

Frequently Asked Questions: Visualize 2050

This FAQ includes the questions /comments received by staff related to the VDOT proposed I-495 Southside Express Lanes project and the technical analyses conducted by staff on the two alternative versions of Visualize 2050.

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I-495 Southside Express Lanes (SEL) Project and Planning Process

1. Will the TPB at its October 15, 2025, meeting be voting to approve all of the projects proposed for Visualize 2050?

No. The TPB will be voting on just the proposal to include the I-495 Southside Express Lanes (SEL) in Visualize 2050 at this meeting. The TPB previously approved all the 150+ regionally significant projects proposed, except this project, at its May 15, 2024, meeting.

2. Will the TPB at its October 15, 2025, meeting be voting to adopt the Visualize 2050 plan?

No. The action at the October 15 meeting is to select one of the two alternative versions of Visualize 2050 and the corresponding air quality conformity analysis, per resolution R13-2024, to advance to the public comment phase prior to adopting Visualize 2050 at its December 17, 2025, meeting.

3. If the TPB defers its action to include the I-495 Southside Express Lanes (SEL) project in Visualize 2050 at this time, can the project be brought back for inclusion in the plan in the future?

Yes. The I-495 SEL project can be re-submitted by the sponsoring agency for inclusion in future plans or as an amendment to Visualize 2050.

4. Is the ability to bring back a project unique to this project/plan or is it a standard process?

The TPB's planning process is continuous and provides regular amendments and updates to its metropolitan transportation plan. As such, any agency may propose new projects/changes to previously adopted projects for inclusion in the region's metropolitan transportation plan at any time, including projects previously proposed and not included in the plan.

5. What is the process for amending Visualize 2050 with a new project?

The project sponsor will have to propose the project with acceptable supporting documentation for the board's consideration and public comment. At that point, TPB staff would evaluate the need to revise the air quality conformity (AQC) analysis and the financial plan. If it is deemed that the amendment would require a new AQC analysis, such an analysis would typically take six to nine months, plus a 30-day public comment period before adopting the amended plan.

6. If the I-495 SEL project is not included now, since the air quality conformity analysis has already been done including the I-495 SEL project, could the project be added to the plan in the future, without having to re-run the conformity analysis?

Possibly. If the project is not included now and requested to be included later, TPB staff will need to evaluate if any other inputs to the conformity analysis would need to be updated to align with the timing of the new analysis. For example, there could be updates required associated with the version of the mobile emissions model (MOVES) or the regional travel demand forecasting model, as well as the land use forecast inputs (Cooperative Forecasts) or other technical

inputs. Additionally, if an amendment is conducted, it is possible that other project sponsors would take advantage of that opportunity to add or make changes to other projects.

7. What flexibility does the region have to modify the I-495 Southside Express Lanes (SEL) project if the project as proposed now is included in Visualize 2050? What level of design changes can occur after the TPB vote?

While changes to projects included in the long-range plan can be proposed annually, the process and time for the TPB to consider and accept these changes depends on the nature of the change. For the I-495 SEL or any roadway project included in the region's air quality conformity analysis, changes to the project start/end limits, number of through lanes, project completion date, facility use policies (tolling and/or HOV threshold), or locations of direct access interchanges would likely prompt a new air quality conformity analysis, public comments and require about nine months.

Changes to ancillary elements such as location or type of bicycle/pedestrian accommodation, additional roadway features and technical design criteria, toll revenue sharing agreements, and other elements not modeled in the conformity analysis would not require revising the air quality conformity analysis and can continue to evolve with project development.

8. The air quality conformity and system performance assessment analyses indicate marginal or no improvement in roadway traffic operations from the I-495 Southside Express Lanes (SEL) project, while VDOT contends measurable meaningful improvements. Please explain.

The TPB's air quality conformity and system performance analysis metrics are summarized at the regional level, while VDOT's analysis metrics are at the project corridor level. The TPB's analyses are conducted for both a modeled area (6,800 sq. miles) and the TPB Planning Area (3,900 sq. miles), encompassing 23 jurisdictions. Regarding the Planning Area analysis, for the current year, there are over 13 million vehicle trips, and 122 million vehicle miles traveled on about 17,000 lane-miles of roadways over the entire 24-hour period of a typical weekday. The reported metrics, such as volumes, speeds, and delay, are averaged across this vast area and thousands of miles of roadway, which means that the impact of individual transportation projects is generally not very large at the regional level. TPB staff's July presentation noted those measures where the data presents appreciable differences.¹ Project-level modeling analysis, as conducted by VDOT as part of their work per National Environmental Policy Act (NEPA) regulations, can estimate changes in travel and traffic operations at a finer level, focusing on the project's corridor.

Note, given the large scale of the metropolitan area and the magnitude of various indicators for the entirety of the TPB Planning Area (like 13 million daily vehicle trips, or 122 million vehicle miles traveled, etc.), a modest percent change in forecasted results could, nonetheless, indicate a meaningful impact for some residents of the region, particularly those traveling in the project's corridor. The results of current analyses are consistent with prior TPB staff studies.²

¹ Cristina Finch, Rob d'Abadie, and Sergio Ritacco, "Finalization of Project Inputs for Air Quality Conformity Analysis: Visualize 2050 & FY 2026-2029 TIP," <https://www.mwcog.org/events/2025/7/2/tpb-technical-committee/>.

² Srikanth, Kanti, and Stacy Cook. "A Summary of the TPB and COG Scenario Study Findings: Informing Planning for the Metropolitan Washington Region." Draft Report. National Capital Region Transportation Planning Board, Metropolitan Washington Council of Governments, November 3, 2022. <https://www.mwcog.org/events/2022/11/4/tpb-technical-committee>.

9. How do the changes in the emissions and performance metrics estimated for the I-495 SEL project, relative to today, compare with a Metrorail line serving this corridor (instead of express toll lanes)?

Metrorail service along this corridor could be seen as an alternative to the express lanes being examined. Such an alternative analysis would typically be part of a fiscally unconstrained scenario analysis as opposed to the development of a metropolitan transportation plan, such as Visualize 2050. The TPB's air quality conformity analysis was fiscally constrained and based on projects proposed for inclusion in Visualize 2050 and, as such, the TPB does not have estimates of emissions impacts for a Metrorail service along this route.

10. Can you clarify the proposed lane configurations for the Build Scenario with the I-495 SEL project? Please clarify if any of the existing general purpose (local/non-tolled express lanes) lanes (in either direction of I-495) will be converted to HOT/Tolled Express lanes.

The I-495 SEL project, as submitted by VDOT for inclusion in Visualize 2050, proposes to add two high-occupancy toll (HOT)/express lanes in each direction between the Springfield Interchange and MD 210 on which vehicles with three or more people travel toll-free, plus a new express bus transit route between the Branch Avenue Metro Station and Tysons Corner, to be operational in 2031.

A presentation by VDOT to the TPB at its April 15, 2025, meeting, displayed a planning-level schematic of the lane configuration across the bridge for the two options that VDOT had examined. The schematic shows five general purpose lanes (the same as what exists today) plus two HOT/express lanes in each direction.³ Based on VDOT's presentation schematic, it appears that space from the existing shoulders on the bridge would be repurposed, and that no existing general-purpose lanes would be converted to HOT/express lanes.

11. What is the approximate width/number of lanes that will need to be converted to rail should transit be developed across the Woodrow Wilson Memorial Bridge (WWMB)?

A presentation by VDOT to the TPB at its April 15, 2025, meeting, displayed a planning level schematic of the lane configuration across the bridge for a scenario with Metrorail operating across the bridge. The schematic shows five general purpose lanes plus one HOT/express lane in each direction implying that one of the HOT/express lanes would be needed, perhaps with some additional unused space, to accommodate Metrorail.³

12. The plan option that includes the I-495 SEL project does not account for emissions resulting from additional bottlenecks/idling cars on secondary and arterial roads during AM and PM peak periods. With the emissions resulting from congestion/backups on local arterial roads unknown at this point, could those additional emissions result in the region exceeding allowable emissions budgets?

³ National Capital Region Transportation Planning Board (April 15, 2025). Agenda Item 8 - Presentation - Visualize 2050 - VDOT SEL Project Update (<https://www.mwcog.org/file.aspx?&A=94h0xhr%2fLZoB1qmK3aGbH3q2VAeXC1cvvj3pej6Eojk%3d>)

The travel demand modeling and emissions modeling conducted for Visualize 2050 with the I-495 SEL project is done using industry-standard methods and tools and can and does predict the impact of the new lanes on traffic demand and operations on other roadways. Additionally, the emissions estimated by the regional air quality conformity analysis for the option including the I-495 SEL project do account for changes in emissions attributable to the project. The analysis indicates that the ozone precursor emissions with the I-495 SEL project, including its impact on traffic operations on other roadways, will be below the currently approved motor vehicle emissions budgets. As noted in response to question #8, this was an expected outcome, as staff have historically found that single projects, even if large in scope, have a very modest impact on regional performance metrics, including emissions.

13. Regarding the finding of more congestion on the I-495 general purpose lanes near the boundaries of the project, what did the analysis indicate regarding back-ups beyond the project limits and for local/state roads in proximity to or connecting to the project at the interchanges?

As noted in response to question #8, the TPB's modeling is conducted for an area of about 6,800 sq. miles, and the analysis results are presented for the TPB's planning area of about 3,900 sq. miles. Consequently, the TPB's presentation of expected traffic operations on the roadways and transitways is summarized at a high level. At this level of analysis, modeling results indicate some increased congestion might occur on the Capital Beltway's general-purpose lanes in the vicinity of the project's termini.

VDOT's project planning modeling is, however, conducted at a much finer, project corridor level. Such models might contain additional roadways, smaller geographic areas to capture land use and roadway connections, and other features at a closer range. As such, for more detailed estimates on the effect on individual road segments, TPB staff would defer to VDOT's corridor-level NEPA analysis. VDOT presented such information as part of its April 15, 2025, briefing to the TPB (see footnote 4 on previous page).

14. Has the process used, and the metropolitan transportation plan document (Visualize 2050) being developed, accounted for the changes to federal regulations?

TPB staff believes that the process used to develop this update to the TPB's metropolitan transportation plan faithfully adheres to the current federal regulations for Metropolitan Planning Organizations (FHWA 23 CFR 450 Subpart C & FTA's 49 CFR 613). Staff's work on the plan has been done in close coordination with and guidance from the representatives of the U.S. Department of Transportation (FHWA and FTA) and the state departments of transportation and state and regional transit agencies. This work does not include any analysis of Diversity, Equity, and Inclusion (DEI) policies, nor any current analysis of climate change which is not identified in the federal planning regulations noted above. Should there be any changes to the MPO regulations pertaining to development and/or content of the metropolitan transportation plan, the TPB will be able to initiate revisions or updates as needed.

Climate Change and Greenhouse Gas (GHG) Goals

15. Are the topics of climate change and greenhouse gas (GHG) emissions included in the plan?

No. Climate change and GHG emissions are not discussed in Visualize 2050, consistent with USDOT advice to strictly adhere to federally required work activities. At this time, there are no federal requirements for MPOs, like the TPB, to undertake activities focused on climate change and/or greenhouse gases.

16. Why has the TPB not conducted an accountable analysis of proposed projects that was required by its 2021 resolution?

The development of Visualize 2050 has been guided by TPB Resolution R19-2021, which was adopted in June 2021 and follows the approach approved by the TPB and documented in the TPB's Technical Input Solicitation document released in February 2023. With more than 150 highway and transit projects in the TPB's plan, staff had noted the inability to perform a systemwide impact analysis for every project submitted for inclusion in Visualize 2050. The TPB had noted, and as documented in the Technical Input Solicitation document, the transportation agencies were to be informed by the results of the several scenario studies previously conducted by the TPB evaluating 100+ alternative combination of transportation improvement projects with other programs and policies intended to improve mobility, accessibility and reduce vehicle miles traveled (VMT).

17. Why has the region not met the voluntary 2030 and 2050 greenhouse gas (GHG) reduction goals, which are set at 50% of 2005 levels in 2030 and 80% of 2005 levels in 2050?

As presented to the TPB on July 16, 2025, on-road GHG emissions for Visualize 2050 are forecast to be 22 percent below 2005 levels in 2030 and 33 percent below 2005 levels in 2050, and although GHG emissions are projected to be lower in the future than today, the predicted GHG emissions do fall short of meeting the targets adopted by the TPB through R18-2022 in June 2022. Visualize 2050 was not expected to meet the TPB's on-road transportation sector GHG reduction goals. The GHG reduction goals that the TPB adopted could be considered aspirational, since the principal study on the subject, the TPB's Climate Change Mitigation Study (CCMS) of 2021, which studied over 30 GHG reduction scenarios for each analysis year (2030 and 2050), failed to find a pathway for Visualize 2050 to meet the 2030 GHG reduction goals. A couple of the studied/modeled scenarios did attain the 2050 goal, but that was mainly driven by the scenarios based on very ambitious vehicle electrification assumptions, some of which also included very aggressive mode shift and travel behavior (or VMT reduction) strategies, many of which would require legislation to be enacted.⁴

It should also be noted that under current federal guidance for metropolitan planning, the TPB is required to adhere to federally required work activities in adopting its long-range transportation plans and TIP, which does not include GHG reductions. The TPB is, however, federally required to determine if the emissions of Volatile Organic Compounds and Nitrogen Oxides from the plan conform to the federally approved levels for this region.

⁴ The mode shift and travel behavior (MSTB) strategies analyzed in the CCMS include: All bus and rail transit fare free; Telework levels comparable to those recorded during the height of the COVID-19 pandemic shutdowns (40% of all telework eligible jobs); Alternative land use assumptions (locations for growth in jobs and housing selected independent of jurisdictional boundaries); All workplace parking in regional activity centers priced by 2030; All workplace parking priced by 2050; DC core cordon pricing – \$10 to enter the central business district (CBD); VMT fees of 5 cents per mile in 2030 and 10 cents per mile in 2050.

The vehicle electrification strategies that were modeled for the CCMS include, among others: 100% of new light-duty vehicle sales will be electric vehicles (EVs) in 2030; 50% of new medium/heavy-duty truck sales will be EVs in 2030, with 100% by 2040; 100% of buses on the road will be EVs by 2030; Biofuels/renewable diesel will make up 20% of diesel fuel use in 2030 and 30% in 2050.

18. Last year, TPB staff said that the shift from EPA MOVES3 to MOVES4 resulted in lower estimated greenhouse gas (GHG) emissions (about 20%) and other pollutants in the modeling forecast. Is that the case with these results?

The trend in the recent releases of the U.S. EPA emissions models has been lower estimates of GHG emissions and some criteria pollutants in future-year estimates. It is important to note that MOVES3 had a short shelf-life and was never used by TPB staff for either an air quality conformity analysis or for estimating greenhouse gas emissions for TPB's recent plans (Visualize 2045 or Visualize 2050). Instead, the MOVES2014b model was used for Visualize 2045 and MOVES4 was used for Visualize 2050.

19. The past estimates of on-road 2005 and 2012 GHG emissions in the region are now 10-12% higher in Visualize 2050 than those used in Visualize 2045. Could you please explain this? Does this have to do with the new MOVES model?

Yes. To ensure that comparisons of GHG emissions across different periods of time are consistent, staff updated the GHG emissions estimates for 2005 and 2012 that were developed using the MOVES2014B model with estimates from the MOVES4 model. According to our analysis and EPA's own analysis, the MOVES4 model typically shows higher GHG estimates for historical years and lower estimates for future years.

Equity

20. Is the topic of equity in the plan?

No. Current federal guidance for metropolitan planning organizations, such as the TPB, is to strictly adhere to federally required planning activities. Metropolitan planning requirements no longer require MPOs to undertake the Environmental Justice analysis that was the basis for the past equity-related work activities of the TPB. The TPB's previous work on equity is still available for your viewing.

Induced Demand/Induced Travel

21. What is induced demand/induced travel? How well is it accounted for in the TPB's production-use, trip-based travel demand forecasting model (TDFM), called the Gen2/Ver. 2.4.6 Travel Model and the upcoming activity-based travel model (Gen3 Travel Model)?

A U.S. EPA guidebook defines induced demand as "any increase in travel arising from improved travel conditions," whether travel conditions are improved by reducing travel times/costs or improving traveler safety/comfort.⁵

When capacity is added to a highway network, traffic will be attracted to the road segment with added capacity, resulting in more traffic through that stretch of road. Here are the types of likely changes in travel behavior, subdivided into three timeframes, when road capacity is added:

- Immediate: Route shift, mode shift, and re-scheduling of travel.
- Near term: Change in trip destination, change in trip linking, and making new trips.

⁵ Jack Faucett Associates, *Guidebook on Induced Travel Demand*, EPA-420-R-02-103 (U.S. Environmental Protection Agency, 2002), <https://nepis.epa.gov/>.

- Long term: Change of home location, change of work location, change of school location, purchase of new car, and land use development.

As found in past research by the TPB staff,⁶ both the Gen2 (production-use) and Gen3 (developmental) travel models do account for many of the changes in travel behavior associated with induced demand. However, the Gen3 Model, as an activity-based model, will be able to account for more facets of induced demand than the Gen2 Model.

Air Quality

22. What level of updated air quality modeling can occur regardless of whether changes are made to the project concept? Is it an option to modify some of the base assumptions in the air quality model?

The TPB is required to use a current U.S. Environmental Protection Agency (EPA) mobile emissions model, such as MOVES4 or MOVES5, to conduct the air quality conformity analysis of the Metropolitan Transportation Plan (MTP) and Transportation Improvement Program (TIP). The TPB staff used MOVES4, since that was the latest emissions model available when the analysis began. In general, the EPA MOVES model cannot be altered, including the adopted rules and regulations that are embedded in the model. Staff are only allowed to update region-specific inputs such as travel (VMT) and vehicle population, but these need to come from official sources, such as the TPB's regional travel demand model and the vehicle registration data.

Travel Models and Mobile Emissions Models

23. What rates of telecommuting are assumed?

The travel model reflects pre-pandemic levels of telecommuting. The TPB's production-use, regional travel demand model does not have telecommuting rates as an explicit input. Rather, telecommuting is implicitly reflected in the trip generation model rates and resulting travel volumes used to calibrate and validate the model. The model calibration is based on the TPB's 2007/2008 Household Travel Survey, which was the latest such survey when model calibration was conducted, with the model subsequently further validated to year-2018 conditions, using traffic counts and transit ridership from 2018.

24. What version of fuel economy standards and pace of electric vehicle adoption are assumed?

Assumptions related to vehicular emissions used in the regional air quality conformity analysis correspond to those included in the U.S. EPA's mobile emissions model, MOVES. The EPA's emissions model used in TPB's conformity analysis, MOVES4, incorporates the regulations listed in Table 1-2 (page 8) of the MOVES4 overview document.⁷ Two of the regulations included in MOVES4 are 1) Control of Air Pollution from New Motor Vehicles: Heavy-Duty Engine and Vehicle Standards (January 2023); and 2) Revised 2023 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions Standards (December 2021).

⁶ Feng Xie, "Considerations of Induced Demand in the TPB Regional Travel Demand Models," Memorandum to Mark Moran, June 15, 2021.

⁷ "Overview of EPA's Motor Vehicle Emission Simulator (MOVES4)," Office of Transportation and Air Quality, EPA-420-R-23-019, August 2023, publication (<https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P10186IV.pdf>).

Increased adoption of electric vehicles is reflected in MOVES4 through a combination of user inputs/national defaults and emissions rates that are embedded in the model to achieve the emissions standards noted above. It is important to emphasize that the most aggressive vehicle electrification strategies, such as the Advanced Clean Cars II Rule, are not assumed in Visualize 2050.

25. Comment from the July 16, 2025, TPB meeting: “In the engineering profession, we have a saying, ‘all models are wrong, but some are useful.’ Unfortunately, due to flawed assumptions, TPB’s modeling is both wrong and not useful. Here’s why: TPB says the expressway will not cause appreciable increases in traffic or emissions, nor will it affect land use or mode choice. However, per USDOT’s recent report, *Improved Travel Demand Modeling*,⁸ these assumptions and findings are simply not realistic.”

The TPB’s production-use, regional travel demand forecasting model (TDFM) – known as the Gen2/Ver. 2.4.6 Travel Model – is a state-of-the-practice, aggregate, trip-based travel model, sometimes called a “four-step” model. The Gen2 Travel Model uses an aggregate assignment of both transit person trips (transit assignment) and private motor vehicle trips (highway assignment). The Gen2 Travel Model was estimated and calibrated, using industry-standard practices, to year-2007/2008 conditions, specifically the 2007/2008 COG/TPB Household Travel Survey and various transit on-board surveys conducted in 2007 and 2008.⁹ The Gen2 Model has been validated to observed traffic counts and/or transit boardings for the following years: 2010,¹⁰ 2014,¹¹ and 2018.¹² The model is documented in a travel model user’s guide,¹³ which is updated whenever the model is updated. The travel model is used by most TPB member agencies in their project development work that is frequently reviewed and approved by federal transportation agencies (FHWA and the FTA).

In comments made at the July 16, 2025, TPB meeting, the commenter states that the TPB TDFM makes use of “flawed assumptions.” However, they did not specify which assumptions are flawed. However, based on the remainder of the commenter’s statement, it appears that “flawed assumptions” may be referring to land use assumptions used in the modeling analysis. The land use assumptions/forecasts used in the TPB’s modeling process, known as the Cooperative

⁸ *Improved Travel Demand Modeling*, with Gretchen Goldman et al., Climate Strategies That Work (U.S. Department of Transportation, 2024), <https://www.transportation.gov/priorities/climate-and-sustainability/improved-travel-demand-modeling-climate-strategies-work-pdf>.

⁹ Ronald Milone et al., *Calibration Report for the TPB Travel Forecasting Model, Version 2.3, on the 3,722-Zone Area System*, Final Report (Metropolitan Washington Council of Governments, National Capital Region Transportation Planning Board, 2012), <https://www.mwcog.org/transportation/data-and-tools/modeling/model-documentation/>.

¹⁰ Ronald Milone, “2010 Validation of the Version 2.3 Travel Demand Model,” Memorandum to Files, June 30, 2013, <https://www.mwcog.org/transportation/data-and-tools/modeling/model-documentation/>.

¹¹ Meseret Seifu, “Year-2014 Validation of TPB Version 2.4 Travel Model,” Memorandum to Feng Xie, October 29, 2020, <https://www.mwcog.org/transportation/data-and-tools/modeling/model-documentation/>.

¹² Meseret Seifu and Sanghyeon Ko, “Year-2018 Validation of TPB Version 2.4 Travel Model,” Memorandum to Feng Xie, August 17, 2021, <https://www.mwcog.org/transportation/data-and-tools/modeling/model-documentation/>.

¹³ Meseret Seifu et al., *User’s Guide for the COG/TPB Gen2/Version 2.4.6 Travel Demand Forecasting Model* (Metropolitan Washington Council of Governments, National Capital Region Transportation Planning Board, 2023), <https://www.mwcog.org/transportation/data-and-tools/modeling/model-documentation/>.

Forecasts, are the official forecasts developed for the region by COG, working with local government staff. The process uses a regional econometric model that projects employment, population, and households for the metropolitan Washington region based on national economic trends and local economic and demographic factors. These “top down” forecasts are reconciled with local jurisdictional “bottom up” forecasts of land activities, to ensure that they are within 3% of each other. Previous assessment of these forecasts has shown the forecasts to closely track empirical data at regional levels. Although the COG land use forecasting process does not involve using a formal land use model, the land activity projections provided by TPB member jurisdictions’ planning departments reflect the locally adopted comprehensive plans, which reflects the consideration of changes to the transportation infrastructure and land use activities.

Similarly, regarding mode choice, based on TPB staff’s internal assessment of how well the travel model captures the effect of induced demand,¹⁴ staff has found that our regional travel models do, in fact, capture the effects of a transportation project on mode choice. Nonetheless, as we have found in various studies over the years, although a transportation project can have a large impact on people traveling in the affected corridor, by contrast, at the regional level, a single transportation project is rarely able to make a significant impact on regional metrics, such as regional VMT, regional vehicle-hours of delay (VHD) or regional mode shares.

26. Comment from the July 16, 2025, TPB meeting: “In the report, USDOT instead recommends elasticity-based approaches to predict highway traffic impacts. Elasticity tools, like our own RMI Shift Calculator, clearly demonstrate that adding 41 urban lane-miles to the Washington Metro area will substantially increase local traffic, by 25,000 additional cars per year, per our own estimates, and hundreds of millions of additional VMT and emissions. In conclusion, TPB’s assumptions go against USDOT’s best practices and should be revisited.”

Economists define “elasticity of demand” or, more formally, “elasticity of demand with respect to price” as the change in demand for a good or service in response to a change in the price of the good or service, usually represented as the ratio of these two metrics, expressed as percentages, e.g., the percent change in demand divided by the percent change in price. Similarly, in the transportation planning field, one is often interested in the elasticity of demand with respect to changes in the transportation supply/capacity. For example, if one increases lane-miles by 1%, what will be the resultant increase in VMT? An elasticity value of 1.0 means that VMT will increase proportionally with lane-miles. Since there can be short-run and long-run changes in travel behavior, transportation researchers often differentiate between short-run and long-run elasticities. As noted in a 2024 USDOT report (cited earlier, *Improved Travel Demand Modeling*):

Short-run elasticities capture induced VMT effects that occur immediately and within the first 1-3 years after a capacity expansion, such as substituting driving for other modes. Long-run elasticities capture a broader range of induced travel effects that occur after 3 to 10 years, including persistent short-run effects and changes in land use. (p. 15)

Regarding short-run and long-run elasticities, the 2024 USDOT report notes,

In the U.S., short-run elasticity estimates range from 0.07-0.76, while longer-run elasticity estimates range from 0.26-1.06. Excluding studies that included

¹⁴ Feng Xie, “Considerations of Induced Demand in the TPB Regional Travel Demand Models,” Memorandum to Mark Moran, June 15, 2021.

local roads, which tend to have the lowest VMT density of all road types and provide the least per-mile improvement in travel speed or access, the range of elasticities shrinks to 0.23-0.76 (short-run) and 0.77-1.06 (long-run). (p. 15)

If we presume that the range of long-run elasticities shown in the USDOT report (0.77 to 1.06) apply to the Washington, D.C. region: the predicted, long-run percent change in VMT resulting from all of the roadway projects in Visualize 2050 would be between $0.77 \times 3\%$ (= 2.31%) and $1.06 \times 3\%$ (= 3.18%). According to the TPB's system performance analysis, the forecast change in VMT between the 2050 No Build and the 2050 that includes all highway and transit projects in the plan is 1.58%.

Similarly, the I-495 SEL project is expected to result in an increase of 41 lane-miles, which represents a 1% increase in freeway lane miles¹⁵ or a 0.23% increase in total lane miles regionally. Thus, at the regional level, this would mean that the predicted, long-run percent change in VMT due to the SEL would be between $0.77 \times 0.23\%$ (= 0.18%) and $1.06 \times 0.23\%$ (= 0.24%). According to the TPB's system performance analysis, the forecast change in VMT from the I-495 SEL project in 2050 is 0.26%.

Finally, the 2024 USDOT report discusses the concept of elasticity and describes the difference between short-run and long-run elasticity, but based on our review of the report, it does not say that MPOs need to be using elasticity-based models. In fact, the opposite might be true for MPOs located in non-attainment areas.

As background, there are different types of travel models being discussed here: 1) elasticity-based sketch models; and 2) network-based travel demand forecasting models. The RMI Shift Calculator is an example of the first type. The TPB TDFM is an example of the second type. According to the air quality conformity (AQC) regulations,¹⁶ for urban areas conducting an air quality conformity analysis, "estimates of regional transportation-related emissions used to support conformity determinations must be made at a minimum using network-based travel models according to procedures and methods that are available and in practice and supported by current and available documentation." (p. 34). Thus, a sketch planning model will not suffice for the air quality conformity analysis that TPB must conduct since the region is a non-attainment area for ground level ozone.

In conclusion, TPB staff disagree with the assertion that "TPB's assumptions go against USDOT's best practices and should be revisited." As noted earlier, TPB's TDFM is a state-of-the-practice, aggregate, trip-based TDFM that has been reviewed by several consulting firms over the years, and which is appropriate for the types of modeling analyses that must be conducted by the TPB staff. Nonetheless, TPB staff are always willing to hear about and try out new modeling tools that seem promising and relevant to our work.

¹⁵ Finch et al., "Finalization of Project Inputs for Air Quality Conformity Analysis: Visualize 2050 & FY 2026-2029 TIP," Presentation to the Transportation Planning Board, July 16, 2025.

¹⁶ *Transportation Conformity Regulations as of April 2012*, EPA-420-B-12-013 (U.S. Environmental Protection Agency, 2012), https://www.fhwa.dot.gov/environment/air_quality/conformity/laws_and_regs/rule.cfm.