ITEM 8 – Action
June 15, 2022

Adoption of Transportation-Sector-Specific
Greenhouse Gas Reduction Goals and Strategies

Action: Adopt Resolution R18-2022: Adding greenhouse gas (GHG) reduction goals and strategies, specifically for the on-road transportation sector, as planning priorities in the development of the reginal long range transportation plans, to help support the region attain its multi-sectoral GHG reduction goals.

Background: The TPB had previously stated its desire to adopt greenhouse gas (GHG) reduction goals and strategies as part of its long-range transportation plan update. The TPB has been engaged in studying and discussing this over the past year. Based on the results of the study, subsequent discussions, a TPB member survey, and on interactions at two TPB work sessions (held on April 20 and May 18), the TPB will be considering formally adopting a GHG reduction goal for the on-road transportation sector and a set of GHG reducing strategies as regional planning priorities to inform transportation planning and programming decisions of its members.

The board will be asked to adopt the transportation-sector goals and strategies in the associated resolution.

ATTACHMENTS:

- Resolution R18-2022
- 8A – Staff Memo on Climate Change Goals and Strategies Resolution
- 8B - Staff Memo follow up information from the May 18 Work Session
- VDOT Letter regarding TPB's Proposed Climate Change Goals and Strategies

TPB R18-2022
June 15, 2022

NATIONAL CAPITAL REGION TRANSPORTATION PLANNING BOARD
777 North Capitol Street, N.E.
Washington, D.C. 20002

RESOLUTION ON THE ADOPTION OF ON-ROAD TRANSPORTATION GREENHOUSE GAS REDUCTION GOALS AND STRATEGIES

WHEREAS, the National Capital Region Transportation Planning Board (TPB), as the federally designated metropolitan planning organization (MPO) for the Washington region, has the responsibility under the provisions of the Fixing America's Surface Transportation (FAST) Act, reauthorized November 15, 2021 when the Infrastructure Investment and Jobs Act (IIJA) was signed into law, for developing and carrying out a continuing, cooperative and comprehensive transportation planning process for the metropolitan area consistent with the requirements of federal law (23 CFR, Parts 450.300 - 450.340); and

WHEREAS, the TPB is committed to developing its long-range transportation plans while also preserving and enhancing the region's environment through transportation plans emphasizing reduced congestion with reduced reliance on single-occupant motor vehicles and emphasizing projects and programs that move more people and goods efficiently; and

WHEREAS, the TPB is associated with the Metropolitan Washington Council of Governments (COG) and works closely with COG's Board of Directors ("COG Board") and its regional policy advisory committees, including the Climate, Energy and Environment Policy Committee (CEEPC), and the Region Forward Coalition, as well as the Metropolitan Washington Air Quality Committee (MWAQC) on matters of regional multi-sectoral planning; and

WHEREAS, in November 2008, the COG Board, through resolution R60-08, adopted the National Capital Region Climate Change Report that included voluntary goals to reduce greenhouse gases by 10 percent below business as usual projections by 2012, by 20 percent below 2005 levels by year 2020, and by 80 percent below 2005 levels by year 2050; and

WHEREAS, the TPB recognizes achieving reductions in criteria air pollutants and greenhouse gas (GHG) emissions as a priority and has been reporting projected on-road GHG emissions in the region's Long-Range Transportation Plan (LRTP) performance report since 2010; and

WHEREAS, the TPB, in 2010, conducted a scenario study, "What Would it Take?" that examined the type of actions needed to reduce GHG emissions specifically within the on-road transportation sector; and

WHEREAS, the TPB, between 2015 and 2016, completed a multi-sector study in collaboration with COG and MWAQC, that identified implementable and stretch local, regional, and state actions to reduce GHG emissions in four sectors (energy, transportation, land use, and built environment); and

WHEREAS, the region has been able to reduce criteria air pollutants (such as ozone and fine particulate matter) and GHG emissions since 2010, due to federal, state, and local actions across sectors, including transportation and land use, even while accommodating considerable growth in population and employment; and

WHEREAS, the region met its GHG reduction goal for 2012 with a report on the status of its 2020 goal anticipated to be published later this year; and

WHEREAS, in 2019, the Intergovernmental Panel on Climate Change (IPCC) updated its guidance to recognize that the world is already experiencing the impacts of global warming and identified 2030 as one of the earliest target years, and noting that to avoid the most severe climate impacts, GHG emissions must be significantly reduced as expeditiously as possible; and

WHEREAS, in October of 2020, the COG Board adopted a new interim-year regional GHG reduction goal of 50% reduction below 2005 levels by 2030; and

WHEREAS, in November 2020, the TPB acted to affirm the new interim regional 2030 GHG reduction goal and the region's climate resilience goals of becoming a Climate Ready Region by 2030; and

WHEREAS, COG's Climate, Energy, and Environment Policy Committee (CEEPC) adopted the 2030 Climate and Energy Action Plan (CEAP), a detailed study of GHG emissions in the region in various sectors and the strategies available within each sector to reduce these emissions; and

WHEREAS, the CEAP states that "achieving the regional goals [for 2030 and 2050] would require unprecedented, aggressive cross-sectoral action from all COG members and its state and federal partners;" and

WHEREAS, the 2030 CEAP provides a roadmap for how the region could achieve the 2030 GHG reduction goal with Priority Collaborative Actions in Climate Action Areas (sectors) including Clean Energy, Zero Energy Buildings, Zero Emission Vehicles, Mode Shift and Travel Behavior, Zero Waste, Sequestration, and Equity; and

WHEREAS, COG has not adopted GHG reduction goals for any of the above sectors, the CEAP assumes specific levels of implementation for various GHG reduction strategies within these sectors; and

WHEREAS, there is currently no federal requirement for MPOs to set goals for GHG reductions and or report GHG emissions levels resulting from its long-range transportation plans; and

WHEREAS, the TPB is committed to the transportation sector being an active partner, with the other sectors, in the region's efforts to reduce GHG emissions and meet the region's GHG reduction goals while meeting all requirements for metropolitan planning, which include addressing federally required planning factors; and

WHEREAS, in 2021, the TPB stated its desire to voluntary adopt on-road transportation-specific GHG reduction goals and strategies as part of its long-range transportation plan and planning process so as to inform the transportation decision making of its members; and

WHEREAS, the TPB commissioned the Climate Change Mitigation Study (CCMS) of 2021 to explore several GHG reduction strategies from three pathways: Vehicle Technology and Fuels; Mode Shift and Travel Behavior; and Transportation Systems Management and Operations (TSMO); and

WHEREAS, the CCMS showed a few combinations of strategies studied could reduce GHG emissions to 80% below 2005 levels by 2050, but did not show any combination of strategies that could meet the study's transportation-sector-specific reduction goal of 50% below 2005 levels by 2030, though there were combinations of strategies that were estimated to have the potential to reduce GHG emissions between 23% and 32% below 2005 levels by 2030; and

WHEREAS, the TPB has expressed an interest in implementing strategies found to reduce GHG emissions and hence conducted a survey of its members to determine the level of on-road transportation GHG emissions reduction goals the region could consider adopting, along with the GHG reduction strategies that the TPB could adopt as planning priorities; and

WHEREAS, the TPB conducted work sessions in April and May 2022 reviewing the result of the TPB member survey and discussing the on-road transportation sector GHG reduction goals and strategies for adoption.

NOW, THEREFORE, BE IT RESOLVED THAT THE NATIONAL CAPITAL REGION TRANSPORTATION PLANNING BOARD:

1. Adopts regional, voluntary, on-road transportation-sector-specific GHG reduction goals of 32% below 2005 levels by 2030 and 80% below 2005 levels by 2050; and

2. Adopts seven greenhouse gas reduction strategies, listed in Table 1 below, that have the potential to reduce on-road transportation GHG emissions; and

3. Identifies seven other greenhouse gas reduction strategies, listed in Table 2 below, as having the potential to reduce on-road GHG emissions which merit further coordinated discussion of the implementation issues among the various concerned entities of the TPB member jurisdictions and commits to participate in such discussions aiming to be able to adopt these strategies as planning priorities for the region.

Table 1 On-road GHG Reduction Strategies For Adoption As Priorities By the TPB

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

Table 2 On-road GHG Reduction Strategies To Be Explored In Coordination At Local and State Levels

Ref.	Description of Strategy
1	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, within jurisdictional boundaries, to improve the jobs-housing balance locally.
2	Make all public bus transportation in the region fare-free by 2030.
3	Make all public rail transportation in the region fare-free by 2030.
4	Price workplace parking for employees – only in Activity Centers by 2030 and everywhere by 2050
5	Convert a higher proportion of daily work trips to telework by 2030 and beyond.
6	Charge a new fee per vehicle mile of travel (VMT) by motorized, private, passenger vehicles in addition to the prevailing transportation fees and fuel taxes.
7	Charge a "cordon fee" (Commuter tax) per motorized vehicle trip for all vehicles entering Activity Centers in the core of the District of Columbia, by 2030.

National Capital Region
Transportation Planning Board

MEMORANDUM

TO: Transportation Planning Board

FROM: Kanti Srikanth, TPB Staff Director

SUBJECT: Information to consider before voting on greenhouse gas reduction goals and strategies for on-road transportation

DATE: June 9, 2022

This memo provides information to consider before voting on greenhouse gas (GHG) reduction goals and strategies for on-road transportation for inclusion in the National Capital Region Transportation Planning Board's (TPB's) long-range transportation plan, Visualize 2045.

The TPB is federally required to maintain a financially constrained long-range transportation plan (LRTP). Federal laws/regulations require, among other things, that the region's LRTP:

- contain the region's collective long-term plans to fund, operate, maintain, and, potentially, expand the transportation system within a minimum planning horizon of 20 years.
- include all transportation projects (highway, transit and non-motorized) that affect the transportation system's capacity, irrespective of the source of funding used for the project.
- include all transportation projects (highway, transit and non-motorized) that use federal funds, irrespective of its impact on the transportation system's capacity.
- be updated at least once every four years; the TPB's 2018 LRTP must be updated and federally approved in 2022; failure to meet this deadline will adversely impact the flow of all federal transportation funds to the region and impact timely federal approval of projects and programs.
- demonstrate that funding will likely be available to maintain and operate the transportation system and fully fund the capital expenditure of all projects in the plan.
- demonstrate that the estimated emissions of specific pollutants (in TPB's case, volatile organic compounds, and nitrogen oxides, which are ozone precursors) conform to the state air quality implementation plans (SIPs) designed to meet federal air quality standards.

The TPB is scheduled to consider, at its June 15 meeting, the adoption of its 2022 update of Visualize 2045, which, according to TPB staff, meets all federal requirements.

The TPB is considering *voluntarily* adopting greenhouse gas (GHG) reduction goals and strategies for the on-road transportation sector, which would be included in its LRTP and its long-range transportation planning process:

- There is currently no federal requirement for MPOs to report GHG emissions resulting from their LRTPs or to establish GHG emission reduction goals.

- Research conducted by TPB staff found a few MPOs with state-mandated reduction goals, but did not find any MPOs that had voluntarily adopted GHG reduction goals for their long-range transportation plans.
- There are no federal restrictions on MPOs adopting such additional policy goals, especially if such aspirational goals do not preclude the MPO from adopting the federally mandated LRTP in a timely manner.
- The TPB began tracking and reporting greenhouse gas emissions from its LRTP in 2010.
- Projects, programs and policies in the draft 2022 update of Visualize 2045 that will be considered for adoption by the TPB at the June 15, 2022 meeting are expected to reduce GHG emissions from on-road sources by 18% below 2005 levels by 2045 (17% below 2005 levels by 2030).[1]

The COG Board adopted greenhouse gas reduction goals for the region:

- The COG goals for the region are:
    - 50% below 2005 levels by 2030.[2]
    - 80% below 2005 levels by 2050.[3]
- The above GHG reduction goals are regional goals and will require reductions from *all* sectors including:
    - Energy Grid
    - Energy Usage in buildings (Residential, Commercial, and Industrial)
    - Transportation (On-road, Aviation, Rail, Marine, Off-road)
    - Waste (Water and Solids)
    - Other (Agriculture, etc.)
- While COG has not adopted individual GHG reduction goals for any of the above specific sectors, its 2030 Climate and Energy Action Plan (CEAP) assumes specific levels of implementation for various GHG reduction strategies within these sectors.
- The TPB has affirmed the region's non-sector-specific goals for 2030 and 2050 and the TPB is now considering voluntarily adopting GHG reduction goals for the on-road transportation sector to assist the region in reaching its regional, non-sector-specific GHG reduction goals.
- The adoption of on-road-specific GHG reduction goals by the TPB in no way changes COG's already established, regional, non-sectoral-specific goals. The TPB's proposed goals are meant to support both the existing regional and national GHG reduction goals.

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[1] "Visualize 2045, A Long-Range Transportation Plan for the National Capital Region" (Washington, D.C.: Metropolitan Washington Council of Governments, National Capital Region Transportation Planning Board, October 17, 2018), 41, https://www.mwcog.org/documents/2018/10/17/visualize-2045-a-long-range-transportation-plan-for-the-national-capital-region-featured-publications-tpb-visualize-2045/.

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

[3] "National Capital Region Climate Change Report," Final Report (Washington, D.C.: Metropolitan Washington Council of Governments, November 12, 2008), https://www.mwcog.org/file.aspx?A=R8%2FO7kehmpgZBhW7Z%2F6R7fLiQ4aIY28XTL33ZwEgoJo%3D.

- COG's adoption of the 2030 GHG reduction goal was informed by its CEAP. According to the CEAP analysis, which covered all sectors, if the actions and implementation levels specified in the CEAP were implemented, the region would be able to attain, in total, the region's GHG emissions reduction goal of 50% below 2005 levels by 2030.
- The strategies identified in the CEAP for the on-road transportation sector focus on clean fuel vehicles, reduced travel/vehicle-miles-travelled, and transportation system efficiency – as does the TPB's Climate Change Mitigation Study (CCMS).[4] [5]
- Although not explicitly stated in the 2030 CEAP, according to the underlying analysis, the transportation sector would need to reduce its GHG emissions by 32% (below 2005 levels by 2030) for the region to achieve its 50% reduction goal (assuming the other sectors also achieve their assumed reductions).

On-road, transportation-sector-specific GHG reduction goals and strategies for TPB's consideration.

Based on the discussion by the board on this topic since 2020, the 2021 CCMS, the 2022 TPB member survey on climate change mitigation, the recent 2022 TPB work sessions, and the June 3, 2022 TPB Steering Committee discussions, the staff resolution proposes the TPB:

1. **Adopt a goal of reducing GHG within the on-road transportation sector[6] by 32% below 2005 levels by 2030 and 80% below 2005 levels by 2050.**
   Achieving this level of reduction would require the region to implement a combination of many of the strategies analyzed in the 2021 CCMS.[7] Table 1 shows a set of strategies and levels of implementation that were estimated to achieve a 32% reduction in GHG emissions if implemented in combination. The first seven strategies in the table, shown in black, were supported by a majority or plurality of TPB members in the TPB member survey. The second set of seven strategies, shown in blue, did not receive widespread support in the TPB member survey, but would likely be needed to achieve the 32% reduction. Many of these strategies shown in blue have substantive unresolved implementation issues, but could, in the future, be re-considered by the TPB and its member agencies.
2. **Adopt the seven GHG reducing strategies** examined by the TPB's 2021 CCMS and **supported for adoption by a majority or plurality of the TPB member jurisdictions and agencies** (Table 2). The seven strategies shown in Table 2 are the same as the first seven shown in Table 1.
3. **Affirm that the TPB finds that seven other strategies examined by the TPB's 2021 CCMS merit further examination** at the local and state levels regarding the viability and possible

[4] ICF, Fehr & Peers, and Gallop Corporation, "TPB Climate Change Mitigation Study of 2021: Scenario Analysis Findings," Final Report (National Capital Region Transportation Planning Board, Metropolitan Washington Council of Governments, January 7, 2022), https://www.mwcog.org/tpb-climate-change-mitigation-study-of-2021/.
[5] ICF, Fehr & Peers, and Gallop Corporation, "TPB Climate Change Mitigation Study of 2021: Additional Transportation Scenarios Analysis: TPB Survey Identified Scenarios," Final Report (National Capital Region Transportation Planning Board, Metropolitan Washington Council of Governments, June 3, 2022), https://www.mwcog.org/events/2022/5/18/tpb-climate-work-session/.
[6] While COG's regional inventory of transportation sector GHG emissions include emission from on-road vehicles and those from Marine, Aviation, Rail and off-road vehicles, TPB is focused on the on-road vehicles (highway and transit).
[7] For example, the CCMS (Jan. 7, 2022) found that three to four of the ten scenarios analyzed would be able to attain a GHG reduction of 32% or more, depending on assumptions about the cleanliness of the electrical grid.

schedule of implementation of these strategies (Table 3). The seven strategies listed in Table 3 are the same as the last seven strategies listed in Table 1.

Additional information:

GHG Reduction goals level:
Recent board discussions have examined four levels of transportation-sector-specific GHG reduction goals for 2030:

- 50% below 2005 levels by 2030
- 32% below 2005 levels by 2030
- 29% below 2005 levels by 2030
- 23% below 2005 levels by 2030

The TPB's most recent and other previous studies have not identified a pathway to reduce the on-road sector's GHG emissions by 50% below 2005 levels by 2030. The 2021 CCMS shows that implementing all 14 strategies (Tables 1 and 2) including those that have substantive unresolved implementation issues (Table 2) still will not yield a 50% GHG reduction in GHG by 2030.

The goal of 32% on-road GHG reduction by 2030 is proposed for adoption and was described in the previous section.

The goal of 29% on-road GHG reduction by 2030 would require implementing all seven strategies identified for adoption by the TPB at this time (Table 2). The clean fuel strategy would have to be implemented at very high levels of implementation, e.g., by 2030, the share of vehicles that would need to be zero-emissions vehicles (ZEVs) would need to be 100% of new light-duty vehicles sold; 50% of new medium/heavy duty trucks sold; and 100% of all buses on the road, which may not be possible to attain, as these sales goals go beyond the most stringent technology goals in California. If ZEVs are not at such high levels of sales and operation by 2030, then additional significant mode shift and travel behavior strategies beyond the seven strategies would be needed.

The goal of 23% GHG reduction by 2030 would require implementing all seven strategies identified for adoption by the TPB at this time (Table 2) with the clean fuel strategy at a level that is considered very aggressive, yet consistent with the levels announced by the federal administration and some of the TPB member jurisdictions.

Table 1 On-road GHG Reduction Strategies For 32% Reduction From 2005 Levels

Ref.	Description of Strategy
1	Improve walk/bike access to all TPB identified high-capacity transit stations – 25% increase in bicycle access trips, by 2030.
2	Increase Walk/Bike modes of travel - Complete the TPB's National Capital Trail Network (about 700 miles) by 2030.
3	Convert private and public sector light, medium and heavy duty vehicles, and public transit buses to clean fuels, by 2030. (50% of new light duty vehicles sold; 30% of new medium / heavy duty trucks sold; 50% of all buses on the road)
4	Deploy a region-wide robust electric vehicle charging network (or refueling stations for alternate fuels).
5	Add additional housing units near TPB-identified high-capacity transit stations and in COG's Regional Activity Centers: 77,000 by 2030 and 126,000 by 2050.
6	Reduce travel times on all public transportation bus services – 15% by 2030/30% by 2050.
7	Implement transportation system management & operations (TSMO) improvement measures at all eligible locations by 2030.
8	**Shift growth in jobs and housing,** within jurisdictional boundaries, from forecast locations to near TPB-identified high-capacity transit stations and COG's Regional Activity Centers (RAC).
9	Make **all public bus** transportation in the region **fare-free** by 2030.
10	Make **all public rail** transportation in the region **fare-free** by 2030.
11	**Convert a higher proportion of daily work trips to telework**. 40% of all work trips by 2030 (80% of telework eligible trips).
12	**Price workplace parking** for employees everywhere in region by 2030 ($12-$14/day in RACs; $6/day outside RACs). 2022$s to be adjusted for future years.
13	Charge a **new fee per vehicle mile of travel** (VMT) by motorized, private, passenger vehicles (on top of prevailing transportation fees/taxes). In 2030 -$0.05/mile and in 2050 $0.10/mile
14	Charge a **"cordon fee"** (Commuter tax) of $10 per motorized vehicle trip for all vehicles entering Activity Centers in the core of the District of Columbia, by 2030.

Table 2 On-road GHG Reduction Strategies For Adoption As Priorities By the TPB

Ref.	Description of Strategy
1	Improve walk/bike access to all TPB identified high-capacity transit stations – 25% increase in bicycle access trips, by 2030.
2	Increase Walk/Bike modes of travel - Complete the TPB's National Capital Trail Network (about 700 miles) by 2030.
3	Convert private and public sector light, medium and heavy duty vehicles, and public transit buses to clean fuels, by 2030. (50% of new light duty vehicles sold; 30% of new medium / heavy duty trucks sold; 50% of all buses on the road)
4	Deploy an region-wide robust electric vehicle charging network (or refueling stations for alternate fuels).
5	Add additional housing units near TPB-identified high-capacity transit stations and in COG's Regional Activity Centers: 77,000 by 2030 and 126,000 by 2050.
6	Reduce travel times on all public transportation bus services – 10% by 2030/20% by 2050.
7	Implement transportation system management & operations (TSMO) improvement measures at all eligible locations by 2030.

Table 3 On-road GHG Reduction Strategies To Be Explored Further At Local and State Levels

Ref.	Description of Strategy
1	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, within jurisdictional boundaries, to improve the jobs-housing balance locally.
2	Make **all public bus** transportation in the region **fare-free** by 2030.
3	Make **all public rail** transportation in the region **fare-free** by 2030.
4	**Price workplace parking** for employees – only in Activity Centers by 2030 (between $12 - $14/day) and everywhere by 2050 (between $12-$14/day and $6/day outside of Activity Centers). 2022$s to be adjusted for future years.
5	**Convert a higher proportion of daily work trips to telework**. 25% of all work trips by 2030 (50% of telework eligible trips) and 40% of all work trips by 2050 (80% of all eligible trips).
6	Charge a **new fee per vehicle mile of travel** (VMT) by motorized, private, passenger vehicles in addition to the prevailing transportation fees and fuel taxes. In 2030, the fee would be 5 cents/mile and in 2050, the fee would be 10 cents/mile
7	Charge a **"cordon fee"** (Commuter tax) of $10 per motorized vehicle trip for all vehicles entering Activity Centers in the core of the District of Columbia, by 2030.

National Capital Region
Transportation Planning Board

MEMORANDUM

TO: Transportation Planning Board

FROM: Kanti Srikanth, TPB Staff Director

SUBJECT: Follow-up information from the TPB's May 18, 2022 meeting and work session

DATE: June 9, 2022

Staff received comments and requests for additional information from various members of the board after the May 18, 2022 TPB work session and board meeting. Staff sought the assistance of the TPB's consultant team, led by ICF, to collect information needed to respond to some of the questions. The consultant team documented the questions and responses in a technical memo,[1] which was shared with the TPB's Technical Committee on June 7. The purpose of this staff memo is to summarize the information in the consultant memo.

WOULD THE ON-ROAD TRANSPORTATION GREENHOUSE GAS REDUCTION GOALS APPLY AT THE LOCAL LEVEL TO INDIVIDUAL JURISDICTIONS?

No. Like COG's regional, non-sector-specific GHG reduction goals, any transportation-specific goal adopted by the TPB would be a regional goal, not locality specific. TPB will continue to report on-road GHG emissions from its long-range transportation plan at a regional level.

CAN THE DIFFERENT LEVELS OF ON-ROAD TRANSPORTATION GOALS UNDER CONSIDERATION HELP THE REGION ACHIEVE COG'S GOAL OF 50% BELOW 2005 EMISSIONS LEVELS BY 2030?

Yes, to varying degree (see below for details). COG's 2030 Metropolitan Washington Climate and Energy Action Plan (CEAP) provides a roadmap for how the region can achieve its 2030 goal with actions from all sectors, including the four largest sectors: energy, buildings, transportation, and waste. Regarding the likelihood of each of the three alternative levels of GHG reduction goal for the transportation-sector under consideration by the TPB helping the region achieve COG's regional 2030 goal:

TPB Goal Option A: 50% reduction in on-road transportation GHGs below 2005 levels by 2030

- YES, this level of reduction would help the region achieve its multi-sector GHG reduction goal, assuming contributions from other sectors.
- This option would significantly exceed the reductions needed from the on-road sector for the region to achieve its overall 2030 goal as in COG's 2030 CEAP.
- HOWEVER, not even the scenarios with a combination of the most aggressive strategies in the TPB's Climate Change Mitigation Study (CCMS), including those with unresolved

[1] Michael Grant, Mike McQueen, and Sam Pournazeri to Kanti Srikanth et al., "Clarifications Regarding On-Road Transportation Greenhouse Gas (GHG) Reduction Goals and Strategies," Memorandum, June 3, 2022, https://www.mwcog.org/tpb-climate-change-mitigation-study-of-2021/.

implementation issues, would be able to reduce on-road GHG emissions by this level. As such, a pathway to achieve this goal is unknown at this time.

TPB Goal Option B: 32% reduction in on-road transportation GHGs below 2005 levels by 2030

- YES, this level of reduction would help the region achieve its multi-sector GHG reduction goal assuming other sectors contribute reductions consistent with the COG CEAP.
- This option would meet the reductions from the on-road sector for the region to achieve its overall 2030 goal as in COG's 2030 CEAP.
- HOWEVER, only scenarios with the most aggressive combinations of strategies in the TPB's CCMS, which are unprecedented for the region, were estimated to achieve this goal. About half of the strategies needed to meet this goal have unresolved implementation issues and thus are not being considered for adoption by the TPB at this time. Prospects for resolving all issues before 2030 are uncertain at best.

TPB Goal Option C: 23% reduction in on-road transportation GHGs below 2005 levels by 2030

- Yes, this level of reduction would help the region achieve its multi-sector GHG reduction goal yet be short of the level of contribution needed from the transportation sector for the region to achieve the overall 2030 goal. The region could still achieve its overall 2030 goal if other sectors are able to reduce GHG emissions further than the reductions in COG's 2030 Climate and Energy Action Plan.
- HOWEVER, this level of GHG reduction is based on the strategies in the TPB's Climate CCMS, that the TPB is considering for adoption as planning priorities, including significant and rapid changes in vehicle technology (at least 50% of all light-duty vehicles sold would be zero emissions by 2030, which is in line with the Biden Administration's goal). It is possible that this set of strategies could exceed a 23% reduction in emission if the strategies are implemented at levels beyond what was assumed in the analysis.

HOW DO THE ON-ROAD TRANSPORTATION GOALS BEING CONSIDERED BY TPB COMPARE TO GOALS FOR PEER MPOS IN CALIFORNIA?

The state legislated, state-wide GHG reduction goals in California (SB 375) are generally comparable to COG's voluntary, region level GHG reduction goals. However, within the transportation sector, it is more difficult to make comparisons, since the GHG reduction goals established for California MPOs are per capita GHG reductions that are limited to vehicle miles traveled by light-duty vehicles and do not include GHG reductions realized via state clean vehicle programs. In order to compare the goals for peer MPOs in California with the goals being considered by the TPB, ICF estimated the reduction in per capita light-duty vehicle miles traveled (VMT) that would be needed to meet the respective goals, factoring in the fact that the California goals are to be achieved by 2035, while the TPB is considering goals for 2030.

The four largest California MPOs -- Los Angeles, Sacramento, San Diego, San Francisco -- will need a 19% reduction in per capita light-duty VMT by 2035, compared to 2005 levels, to achieve GHG reduction targets established by SB 375 and the California Air Resources Board. The latest reports indicate that the statewide 2019 passenger VMT per capita *exceeded* 2005 passenger VMT per capita in California.

Using aggressive assumptions about clean vehicle technology adoption (assuming 50% of all light-duty vehicles sold in the region would be EVs or similar zero-tailpipe emissions, 30% of new medium/heavy duty truck sales would be zero-tailpipe emissions, and 50% of buses on the road

would be zero-tailpipe emissions by 2030). With regard to the three alternatives for GHG reduction goals being considered by the TPB, goal options A and B would require significantly more aggressive levels of passenger VMT per capita reduction than the goals of California's largest MPOs – 19% below 2005 levels .

TPB Goal Option A: 50% reduction in on-road transportation GHGs below 2005 levels by 2030, would require 53-57% reduction[2] in per capita passenger VMT, compared to 2005, by 2030

TPB Goal Option B: 32% reduction in on-road transportation GHGs below 2005 levels by 2030, would require 20-26% reduction[3] in per capita passenger car VMT, compared to 2005, by 2030

TPB Goal Option C: 23% reduction in on-road transportation GHGs below 2005 levels by 2030, would require 3-10% reduction[3] in per capita passenger car VMT needed, compared to 2005, by 2030.

Regardless of the goal option that is ultimately chosen, the goals under consideration by the TPB could be considered ambitious relative to peer MPOs given that TPB staff research showed that 1) many peer MPOs do not have any on-road transportation sector GHG reduction goals, 2) TPB would be the first MPO adopting these types of goals without a state mandate and 3) California MPOs have been unable to achieve their per capital VMT reduction levels.

DO THE GHG GOALS ACCOUNT FOR UPSTREAM EMISSIONS ASSOCIATED WITH VEHICLE PRODUCTION/MANUFACTURING?

A comment was made during the meeting that the term "zero emissions vehicles" (ZEVs) is misleading since even if the vehicles do not emit GHGs and the electric grid is carbon free, there are upstream emissions associated with the manufacturing and maintenance of the vehicles.

From a full life-cycle perspective, there are GHG emissions associated with the manufacture, repair, and disposal of vehicles (automobile and transit), as well as roadway and transitway maintenance and operations , which are not considered in the TPB's analysis. Typically, regional emissions inventories do not include upstream or downstream emissions associated with the manufacture of products outside of the region, and if manufactured in the region would be counted as industrial-related emissions. Similarly, the regional inventory does not include emissions associated with the production of goods used by residents in the region, such as clothing, furniture, toys, or other products purchased by residents, if they are manufactured outside of the region.

It should be noted that the Climate Change Mitigation Study (CCMS) of 2021 included estimates of both tailpipe GHG emissions from motor vehicles and GHG emissions associated with the electricity needed to power electric vehicles (EVs). A review of many other studies and GHG reduction plans for on-road transportation sources show, by contrast, account for only tailpipe emissions from motor vehicles.

[2] *Range depends on the electric grid assumptions in the TPB's CCMS – Reference case Grid; Modified Grid and Clean Grid. .*

COMMONWEALTH of VIRGINIA

DEPARTMENT OF TRANSPORTATION

Stephen C. Brich, P.E.
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May 31 2022

The Honorable Pamela Sebesky
Chair, National Capital Region Transportation Planning Board
Metropolitan Washington Council of Governments
777 North Capitol Street, N.E., Suite 300
Washington, DC 20002-4201

RE: TPB's Proposed Climate Change Goals and Strategies for the Visualize 2045 Plan and Planning Process

Dear Chair Sebesky:

The Commonwealth of Virginia is supportive of the TPB's effort in advancing climate change mitigation for the region. This was documented on the Commonwealth responses to the Climate Change Mitigation Goals and Strategies Questionnaire in April 2022. Also, as the VA-DOT representative, I participated in the TPB's workshops in April and May 2022 to discuss the proposed Greenhouse Gas (GHG) reductions goals and the appropriate levels of implementation that could be pursued for the proposed strategies.

As documented on our response to the TPB's Climate Change Mitigation Goals and Strategies Questionnaire and stated during the TPB's workshops, the adoption of GHG reductions goals and targets should be aspirational and not directly tied to the performance of the Visualize 2045 Plan as it is not required by Federal law. After reviewing the three potential GHG reduction levels for consideration, VDOT supports Option C "Pragmatic goals", at more moderate levels of implementation compared to those listed in the survey resulting in 23% GHG reductions by 2030 below 2005 levels.

I am offering the following comments on behalf of the Commonwealth to express our position on the recommended climate change goals and strategies actions to be considered at the next June Board meeting.

General Comments:

- The Commonwealth did not respond with "Adopt" or "Explore" to any proposed level of GHG reduction. Our response was "Other" indicating that we needed more information regarding some of the questions before making a determination.
- Regardless of the proposed level of implementation, the adoption of GHG reduction goals/targets should be aspirational and not directly tied to the performance of the Visualize 2045 Plan because it is not required by Federal law.

- As the VA-DOT representative, I support Option C "Pragmatic goals", at more moderate levels of implementation compared to those listed in the survey resulting in 23% GHG reductions by 2030 below 2005 levels.
- The GHG reduction proposed goals and targets should not exclude any jurisdiction or any mode of transportation improvement/strategy from the Visualize 2045 plan future updates; likewise reporting of GHG reduction should be system wide for the region, not project or jurisdiction specific. Projects and strategies have synergies that can only be realized when reported system wide.
- The TPB survey of other MPO's did not find any peer MPO that have voluntarily adopted on-road transportation greenhouse gas reduction targets for their long-range transportation plan (LRTP). Some states such as California, Oregon, and Colorado have adopted GHG reduction targets at a much lower level than proposed by TPB due to requirements of their own state legislation. California and Oregon adopted per capita measures and Colorado has an absolute reduction measure ranging between 2% and 7%.
- Based on Virginia Code, an alternative option could be to develop a scenario that mainly promotes zero-emission vehicles and infrastructure, including electrified transport, decreasing the carbon intensity of the transportation sector, encouraging alternative transportation options, and increasing the efficiency of motor vehicles.

Specific Comments from Questions proposed at the 5/18/22 Climate Strategies Work Session

- Of the three identified levels of greenhouse gas (GHG) reduction goals the TPB should consider adopting, specifically for the on-road transportation sector: VA-DOT **supports The Pragmatic approach (Option C) with the more modest levels of implementation since it is the more attainable option.**

  Additional Content:
  - *The Commonwealth further recognizes that addressing climate change requires reducing greenhouse gas emissions across the Commonwealth's economy sufficient to reach net-zero emission by 2045 in all sectors, including the electric power, transportation, industrial, agricultural, building, and infrastructure sectors.*
  - *The progress should be reported for the region system-wide to maximize the synergy of projects and strategies. This avoids putting any one mode or locality at a disadvantage.*

This section summarizes our actual response to the TPB's Climate Change Mitigation Goals and Strategies Questionnaire in April 2022. This section only documents our responses to the seven strategies that the majority of survey respondents support.

Specific comments related to which of the two levels of implementation for the seven GHG reduction strategies the TPB survey has indicated majority support for adoption, should the TPB consider adopting specifically for the on-road transportation sector.

1. Improve walk and bicycle access to all TPB identified high-capacity transit stations.

- Depending on the improvement, the Commonwealth might not be able to maintain or operate.

2. Complete the TPB's National Capital Trail Network to (NCTN) to increase the walk and bike mode of travel.

- The Commonwealth agrees in concept, however, funding for implementation will need to be identified or competed through the construction programs.
- Implementation will be based on funding availability.

3. Implement Transportation Systems Management and Operations (TSMO) measures at all eligible locations, including advanced ramp metering, enhanced incident management systems, active signal controls, and transit bus priority treatments.

- Criteria for all eligible locations will need to be identified.
- Funding will need to be identified or it would compete among other modes.

4. Develop an electric vehicle (EV) charging network in the region In the CCMS, this strategy was considered an enabling action for the clean fuel vehicle strategy C1. Thus, no GHG emissions amounts were estimated or attributed to this EV charging network strategy.

- Agree TPB should adopt this strategy for the region and monitor progress
- The Commonwealth is currently implementing this strategy through the use of VW settlement funding and other funding mechanisms. Additionally, VDOT's Office of Transportation Sustainability is assisting in the development of the Commonwealth's EV Infrastructure Deployment Plan under the guidance of the Secretary of Transportation's office.

5. Convert light-, medium- and heavy-duty vehicles and buses to clean fuel, e.g., electric or hydrogen.

- More comprehensive examination of the implications and implementation actions of this strategy is recommended prior to the TPB's adoption.
- The Commonwealth does not have the authority for the proposed level of implementation. The question references various vehicle types as being either "new", "sold", and/or "on the road", and additional clarification is requested.
- In December 2021, the Virginia State Air Pollution Control Board adopted regulations for Low-Emission Vehicle (LEV) and Zero-Emission Vehicle (ZEV) standards consistent with the California Advanced Clean Cars (ACC) program that would aggressively increase the light-duty vehicle ZEV market share beginning in 2025. It is anticipated that California's ACC II program will result in 100% of new light-duty vehicle purchases essentially being EVs by 2035, and this may include some medium-duty vehicles as well. Virginia can only legally adopt federal motor vehicle emissions standards, or California's, and has no authority to adopt separate and/or more stringent vehicle emission standards.
- In addition, Virginia recently signed on to the multistate Multi-State Medium- and Heavy-Duty Zero Emission Vehicle Memorandum of Understanding, along with 15 other states including Maryland and Washington, D.C. This MOU aims to electrify all new large trucks and buses in the state by 2050, and is a voluntary measure that is not legally binding.
- Since the Commonwealth is clearly limited in its ability to adopt more stringent vehicle emission standards, VDOT would recommend that TPB further evaluate clean vehicle strategies to ensure that they are achievable.
- Last, EPA recently proposed new, stronger standards to promote clean air and reduce pollution from heavy-duty vehicles and engines starting in model year (MY) 2027. The proposed standards would reduce emissions of smog- and soot-forming nitrogen oxides (NOx) from heavy-duty gasoline and diesel engines and set updated greenhouse gas (GHG) standards for certain

commercial vehicle categories. This proposed rule would ensure the heavy-duty vehicles and engines that drive American commerce and connect people across the country are as clean as possible while charting a path to advance zero-emission vehicles in the heavy-duty fleet.

- The adoption of fleet penetration goals and targets for EVs should be aspirational and not directly tied to the performance of the Visualize 2045 Plan.

6. Add additional housing units, above current COG Cooperative forecasts (Round 9.2) near TPB-identified high-capacity transit (HCT) stations and in COG's regional activity centers (RAC).

- TPB should consult with the jurisdictional representatives on the specifics and implementation prospects prior to the TPB's adoption.
- Lacks the specific authority to implement this strategy.
    - VDOT, DRPT, and VPRA is supportive of TOD, although this question is not directly applicable to Virginia state agencies. In the Commonwealth the land use authority falls to localities.

7. Reduce travel times, relative to 2020, on all public transportation buses.

- TPB should conduct a more comprehensive examination of the implications and implementation actions of this strategy prior to the TPB's adoption.
    - This question is not applicable directly to Virginia state agencies. DRPT provides operating assistance to all transit agencies in the Commonwealth through a funding formula. It is the responsibility of the local transit agency and their governing board to determine how to use those funds in their service delivery plans. DRPT does, however, support reduced travel times for public transit services.

Please let me know if you have any questions or additional information is needed.

Thank you for your consideration.

Sincerely,

John D. Lynch, P.E.
Northern Virginia District Engineer

cc: Angel Deem, Chief of Policy