VISUALIZE 2050
National Capital Region Transportation Plan

Frequently Asked Questions:
Visualize 2050 Air Quality Conformity and System Performance Assessment

1. **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.

2. **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.

     Note, given the large scale of the metropolitan area and the vast amounts of various indicators for the entirety of the TPB Planning Area (like daily vehicle trips, vehicle miles traveled, number of roadway lane-miles, etc.), a modest change in forecasted results could, nonetheless, indicate a meaningful impact for some residents of the region, particularly those traveling in the associated corridor. The results being deliberated today are consistent with prior studies conducted by TPB staff.[2]

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[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.

3. **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, which is not the case with Visualize 2050.

   - Federal regulations require that the TPB's metropolitan transportation plan (MTP), Visualize 2050, include only projects proposed to be implemented by an implementing agency with funding for the planning, design, construction, operations and maintenance demonstrated to be reasonably expected to be available. Projects included in a MTP cannot be based on an assumption or a scenario, rather they must meet these other requirements. The I-495 SEL project has been proposed by VDOT to be included in Visualize 2050, and the proposal meets the above criteria. There has been no proposal for a Metrorail service along this corridor that meets this criterion.

4. **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.[3] 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).

   - 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.

5. **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.

[3] "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).

6. **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.

7. **What rates of telecommuting are assumed?**

   - The model reflects pre-pandemic levels of telecommuting. The TPB's 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, with the model subsequently further validated using traffic counts and transit ridership from 2018.

8. **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.[4] 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.

9. **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]

[4] 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)

10. **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?**

    - The travel demand modeling conducted for Visualize 2050 with the I-495 SEL project is able to 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 does indicate 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 #2, 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.

11. **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 #2, 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).