and deliveries, a clear understanding is needed for the third of trips that supplement regular shopping and to determine whether the efficiency benefit is still great enough for a net reduction in VMT. Further, given the nature of e-commerce, and the changes people have made with respect to housing and workforce as a result of the pandemic, further attention to this topic is warranted.

Recommendations

In thinking ahead to the next phase of work on developing a process for local target setting, it is necessary to consider the overall state VMT value and what is included within it. RCW

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[28] Zhang, W., and Wang, K. 2020. Parking futures: Shared automated vehicles and parking demand reduction trajectories in Atlanta. Land Use Policy. 91:103963

[29] Harb, M., Malik, J., and Circella, G. 2021. Glimpse of the future: Simulating life with personally owned autonomous vehicles and their implications on travel behaviors. Transportation Research Record. 2676(3):492—506.

[30] Bahk, Y., Hyland, M., and An, S. 2022. Private autonomous vehicles and their impacts on near-activity location travel patterns: Integrated mode choice and parking assignment model. Transportation Research Record.

[31] Jaller, M., and Pahwa, A. 2020. Evaluating the environmental impacts of online shopping: A behavioral and transportation approach. Transportation Research Part D. 80:102223.

[32] Spurlock, C., Todd-Blick, A., Wong-Parodi, G., and Walker, V. 2020. Children, income, and the impact of home deliver on household shopping trips. Transportation Research Record. 2674(10):335—350.

[33] Wygonik, E., and Goodchild, A. 2018. Urban form and last-mile goods movement: Factors affecting vehicle miles travelled and emissions. Transportation Research Part D. 61:217—229.

47.01.440 provides direction on VMT reduction baseline values, statewide targets, and which vehicles are included. Two proposed revisions to RCW 47.01.440 are offered in this report for consideration and potential action by the Legislature:

- Change the baseline VMT value to be based on observed 2019 data (rather than a forecast from 2008 for 2020, which significantly exceeds observed data).
- Include all vehicles in the targets, not only light-duty vehicles.

In addition to the aforementioned survey and interviews that focused on VMT reduction strategies, WSDOT held two workshops. The workshops focused on two parts of RCW 47.01.440: 1) The requirement to remove vehicles more than 10,000 pounds from VMT reduction targets, and 2) The requirement to use a forecast based on a 2008 VMT value for future target reduction work. Workshop participants reached consensus to change these requirements, with unanimous participant support for the recommendations listed here.

Baseline VMT value

The baseline total value for statewide annual VMT in RCW 47.01.440 is 75 billion miles. This value is based on 2008 data forecast to the year 2020. This value exceeds observed VMT for 2019 (the last year unaffected by the COVID-19 pandemic) by roughly 12.5 billion miles. This inflation of the baseline obscures VMT trends since the passage of RCW 47.01.440 in 2008. Indeed, the 2021 Energy Strategy[34] states that:

> *"In 2008, the state established long-term targets for reducing the VMT of light-duty vehicles statewide. These targets call for an 18% reduction in VMT per capita by 2020, a 30% reduction by 2030, and a 50% reduction by 2050. However, these targets are pegged to a statewide baseline of 75 billion VMT per year, which is substantially higher than Washington's actual annual VMT. Although Washington is nominally close to achieving the 2020 target, growth in the state's population has meant that VMT continues to grow in absolute terms even as VMT per capita has declined. In 2019 – the highest year yet – statewide VMT was 62.5 billion. The state should update the VMT baseline based on historical values and set targets that are achievable while contributing*

[34] *Energy Strategy, 2021, Retrieved from https://www.commerce.wa.gov/wp-content/uploads/2021/01/Appendix-C_Supplementary-Materials-to-Transportation.pdf*

> *meaningfully to the state's efforts to meet our greenhouse gas reduction limits." (Appendix C, P1)*

Several options were considered including:

- Retain 2008 forecast for 2020—75 billion VMT: Keeping the same figure maintains consistency with past reporting on RCW 47.01.440. However, as noted, the figure of 75 billion miles significantly exceeds the highest observed VMT in Washington.
- Use 2019 base year—62 billion VMT: 2019 is the last year for which we have "normal" VMT data prior to the COVID-19 pandemic and large numbers of people working from home. The observed value of 62 billion miles (8,287 miles per capita annually) would establish a contemporary baseline.
- Use average of 2015-2019: Understanding that any individual year may fluctuate, a different approach is to use an average over several years. In the last couple of decades per capita VMT has been largely stable, while total VMT has continued to climb as the population has grown.

Recommendation

Change the baseline VMT value, as suggested in the State Energy Strategy, to be based on observed 2019 data because the value reflects an accurate and current figure, which is steady from year to year. This change would allow observed reduction to be based on behavior rather than an overly inflated starting figure.

Vehicles considered in vehicle miles of travel reductions

Under RCW 47.01.440, WSDOT is directed to establish VMT reduction benchmarks "less the VMT attributable to vehicles under RCW 46.16A.455 and weighing ten thousand pounds or more." In simple terms, this requirement removes vehicles with more than six seats other than taxis, tractors, and trucks.

WSDOT classifies vehicles based on the Federal Highway Administration's 13 vehicle classifications. WSDOT's reporting to date has focused on light-duty vehicles—i.e., motorcycles, cars, SUVs, and pickup trucks that have no more than two axles and four tires. This classification mislabels commercial activity in personal vehicles—e.g., deliveries made from a passenger car, and personal activities in larger vehicles—e.g., an RV appears the same as a

truck or bus. Light-duty and heavy-duty vehicles also have different characteristics with respect to VMT; during the pandemic, light-duty VMT went down while heavy-duty VMT stayed constant and in some instances rose, highlighting a need to focus on both.

The State Energy Strategy recommends measures to optimize freight VMT and plan and implement strategies to reduce freight VMT and GHG emissions. The Energy Strategy also recommends that state policies address freight congestion and bottlenecks and optimize local connections to improve rail and shipping.

Potential options:

- Light-duty vehicles only: Retaining the status quo would be simple as existing state-wide reporting is built to separate out light-duty vehicles from all vehicles with respect to statewide VMT. At the local level, the distinction between vehicle types may be difficult to obtain.
- All vehicles: Considering all vehicles would more accurately and fully capture transportation needs and nature of travel choices. Many vehicles classified as light-duty currently operate as commercial vehicles—e.g., the Amazon delivery made to one's home by a personal passenger vehicle. Considering all vehicles would reinforce support to improve and optimize freight networks and support the needs of commerce—a truck driving empty on the road is both bad for business and emissions. Finally, considering all vehicles would be consistent with the State Energy Strategy's recommendations.

Recommendation

Amend RCW 47.01.440 to include all vehicles to be consistent with the State Energy Strategy, provide an opportunity to improve efficiency in goods movement, and ease local VMT data collection.

Next steps

Work on the final report, due to in June 2023, is already underway. The final report will focus on community engagement, potential rules that could be considered for changes to better facilitate VMT reduction, a detailed process for local VMT reduction target setting including a description of the data needs, and a funding analysis describing the costs to WSDOT and partners for carrying out such work. The proposal for local target setting will focus on ten counties: Benton, Clark, Franklin, King, Kitsap, Pierce, Snohomish, Spokane, Thurston, and Whatcom. All these

efforts will continue to be conducted collaboratively with partners at Commerce and other state agencies as well as partners in cities, counties, RTPOs, MPOs, and others who are interested in engaging further.

Initial exploration into potential target setting approaches has yielded several interesting models and concepts to consider and explore further, including:

- California Senate Bill 375: California sets reduction targets through the California Air Resources Board. Each region in the state, represented by Regional Transportation Planning Agencies (RTPAs), is then responsible for meeting their reduction target.
- Colorado GHG targets: Colorado focuses on GHG rather than VMT, though the concept is similar. The state's MPOs, which do not cover the entirety of the state as is the case in California, each have a target to meet. There is also a strategy of mobility hubs that increase access to transit and carpooling along a corridor for Interstate 25.
- Housing targets: Under the Growth Management Act, there are existing processes for conducting buildable lands analyses and setting housing targets. Existing local processes could be adapted to set VMT reduction targets as well.
- Mode-split targets: Instead of setting a VMT reduction target and then allowing each jurisdiction to choose the tools that best fit its circumstance to meet the targets, a process could be developed to begin by considering what each jurisdiction already has on the ground and what they're planning for in terms of land use and transportation and what they can reasonably expect to change (e.g., additional transit service), within the near term. Targets would then be based on incremental improvements from the baseline. For this approach to be practical, it would need to be coupled with robust count data by mode, which would likely be costly and difficult.

Appendix

Case studies

City of Burlington

New mixed-use developments are coming in on major arterials close to commercial areas. An example is Grafton Place which includes 140 apartments as well as 18,000 square feet of commercial space. The development was a welcome change from a vacant gravel lot, is on land that was underutilized commercial, and the project received no negative comments during the comment period.

City of Olympia[35]

Several complete streets projects have been completed in the city. Street treatments include raised intersections, bike boxes, flashing beacons, bulb outs, and pavement markings. Olympia has also robustly incorporated VMT into their Transportation Master Plan, which discusses demand management, connectivity, goods movement, and proximity to activities.

[35] *City of Olympia. 2022. Complete streets in Olympia: redesigning our streets for everyone. Retrieved from https://olympiawa.maps.arcgis.com/apps/Cascade/index.html?appid=d58ab3ffe8f54308a7b1f0d62f98d659 on April 3, 2022.*

City of Redmond

Redmond's success can be attributed to a confluence of factors including being home to several large employers that participate in commute trip reduction, growth in transit service and ridership, and progressive and innovative plans. Although land use generally changes slowly, some parts of Redmond are growing and developing rapidly. A recent example of integrated land use and transportation planning is the apartment complex 162-TEN. The apartment building includes some secure parking, but also includes secure bicycle parking as well as being adjacent to a living street, "woonerf"—where all modes intermingle, and promoting itself as a place with proximity to many amenities under a ten-minute walk with a high walk and bike score.

City of Renton[36]

The City of Renton recently completed the Wells-Williams conversion project. The project converted two one-way arterials into two-way streets to promote accessibility to downtown. Pedestrian and bicycle friendly amenities were added including bike boxes, raised intersections, street furniture, and crossing improvements. Despite concern from local business struggling from COVID-19 customer losses, the finished project has been well received by the community.

City of Stanwood

The City of Stanwood is currently developing the "Twin City Mile", a walkable mile stretch connecting the ends of the downtown area. Part of the intention is to retain the small-town rural character while promoting the area as a place to stop, not just pass through, and make it a better place for the city's residents. There are also new multifamily and mixed-use developments coming in, which will build upon and improve the walkable nature of the city.

VMT strategies in existing plans

- City of Anacortes*:* The city's comprehensive plan has a transportation policy in place to promote modes other than driving, higher density, and mixed-use development. (65)
- City of Bothell: The comprehensive plan's transportation element include mention of using commute trip reduction to reduce VMT (26).

[36] *City of Renton. 2022. Wells-Williams conversion project. Retrieved from https://rentonwa.gov/city_hall/public_works/transportation_systems/projects_and_programs/current_projects/wells-_williams_conversion_project on May 4, 2022.*

- City of Kirkland: The sustainability master plan discusses increasing transit (30).
- City of Olympia: Within the transportation master plan, there is discussion on land use and proximity of activities (20,144), regional goals and partnerships (2,9,17), goods delivery to homes as opposed to personal shopping (138), street connectivity (145), transportation demand management (150), and parking management and pricing (151).
- City of Redmond: The environmental sustainability action plan sets measurable reduction targets (28), and calls for specific strategies including pedestrian, bicycle, transit, and transit-oriented development improvements (42). In addition, the 2021 Operations Zero Carbon Strategy calls for VMT reduction even while electrifying the fleet.
- City of Ridgefield: The comprehensive plan's transportation element has a VMT policy (84) and measures to reduce VMT including mixed land uses and higher density near transit, active transportation and low-speed electric vehicles, and commute trip reduction.
- City of Roy*:* The comprehensive plan reference's Pierce County's plan and countywide planning policies to reduce VMT through improving transit and active transportation options as well as through demand management (Ch5: 6-7).
- City of Spokane: The comprehensive plan's transportation element discusses methods to reduce VMT including transit, active transportation, pay per mile, and the sharing economy (Ch4: 73).
- City of Stanwood*:* The transportation plan has a policy to give priority to projects that reduce VMT (5).
- City of Tukwila: The comprehensive plan's transportation element discusses a right size parking calculator (Ch8: 18), commute trip reduction (Ch13: 20), and transportation demand management (transit, rideshare, bicycle, pedestrian, transit-oriented developments, and parking; Ch13: 21)
- City of Vancouver*:* The city's comprehensive plan has a community development policy for integrating land use and transportation (Ch1: 15), and a similar policy within the public facilities element (Ch5: 56).

- Clark County: The regional transportation plan sets goals for reductions through local commute trip reduction programs (125).
- Snohomish County*:* The transportation element in the comprehensive plan discusses the benefits of using demand management to reduce VMT (39), commute trip reduction (p40), and shifting modes to transit and active transportation (55).
- Thurston County: The county's comprehensive plan includes discussion of VMT in the land use section and the transportation element. There are policies encouraging access to transit and active transportation as well as support for commute trip reduction (Ch5: 37-38). In addition to the county, the Thurston Regional Planning Council's Sustainable Thurston plan also includes reduction targets (22) and the climate mitigation plan includes discussion of land use efficiency for siting large employers (83), reduction targets (88), and equity considerations (89).
- Whatcom County. The comprehensive plan includes a policy for reducing VMT through commute trip reduction (Ch6:14).

Survey respondents who reported success with VMT reduction strategies

- City of Bellingham
- City of Bothell
- City of Ferndale
- City of Kirkland
- City of Mukilteo
- City of Pasco
- City of Redmond
- City of Seattle
- City of Tukwila
- City of Vancouver
- Island Transit
- King County
- Pierce County
- Puget Sound Regional Council
- Snohomish County
- Southwest Washington Regional Transportation Council
- Thurston County
- Thurston Regional Planning Council
- Whatcom Council of Governments
- Whatcom County