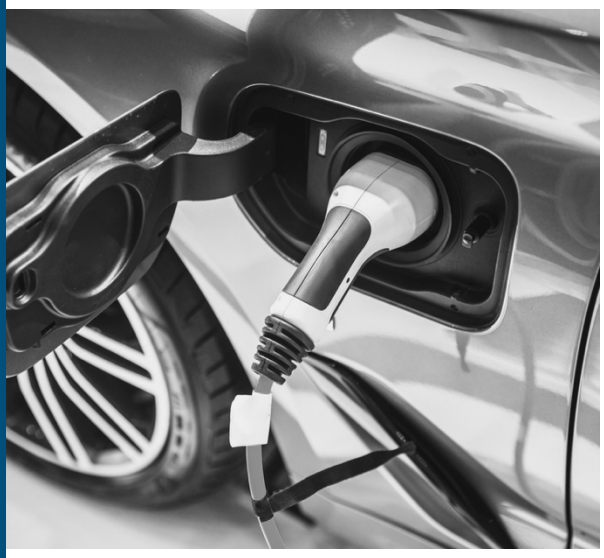
VISUALIZE 2050



Visualize 2050 Planning and Programming Process

Emissions Reduction Activities in the On-Road Transportation Sector

Part 4 of 27

National Capital Region
Transportation Planning Board

December 2025

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OVERVIEW OF EMISSIONS REDUCTION ACTIVITIES IN THE ON-ROAD TRANSPORTATION SECTOR

The transportation system is vital for allowing people to get to work, school, shopping, and other activities of daily life. However, the transportation system also results in unintended consequences on society, referred to as "externalities," such as air pollution from vehicle emissions. Emissions from motor vehicles are called "mobile emissions" since these emissions come from motor vehicles which move around. Emissions reduction activities are conducted by metropolitan planning organizations (MPOs) in response to federal regulations. Air pollution is categorized into two groups: criteria pollutants, which are regulated by the U.S. Environmental Protection Agency (EPA), and non-criteria pollutants, which are not regulated by the EPA. Criteria pollutants are discussed in the documentation dealing with the Air Quality Conformity Analysis of Visualize 2050. An example of a non-criteria pollutant is carbon dioxide, which is a greenhouse gas (GHG), that is produced from the use of fossil fuels in motor vehicles as well as activities outside of the transportation sector. Carbon dioxide naturally exists in the atmosphere; however, burning fossil fuels like gas and oil contribute to the atmospheric concentration of carbon dioxide rising beyond natural levels.[1]

Climate change mitigation is the reduction in GHG emissions that drive global climate change. According to the EPA:

> *Burning fossil fuels like gasoline and diesel releases carbon dioxide, a greenhouse gas, into the atmosphere. The buildup of carbon dioxide (CO2) and other greenhouse gases like methane (CH4), nitrous oxide (N2O), and hydrofluorocarbons (HFCs) is causing the Earth's atmosphere to warm, resulting in changes to the climate we are already starting to see today.*[2]

The on-road transportation sector contributes approximately one-third of the region's GHG.[3] The federal government does not require MPOs to report greenhouse gas emissions as part of their metropolitan transportation plans (MTPs), but strategies designed to lower GHG emissions generally lower all mobile emissions, so such strategies have multiple benefits for large urban areas.

The TPB policy framework has long included goals regarding protections for the natural environment, and in the absence of a federal requirement, the TPB has been proactively involved with climate change mitigation planning since 2008. For example, the TPB:

- Supported the development of the COG's National Capital Region Climate Change Report (2008)[4] by developing transportation sector emissions.

[1] National Oceanic and Atmospheric Administration (April 9, 2024). *Climate Change: Atmospheric Carbon Dioxide.* https://www.climate.gov/news-features/understanding-climate/climate-change-atmospheric-carbon-dioxide
[2] U.S. Environmental Protection Agency (May 14, 2024). *Carbon Pollution from Transportation.* https://www.epa.gov/transportation-air-pollution-and-climate-change/carbon-pollution-transportation
[3] Metropolitan Washington Council of Governments (January 15, 2021). *Community-Wide Greenhouse Gas Inventory Summary Fact Sheet.* https://www.mwcog.org/documents/2016/04/22/metropolitan-washington-community-wide-greenhouse-gas-emissions-inventory-summary--greenhouse-gas/
[4] Climate Change Steering Committee for the Metropolitan Washington Council of Governments Board of Directors (November 12, 2008). *National Capital Region Climate Change Report Final Report.* https://www.mwcog.org/file.aspx?A=R8%2FO7kehmpgZBhW7Z%2F6R7fLiQ4aIY28XTL33ZwEgoJo%3D

- Completed its own scenario study of on-road GHG emissions in 2010[5] and participated in a joint study with COG and the Metropolitan Washington Air Quality Committee (MWAQC) from 2015-2016.[6]
- Voluntarily reported estimated on-road greenhouse gas emissions (both absolute and per capita) as part of the performance analysis of the region's transportation plan since 2010.
- Included a question on the project submission form asking whether the project is "expected to contribute to reductions in emissions of greenhouse gases" beginning with the Call for Projects for the 2015 MTP.
- Undertook a significant action to adopt voluntary GHG reduction goals and supportive strategies for the on-road transportation sector in June 2022.
- Provides on-road transportation sector emissions for COG's periodic Metropolitan Washington Community-wide Greenhouse Gas Inventory.[7]
- Provides data, as requested, in coordination with COG staff, to local jurisdictions to support their climate planning efforts.
- Provides information and resources to support state and local jurisdictions in implementing GHG reduction actions.

TPB'S ROLE AND KEY STAFF

Since there is no federal requirement for MPOs to address GHG emissions as part of their MTPs, the TPB's role in climate change mitigation planning is voluntary. The TPB recognizes the contribution of motor vehicle emissions to the region's overall GHG emissions. By reporting on GHG emissions forecasts for the MTP, and by adopting GHG reduction goals and priority strategies that have been incorporated into the TPB Synthesized Policy Framework, the TPB informs planning throughout the region and guides the projects, programs, and policies that are submitted for the MTP (currently Visualize 2050) and Transportation Improvement Program's financial plan and planning activities beyond the financial plan.

TABLE 4.1: KEY STAFF

TPB Staff	Title	Role
Kanti Srikanth	Executive Director	Staff Director for the Transportation Planning Board (TPB)
Mark Moran	Program Director, Travel Forecasting and Emissions Analysis	Program Lead
Jeff King	Director, Climate, Energy, and Air Programs	COG Department of Environmental Programs

[5] National Capital Region Transportation Planning Board (May 18, 2010). *What Would It Take? Transportation and Climate Change in the National Capital Region Final Report.* http://www.mwcog.org/uploads/pub-documents/qF5eXVw20110617114503.pdf

[6] ICF and Metropolitan Washington Council of Governments (January 31, 2016). *Multi-Sector Approach to Reducing Greenhouse Gas Emissions in the Metropolitan Washington Region Final Technical Report.* https://www.mwcog.org/file.aspx?D=Uj%2fOvKporwCjlofmfR2gk7ay5EmBOb9a4UhR7cKKQig%3d&A=ITSIgZNdO1uWwMHJVzfUV1WlPhZ9IDhMGqWlEQSf9CM%3d

[7] *See, for example:* Metropolitan Washington Council of Governments (January 15, 2021). *Community-Wide Greenhouse Gas Inventory Summary Fact Sheet.* https://www.mwcog.org/documents/2016/04/22/metropolitan-washington-community-wide-greenhouse-gas-emissions-inventory-summary–greenhouse-gas/

TPB Staff	Title	Role
Dusan Vuksan	Program Manager, Model Application Group	Model Application Group Lead
Erin Morrow	Transportation Engineer	Model Application Group
Maia Davis	Senior Environmental Planner	COG Department of Environmental Programs

Role of TPB Committees and Subcommittees

The TPB Technical Committee generally oversees the TPB's work on emissions reduction planning. Some past scenario studies have been overseen by a task force or a working group, some of which included both the state department of transportation and state air agency representatives. TPB subcommittees have historically not focused on GHG emissions reductions; however, the missions of some of the TPB's subcommittees naturally support the reduction of GHG emissions from on-road transportation because GHG reduction is a minor co-benefit of many transportation planning activities that improve options for modes of travel other than single occupant vehicle (SOV) or improve travel efficiency.

For example, the TPB's Commuter Connections Program contributes to reductions in vehicle miles traveled (VMT) and vehicle trips (VT) by providing services to the region's commuters to encourage them to choose modes other than SOV. Similarly, the work of both the Bicycle and Pedestrian Subcommittee and the Regional Public Transportation Subcommittee (RPTS) supports reductions in VMT and VT by supporting planning for non-auto modes. Additionally, the Systems Performance, Operations and Technology Subcommittee (SPOTS) advises the TPB on matters of performance outcomes of the transportation system and transportation operations and management. Lastly, the Regional Electric Vehicle Deployment Working Group (REVD), which is staffed by COG and has members from TPB and COG member jurisdictions, serves as a forum for members to collaborate and coordinate actions related to deploying EVs and EV infrastructure. REVD oversaw the development of the TPB's Regional Electric Vehicle Infrastructure Implementation (REVII) Strategy.[8]

ROLE OF KEY PLANNING AGENCIES

The TPB and COG have worked extensively with their member agencies and partners on approaches to mitigate climate change and prepare the region for the impact of climate change. State DOT and transit agency planners, local jurisdiction staff, state air agency representatives, and other stakeholders are all able to provide their input to the process through various COG/TPB committees.

Many regional climate change planning activities are led by COG's Climate, Energy, and Environment Policy Committee (CEEPC) and its subcommittees, which are staffed by COG's Department of Environmental Programs (DEP) staff. CEEPC oversees development of periodic economy-wide GHG emission inventories and regional climate and energy action plans, including the Metropolitan Washington 2030 Climate and Energy Plan (CEAP) referenced previously in this document. TPB staff work closely with DEP staff on GHG inventory development and other studies,

[8] *ICF, "Regional Electric Vehicle Infrastructure Implementation Strategy," Final Report (Washington, D.C.: National Capital Region Transportation Planning Board, Metropolitan Washington Council of Governments, August 2024), https://www.mwcog.org/documents/2024/09/04/regional-electric-vehicle-infrastructure-implementation-revii-strategy-climate--energy-climate-change-electric-vehicles/.*

and periodically brief CEEPC on relevant matters. Similarly, DEP staff periodically brief the TPB and committees on climate change issues relevant to transportation planning.

In addition to the regional climate and/or energy action plans developed by CEEPC, many local and state agencies have developed climate and energy action plans and are undertaking electric vehicle infrastructure planning.

The Bipartisan Infrastructure Law and the Inflation Reduction Act have both provided funding for states to undertake development of climate action plans and electric vehicle infrastructure planning through the NEVI program, the Carbon Reduction Program (CRP), and the Climate Pollution Reduction Grants (CPRG) program. At the regional level, COG is leading the development of a Comprehensive Climate Action Plan (CCAP) through the CPRG for the Metropolitan Statistical Area (MSA). More information on the planning work being done through these federal grant programs can be found on the TPB's climate change mitigation planning page.[9]

PUBLIC ENGAGEMENT

Every month, there is a public comment opportunity at the beginning of the TPB meeting. For in-person/hybrid meetings, comments can be delivered in person, verbally, or in writing (e.g., email message, letter). For virtual-only meetings, comments can be delivered in writing, and summarized versions of the comments are usually read at the beginning of the meeting by TPB staff. Some of the local advocacy groups have been very engaged over the past several years and have submitted several rounds of both in-person comments and comment letters regarding how TPB should mitigate climate change and/or its negative effects. Climate change mitigation also surfaced as a major concern in all the public comment opportunities held for Visualize 2050.

TPB staff have presented to the TPB's Community Advisory Committee (CAC) and developed a climate change mitigation planning module for the TPB's Community Leadership Institute (CLI) that debuted in 2024.

CLIMATE CHANGE MITIGATION GOALS AND STRATEGY IDENTIFICATION FOR VISUALIZE 2050

In June 2022, the TPB undertook significant action with respect to climate change mitigation. The TPB adopted Resolution R18-2022,[10] which established on-road transportation-sector greenhouse reduction goals of 50 percent below 2005 levels by 2030 and 80 percent below 2005 levels by 2050. These TPB goals are identical to COG's economy-wide/non-sector-specific goals.

According to staff research, the TPB, by taking this action, was the first MPO in the country to voluntarily adopt GHG reduction goals for the on-road transportation sector. Part of the approval was adoption of seven priority GHG reduction strategies and identification of seven other GHG reduction strategies that have the potential to reduce on-road GHG emissions and which merited further discussion by the TPB member jurisdictions. The goals and strategies that were adopted by the TPB were examined in the TPB's Climate Change Mitigation Study of 2021 (CCMS).

[9] Metropolitan Washington Council of Governments (November 29, 2024). *Climate Change Mitigation in the Surface Transportation Sector.* https://www.mwcog.org/transportation/planning-areas/air-quality-and-environment/climate-change/

[10] National Capital Region Transportation Planning Board (June 15, 2022). *Resolution on the Adoption of On-Road Transportation Greenhouse Gas Reduction Goals and Strategies (TPB R18-2022, Item #8).* https://www.mwcog.org/events/2022/6/15/transportation-planning-board/

The seven priority GHG reduction strategies, as noted in the resolution, and which have been integrated into the TPB Synthesized Policy Framework,[11] are:

- Improve walk/bike access to all TPB identified high-capacity transit stations.
- Increase walk/bike modes of travel – complete the TPB's National Capital Trail Network by 2030.
- Convert private and public-sector light-, medium-, and heavy-duty vehicles, and public transit buses to clean fuels by 2030.
- Deploy a region-wide robust electric vehicle charging network (or refueling stations for alternate fuels).
- Add additional housing near TPB-identified high-capacity transit stations and in COG's Regional Activity Centers.
- Reduce travel times on all public transportation bus services.
- Implement transportation system management & operations (TSMO) improvement measures at all eligible locations by 2030.

The seven strategies adopted "to be explored in coordination at the local and state levels" are:

- Take action to shift growth in jobs and housing from locations currently forecast to locations near TPB-identified high-capacity transit stations and in COG's Regional Activity Centers to improve the jobs-housing balance locally.
- Make all public bus transportation in the region fare-free by 2030.
- Make all public rail transportation in the region fare-free by 2030.
- Price workplace parking for employees – only in Activity Centers by 2030 and everywhere by 2050.
- Convert a higher proportion of daily work trips to telework by 2030 and beyond.
- Charge a new fee per vehicle miles of travel (VMT) by motorized, private, passenger vehicles in addition to the prevailing transportation fees and fuel taxes.
- Charge a "cordon fee" (commuter tax) per motorized vehicle trip for all vehicles entering Activity Centers, by 2030.

The path to the adoption of these goals, targets, and strategies began more than a year and a half earlier. In October 2020,[12] the COG Board adopted an interim greenhouse gas reduction goal of 50 percent below 2005 levels by 2030 to help set a course to the region's long-term goal of 80 percent below 2005 levels by 2050, which was set in 2008.[13] The COG goal addressed the need to incorporate equity principles and expand education on climate change to reach the climate change mitigation and resiliency goals. The TPB endorsed the COG goal at its October 2020

[11] National Capital Region Transportation Planning Board (November 9, 2022). *The TPB's Synthesized Policy Framework: Informing Planning for the Metropolitan Washington Region Booklet.* https://www.mwcog.org/documents/2024/02/06/tpb-synthesized-policy-framework/

[12] Metropolitan Washington Council of Governments (October 14, 2020). *Resolution Endorsing Regional Climate Mitigation and Resiliency Goals (COG R45-2020) Resolution.* https://www.mwcog.org/documents/2020/10/14/certified-resolution-r45-2020---endorsing-regional-climate-mitigation-and-resiliency-goals/

[13] *Climate Change Steering Committee for the Metropolitan Washington Council of Governments Board of Directors (November 12, 2008). National Capital Region Climate Change Report.* https://www.mwcog.org/documents/2008/11/12/national-capital-region-climate-change-report-climate-change/

meeting.[14] CEEPC finalized the CEAP in November 2020,[15] which establishes priority collaborative actions for the region to work together to make progress towards the 2030 goal.

Climate Change Mitigation Study of 2021

In late 2020, the TPB had numerous discussions on the role and responsibility of the transportation sector in achieving the region's greenhouse gas reduction goals. To answer questions that were being asked by the TPB, TPB staff commissioned a study, the Climate Change Mitigation Study of 2021 (CCMS),[16] which was led by the TPB's planning services on-call consultant, to examine in more detail what strategies and actions could be taken solely by the transportation sector to help the region meet the multi-sector regional goals. The CCMS findings were presented to the TPB at a special work session and at its regular meeting in December 2021.[17]

According to the CCMS, none of the scenarios were estimated to achieve the 50 percent reduction in on-road greenhouse gas emissions (from the 2005 level) by 2030 goal, which affirmed the findings of previous TPB and COG scenario studies. Several ambitious scenarios (generally those with a combination of strategies) achieved the level of on-road greenhouse gas reductions assumed in the technical analysis that supported COG's 2030 CEAP, which demonstrated that the region could meet the overall economy-wide 2030 goal.

Regarding 2050, with the reference-case electrical grid, the analysis showed that the 2050 goal could be met with only the most aggressive scenarios. Under cleaner electrical grid assumptions, only the most aggressive scenarios were able to achieve the 2050 goal. Mode shift and travel behavior strategies support greenhouse gas reductions but are less impactful when nearly all on-road vehicles are EVs and the electrical grid is carbon neutral.

The results of the CCMS left the TPB without a clear answer regarding the adoption of greenhouse gas reduction goals and strategies, and there were varied opinions on how to move forward. During the first half of 2022, TPB staff and the consultant team provided additional information to support the TPB members' decision making. Additional work sessions on the topic were held before the April and May 2022 TPB meetings where staff presented the TPB with three possible goals for adoption:[18] pragmatic, ambitious, and the aspirational 50 percent and 80 percent below 2005 levels by 2030 and 2050.[19] After extensive discussion, in June 2022, the TPB adopted Resolution R18-2022 with the aspirational-level, on-road transportation greenhouse gas reduction goals and the aforementioned greenhouse gas reduction strategies (seven priority strategies to implement and seven strategies that warranted further discussion and study).

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[14] National Capital Region Transportation Planning Board (October 21, 2020). *Resolution on the Metropolitan Washington Council of Governments' Regional Multi-Sector Interim Goals for Reducing Greenhouse Gases Resolution.* https://www.mwcog.org/events/2020/10/21/transportation-planning-board/

[15] Metropolitan Washington Council of Governments (November 18, 2020). *Metropolitan Washington 2030 Climate and Energy Action Plan.* https://www.mwcog.org/documents/2020/11/18/metropolitan-washington-2030-climate-and-energy-action-plan/

[16] ICF, Fehr & Peers, and Gallop Corporation (January 7, 2022). *TPB Climate Change Mitigation Study of 2021: Scenario Analysis Findings Final Report.* https://www.mwcog.org/tpb-climate-change-mitigation-study-of-2021/

[17] National Capital Region Transportation Planning Board (December 15, 2021). *TPB Climate Change Mitigation Study of 2021: Report Findings.* https://www.mwcog.org/events/2021/12/15/transportation-planning-board/

[18] Kanti Srikanth to National Capital Region Transportation Planning Board (May 12, 2022). *Transportation Sector-Specific Climate Change Goals and Strategies for TPB's Plan and Planning Process.* https://www.mwcog.org/events/2022/5/18/tpb-climate-work-session/

[19] Kanti Srikanth to National Capital Region Transportation Planning Board (June 9, 2022). *Information to Consider before Voting on Greenhouse Gas Reduction Goals and Strategies for On-Road Transportation Memorandum.* https://www.mwcog.org/events/2022/6/15/transportation-planning-board/

EMISSIONS REDUCTION ACTIVITIES FOR VISUALIZE 2050

Since June 2022, the TPB has undertaken two major work activities to support implementation of strategies to work towards the TPB's greenhouse gas reduction goals. The first work activity was a study entitled, "Implementation Considerations for On-Road Transportation Greenhouse Gas Emissions Reduction Strategies" (ICGHG), which was commissioned in response to the TPB's direction in Resolution R18-2022 to further study seven greenhouse gas reduction strategies. The ICGHG report was finalized on June 17, 2024,[20] and was presented to the TPB Technical Committee on October 4 and to the TPB on October 18.

The second major work activity was a study entitled, the "Regional Electric Vehicle Infrastructure Implementation (REVII) Strategy." The REVII Strategy was developed as a joint effort between the TPB and COG as a follow-up to the findings of the CCMS as well as to support EV infrastructure planning thanks to the unprecedented amounts of funding for EV infrastructure in the Bipartisan Infrastructure Law's $5 billion National Electric Vehicle Infrastructure (NEVI) Formula Program and $2.5 billion Charging and Fueling Infrastructure Discretionary Grant Program (CFI Program). The final REVII Strategy report was dated August 2024.[21] Updates on TPB's climate change mitigation planning and federal funding programs to reduce greenhouse gas emissions from on-road transportation sources through planning and implementation grants can be found on the TPB's climate change mitigation planning page.[22]

In 2024, the federal government developed a rule that would have required states and MPOs to establish declining targets for carbon dioxide, one of the primary greenhouse gases, and report on progress toward the achievement of those targets.[23] However, as noted by the U.S. Federal Highway Administration (FHWA) in April 2024:

> *Pursuant to negotiations in two lawsuits, FHWA agreed to temporarily not seek to enforce the February 1, 2024, deadline for States to submit initial targets and reports through March 29, 2024. On March 27, 2024, the U.S. District Court for the Northern District of Texas vacated and remanded the Final Rule to DOT, in effect nullifying the rule Nationwide. Consistent with the Court's decision, States and MPOs are not required to submit initial targets and reports at this time.*[24]

Even though there is no federal requirement for greenhouse gas emission reduction targets, TPB, through its partnership with COG, continues to pursue regional greenhouse gas emission reduction goals.

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[20] ICF (June 17, 2024). *Implementation Considerations for On-Road Transportation Greenhouse Gas Reduction Strategies Final Report.* https://www.mwcog.org/events/2024/10/4/tpb-technical-committee/ and https://www.mwcog.org/documents/2024/10/18/implementation-considerations-for-on-road-greenhouse-gas-emissions-reduction-strategies/

[21] ICE and Metropolitan Washington Council of Governments (August 2024). *Regional Electric Vehicle Infrastructure Implementation Strategy Final Report.* https://www.mwcog.org/documents/2024/09/04/regional-electric-vehicle-infrastructure-implementation-revii-strategy-climate--energy-climate-change-electric-vehicles/

[22] Metropolitan Washington Council of Governments (November 29, 2024). *Climate Change Mitigation in the Surface Transportation Sector.* https://www.mwcog.org/transportation/planning-areas/air-quality-and-environment/climate-change/

[23] U.S. Department of Transportation, Federal Highway Administration (December 7, 2023). *National Performance Management Measures; Assessing Performance of the National Highway System, Greenhouse Gas Emissions Measure," Rule, 88 Fed. Reg. 85394.* https://www.federalregister.gov/documents/2023/12/07/2023-26019/national-performance-management-measures-assessing-performance-of-the-national-highway-system

[24] U.S. Department of Transportation, Federal Highway Administration, (April 8, 2024). *TPM Rulemakings - Transportation Performance Management.* https://www.fhwa.dot.gov/tpm/rule.cfm