CLIMATE CHANGE MITIGATION PLANNING

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Community Advisory Committee
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Item #5

National Capital Region
Transportation Planning Board

What is Climate Change Mitigation and Resiliency?

Climate Change Mitigation

Mitigation is a decrease in a possible harmful effect. Climate change mitigation is the reduction in greenhouse gas emissions that drive global climate change.

Resiliency

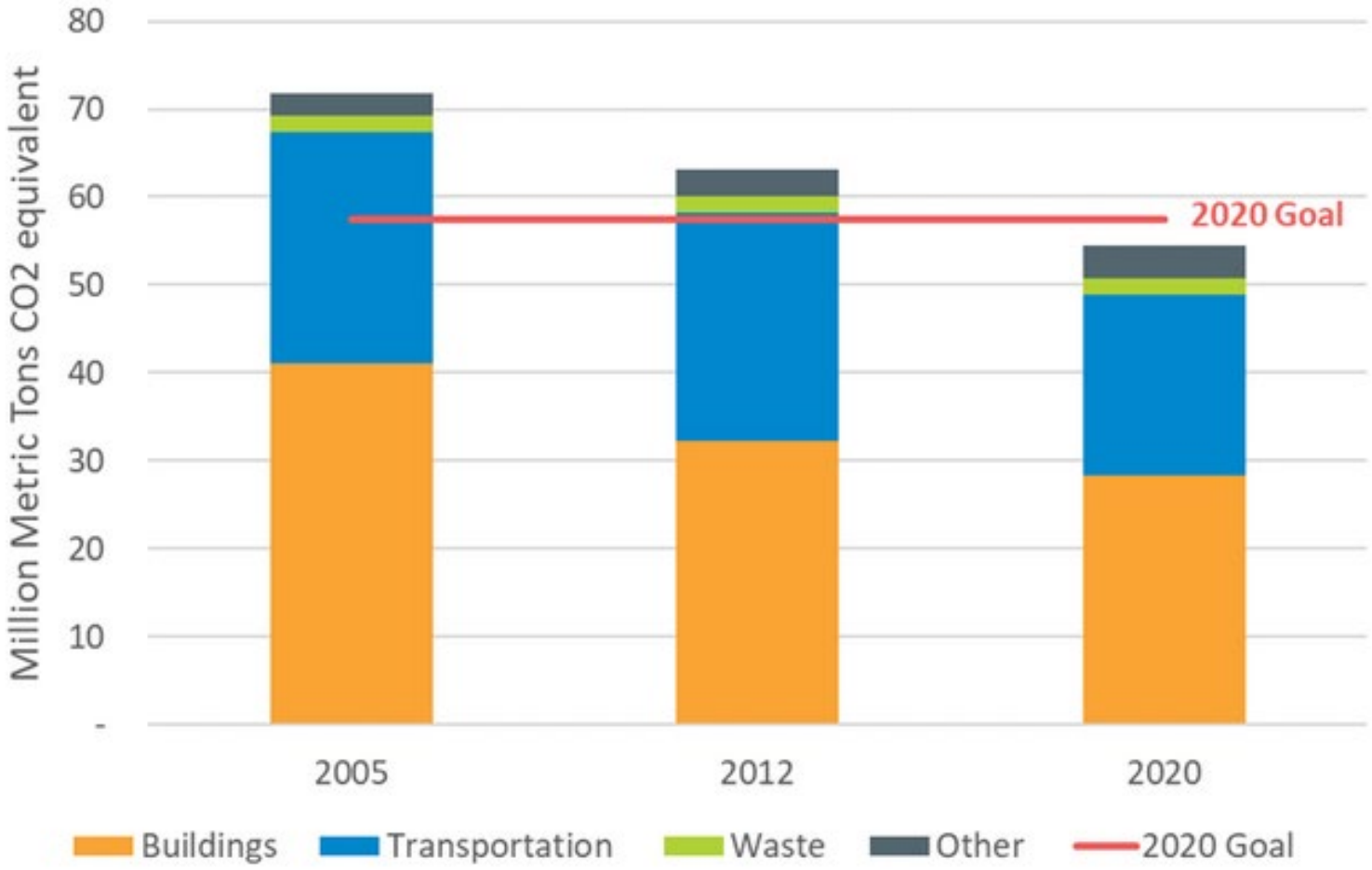
Resilience is the ability to anticipate, prepare for, and adapt to changing conditions, including those caused by climate change, and withstand, respond to, and recover rapidly from disruptions from natural hazards.

Regional Greenhouse Gas Reduction Goals

- In 2008, the COG Board adopted economy-wide greenhouse gas reduction goals for the region based on the recommendation from the National Capital Region Climate Change Report:
  - 10% below “business-as-usual” forecast by 2012 (approximately equivalent to 2005 levels
  - 20% below 2005 levels by 2020
  - 50% below 2005 levels by 2030*
  - 80% below 2005 levels by 2050
- The goal were based on scientific evidence from the Intergovernmental Panel on Climate Change (IPCC) that was current at the time to keep the global temperature increase to within 2.5–3°C by 2050

* Interim goal adopted in 2020

Progress towards regional goals…



Source: https://www.mwcog.org/newsroom/2022/10/12/region-surpasses-2020-climate-goal/

National Capital Region Greenhouse Gas Initiatives…

2008: National Capital Region Climate Change Report adopted *(COG)*

2009: Climate, Energy & Environment Policy Committee created *(COG)*

2010: Regional Climate and Energy Work Plan *(CEEPC; 2013, 2017 Update)*

2010: **"What Would it Take?"** Scenario: Transportation sector local/regional/state strategies *(TPB)* ; TPB begins voluntarily reporting GHG emissions in Performance Analysis of LRTP *(TPB)*

2012: Region Forward Report and Compact adopted: incorporates regional greenhouse gas emission reduction goals

2014: TPB and MWAQC resolutions: affirm greenhouse gas emission reduction goals and support for Multi-Sector Working Group

2015: **Multi-Sector Working Group (MSWG) Convened** *(COG, TPB, MWAQC, CEEPC)*

2017: Resolution endorsing voluntary multi-sector GHG reduction *(COG)*

Then in Fall 2020…

- In fall 2020, COG established an interim regional non-sector-specific, economy-wide GHG reduction goal of 50% below 2005 levels by 2030 and developed the 2030 Metropolitan Washington Climate and Energy Action Plan, which included transportation priority climate action areas
- Also in fall 2020, project selection for the TPB's long-range transportation plan update was underway
- The TPB affirmed COG's 2030 interim economy-wide GHG reduction goal and expressed interest in setting on-road transportation sector goals as part of the Spring 2022 plan update
- TPB staff commissioned the Climate Change Mitigation Study of 2021 (CCMS), which built upon previous climate change mitigation and other scenario studies conducted by TPB and COG

What we had already learned from previous studies…

- Reducing GHG from on-road transportation in a growing region is difficult
- According to past studies on this topic, no pathway has been identified that would achieve the region's GHG reduction goals in the on-road transportation sector, whether via a single transportation project, program, or policy or via a grouping of such projects, programs, or policies
- Actions will be required at all levels of government – federal, state, and local
- The effectiveness of a project/program/policy is affected by the scale and timeframe of its implementation
- Benefits from multiple projects/programs/policies are not always additive and at times are counteractive

What we had already learned from previous studies…

- According to past studies, the most effective projects/programs/policies are (in descending order of GHG reduction potential):
  - Addressing fuel content and fuel efficiency
  - Aggressive land use and travel reduction policies (e.g., telework and pricing)
  - Constructing new capital transportation projects and improving operational efficiency

Climate Change Mitigation Study of 2021

Two “top-down” scenarios

- What level of VMT reduction would be needed to meet the regional 2030 and 2050 goals if VMT reduction were the sole focus of efforts?
    - To achieve these reductions in 2030, despite forecasted population growth, traffic volumes in the region would need to shrink to the level seen at the height of the COVID-19 stay-at-home orders during April 2020 and not rebound
- What level of electric vehicle (EV) adoption would be needed to meet the regional 2030 and 2050 goals if vehicle technology were the sole focus of efforts?
    - The required level of fleet change by 2030 and would likely require immediate shifts to all new vehicles sold as EVs

Summary of GHG Reductions Estimated for Scenarios: % Reductions from 2005 On-Road Emissions Level

- None of the scenarios achieve 50% reduction in on-road GHG emissions by 2030.
- Several scenarios provide on-road GHG emissions reductions at levels assumed in COG's multisector 2030 Climate and Energy Action Plan (CEAP).
- 80% reduction by 2050 is met only with the most aggressive scenario under the reference case electric grid but can be achieved under other scenarios with vehicle technology/fuels strategies and a cleaner electric grid.

Scenario	Key Components	2030			2050		
		Ref. Grid	Mod. Grid	Clean Grid	Ref. Grid	Mod. Grid	Clean Grid
Baseline	Base assumptions in Visualize 2045	-14%	--	--	-14%	--	--
VT.1	50% of new LD vehicle sales are EVs in 2030, with 100% by 2040; 30% of new M/HD truck sales are EVs in 2030, with 100% by 2050; 50% of buses on the road are EVs in 2030, 100% in 2050; biofuels/renewable diesel make up 10% of diesel fuel use in 2030 and 20% in 2050	-21%	-21%	-24%	-69%	-75%	-84%
VT.2	100% of new LD vehicle sales are EVs in 2030; 50% of new M/HD truck sales are EVs in 2030, with 100% by 2040; 100% of buses on the road are EVs by 2030; biofuels/renewable diesel make up 20% of diesel fuel use in 2030 and 30% in 2050	-28%	-29%	-34%	-76%	-83%	-93%
MS.1	Land use changes, including new housing in the region; transit fares reduced 50% by 2030 and 75% in 2050; all workplace parking in activity centers priced by 2030; 10% reduction in transit travel time by 2030 and 20% by 2050; 25% telework; increased bike/ped/micromobility	-20%	-20%	-20%	-21%	-21%	-22%
MS.2	MS.1 + DC core cordon pricing + VMT-fees of $0.05 per mile in 2030 and $0.10 per mile in 2050 (analyzed for passenger vehicles)	-22%	-22%	-23%	-25%	-25%	-25%
MS.3	MS.2 with amplified strategies, including free transit; all workplace parking priced by 2050 (not just in activity centers), 15% reduction in transit travel time by 2030 and 30% by 2050; 40% telework	-26%	-26%	-26%	-27%	-28%	-28%
TSMO	Optimized ITS/TSMO, with benefits from connected/automated vehicles (CAVs) by 2050	-16%	-16%	-17%	-16%	-17%	-18%
COMBO.1	Combined scenario: VT.1+ MS.1 + TSMO	-27%	-28%	-30%	-73%	-78%	-86%
COMBO.2	Combined scenario with more aggressive technology emphasis: VT.2 + MS.1 + TSMO	-33%	-34%	-38%	-79%	-85%	-94%
COMBO.3	Combined scenario with more aggressive mode shift emphasis: VT.1 + MS.3 + TSMO	-33%	-33%	-36%	-74%	-79%	-87%
COMBO.4	Combined scenario with aggressive actions across all pathways and shared CAV future: VT.2+MS.3+TSMO+additional sharing in 2050	-38%	-39%	-43%	-82%	-87%	-95%

KEY: Meets level of on-road GHG reductions in 2030 CEAP; Meets level of GHG reductions commensurate with regional goal

GHG Reduction Goals Considered by the TPB

Option	Title	GHG Reduction Goal (Below 2005 levels)	Notes
A	Aspirational	50% by 2030 80% by 2050	No identified pathway to attain 2030 goal, based on Climate Change Mitigation Study (CCMS).
B	Ambitious	32% by 2030 80% by 2050	Data driven (CCMS scenarios Com.2, 3 and 4), yet with unprecedented levels of implementation of clean vehicle and travel reduction strategies. Considered ambitious because some strategies identified by CCMS did not receive majority/plurality support (at this time).
C	Pragmatic	23% by 2030 OR 29% by 2030 80% by 2050	Data driven and based on strategies supported by majority/plurality of TPB member jurisdictions. Ambitious compared to peer MPOs (staff research memo).

GHG Reduction Goals and Strategies adopted by the TPB

Option	Title	GHG Reduction Goal (Below 2005 levels)	Notes
A	Aspirational	50% by 2030 80% by 2050	No identified pathway to attain 2030 goal, based on Climate Change Mitigation Study (CCMS).

- 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

https://www.mwcog.org/newsroom/2022/06/29/june-2022-tpb-meeting-recap/

Follow-up work to CCMS

- Development of a Regional Electric Vehicle Infrastructure Implementation (REVII) Strategy
- Study on Implementation Considerations for On-Road Transportation Greenhous Gas Emission Reduction Strategies (ICGHG)

The REVII Strategy

- The REVII Strategy is intended to serve as planning resource built to assist the region in implementing the clean fuel vehicle strategy to attain its climate goals and includes three key objectives:
  - Identify locations for publicly accessible Level 2* and direct current fast charging (DCFC)** facilities to support increased EV adoption throughout the metropolitan Washington region.
  - Support reliable access to publicly accessible EV charging infrastructure, particularly in areas with limited at-home charging, including multi-family housing (MFH) developments and disadvantaged communities.
  - Help ensure that all populations in the metropolitan Washington region, including disadvantaged communities and individuals living within equity emphasis areas (EEAs), are able to access and benefit from the financial and environmental benefits of EVs.
- Will be presented to the TPB this month

* Level 2 charging gives EVs 10 to 20 miles of range per hour and is most suitable for residential and workplace locations where charging for at least 4 hours at a time is feasible.

** DCFC charging gives 60 to 80 miles of range per 20 minutes of charging.

The REVII Strategy

- Two Primary Components:
  - Projections for light-duty EV registrations and EV charger needs for this region for three EV adoption rate scenarios (low, medium, and high adoption) at three planning benchmark years (2030, 2035, and 2045) at the county level, including the District of Columbia and the City of Alexandria
  - A GIS-based EV charger siting priority map that identifies priority locations for deploying chargers for three different scenarios: prioritizing DCFCs with high utilization, prioritizing Level 2 chargers with an equity focus, and prioritizing DCFC with a multi-family housing focus
- To support the projected number of EVs in 2030, the region will need to install:
  - 10,000 – 25,00 publicly accessible Level 2 chargers by 2030 (low adoption – high adoption)
  - 100 – 670 publicly accessible DCFC (low adoption – high adoption)
- Link to REVII Strategy document

Implementation Considerations…Study

- Study of seven GHG reduction strategies that the TPB identified as needing “further exploration in coordination at the local and state levels”
  - Strategies include expanded teleworking, fare free transit, mileage-based user fee, parking pricing, and cordon pricing
- The study includes nine additional strategies that were not considered in the TPB’s Climate Change Mitigation Study of 2021
- Qualitative assessment of set of implementation considerations for each strategy
- Considerations include relative GHG reduction potential, cost, implementation authority, and implications on other regional goals and priorities
- Will be presented to the TPB in October

Federal Programs for On-road GHG Reduction

Program	Legislation	Agency
Carbon Reduction Program (CRP)	**Bipartisan Infrastructure Law** ($6.4 billion total FY 22 – FY 26)	**FHWA**
Climate Pollution Reduction Grant (CPRG) Program	**Inflation Reduction Act** ($250 million for noncompetitive planning grants; $4.6 billion for competitive implementation grants)	**EPA**
Charging and Fueling Infrastructure Discretionary Grant Program (CFI Program)	**Bipartisan Infrastructure Law** ($2.5 billion total FY 22 – FY 26)	**FHWA**
National Electric Vehicle Infrastructure (NEVI) Formula Program	**Bipartisan Infrastructure Law** ($5 billion total FY 22 – FY 26)	**FHWA**
Low or No Emission (Low-No) Vehicle Program	**Bipartisan Infrastructure Law** ($1.1 billion FY 22; $1.2 billion FY 23)	**FTA**

Resources

- https://www.mwcog.org/transportation/planning-areas/air-quality-and-environment/climate-change/
- TPB's Climate Change Mitigation Study of 2021: https://www.mwcog.org/tpb-climate-change-mitigation-study-of-2021/
  - TPB Climate Change Mitigation Study of 2021: Scenario Analysis Findings – Final Report (January 2022)
  - TPB Climate Change Mitigation Study of 2021: Report Findings – Presentation (December 2021)
  - TPB Climate Change Mitigation Study of 2021: Findings from Past COG and TPB Studies, Phase 1 – Report (March 2021)
- Visualize 2045: https://visualize2045.org/plan-update/approved-2022-plan/
  - Adopted GHG reduction goals and strategies begin on page 133 of plan document

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What is the Carbon Reduction Program?

- Established by the Bipartisan Infrastructure Law (BIL)
- Two parts:
  - Part 1: Requires states to develop a Carbon Reduction Strategy (CRS)
  - Part 2: Provides funds for “projects designed to reduce transportation emissions, defined as carbon dioxide emissions from on-road transportation sources”
- FHWA developed a fact sheet and program implementation guidance

CRP Part 1: Carbon Reduction Strategies

- States were required to develop a Carbon Reduction Strategy (CRS) by November 15, 2023
- States were to required to consult with any MPO within the state
- States must update CRS at least once every four years
- Federal guidance notes that “States, in coordination with MPOs, are encouraged to develop their Carbon Reduction Strategies as an integral part of their transportation planning processes, such as by integrating them into … the MPO’s Metropolitan Transportation Plan (MTP), or by developing a separate document which is incorporated by reference into the Long-Range Statewide Transportation Plan (LRSTP) and MTP.”
- DDOT, MDOT, and VDOT, presented to the TPB in October 2023
- The state Carbon Reduction Strategies can be found on the FHWA website

CRP Part 2: Funding

- $6.4 billion in formula funding nationally from FY 2022 through FY 2026
- 65% percent of each state's apportionment is to be obligated to areas based on the proportion of the state's population residing in that area
- 35% of the apportionment can be spent anywhere in the state
- Funds are available for obligation for a period of 3 years after the last day of the fiscal year for which the funds are authorized
- Funds can be used on a wide array of eligible projects to reduce carbon dioxide emissions from on-road transportation

CRP Funding for Metropolitan Washington Region

	FY 2022 (Lapses Sept 2025)	FY 2023 (Lapses Sept 2026)	FY 2024 (Lapses Sept 2027)
District of Columbia	$3,206,817	$3,270,954	$3,336,373
Maryland	$4,084,813	$4,166,510	$4,473,950
Washington, DC area	*$3,571,327*	*$3,642,754*	*$3,888,142*
Frederick	*$289,061*	*$294,842*	*$350,337*
Waldorf	*$224,425*	*$228,914*	*$235,471*
Virginia	$5,786,618	$5,902,350	$6,306,966
Total - Metropolitan Washington	**$13,078,248**	**$13,339,814**	**$14,117,289**

Projects Eligible for CRP Funds

Identified in statute (with additional specifics):

- Traffic management
- Truck stop electrification
- Certain public transportation projects (including BRT and Bus priority treatments)
- Transportation alternatives projects
- Advanced transportation and congestion management technologies
- Intelligent Transportation Systems
- Development of a Carbon Reduction Strategy
- *Travel Demand Management*
- Efforts to reduce the impacts of freight movement
- Deployment of alternative fuel vehicles
- Diesel engine retrofits
- Traffic flow improvements that do not involve construction of new capacity; and
- Projects that reduce transportation emissions at port facilities

Projects Recommended for Maryland CRP Funding

Project Title	Project Sponsor	County	Federal CRP Funds	Matching Funds	Project Total
Anacostia Riverwalk Trail Lincoln Connector Segment	SHA/DDOT	Prince George's	$ 300,000	$ 75,000	$ 375,000
MD 210 Pedestrian and Bicycle Connectivity	SHA	Prince George's	$ 1,280,000	$ 320,000	$ 1,600,000
MD 190 from Brookside Drive to Little Falls Parkway	SHA	Montgomery	$ 1,200,000	$ 300,000	$ 1,500,000
City of Rockville Transportation GHG Reduction Projects (EV Design)	City of Rockville	Montgomery	$ 324,051	$ 81,013	$ 405,064
Montgomery County Community EV Charging Network	Montgomery County	Montgomery	$ 2,668,233	$ 667,058	$ 3,335,291
City of Rockville Transportation GHG Reduction Projects (Bikeshare)	City of Rockville	Montgomery	$ 371,200	$ 92,800	$ 464,000
		Totals:	**$6,143,484**	**$1,535,871**	**$7,679,355**

Virginia and District of Columbia CRP funds

- Virginia allocated $18 million to the Richmond Highway BRT project
- The District of Columbia has not yet allocated CRP funds

Climate Pollution Reduction Program (CPRG)

- The **Climate Pollution Reduction Grants (CPRG) program** will provide grants to states, regions, and local governments to develop and implement plans for reducing greenhouse gas emissions and other harmful air pollution.
- Section 60114 of the **Inflation Reduction Act** provides an investment of $5 billion to support these efforts.
- This two-staged grant program provides funding of $250 million for noncompetitive planning grants, and **$4.6 billion for competitive implementation grants**. Our region did not win an implementation grant
- Non-competitive allocations for planning include - States, District of Columbia, Puerto Rico: $3 million; Metropolitan Statistical Areas (MSAs): $1 million to 67 most populous (except COG).
- COG, through DC's allocation, is leading **Metropolitan Statistical Area (MSA) climate planning**, which includes communities from VA and WV.

Climate Pollution Reduction Program (CPRG)

- COG submitted the **Priority Climate Action Plan** (PCAP), in spring 2024.
- **Comprehensive Climate Action Plan** (CCAP), is due summer-fall 2025.
- The TPB Technical Committee and TPB will likely receive a briefing on the development of the CCAP in early 2025

Charging and Fueling Infrastructure Discretionary Grant Program (CFI Program)

- Established by the Bipartisan Infrastructure Law "to strategically deploy publicly accessible electric vehicle charging and alternative fueling infrastructure in the places people live and work – urban and rural areas alike – in addition to along designated Alternative Fuel Corridors (AFCs)"
- Provides two funding categories of grants: (1) Community Charging and Fueling Grants (Community Program); and (2) Alternative Fuel Corridor Grants (Corridor Program)
- $2.5 billion over five years
- COG submitted a Request for Funding on behalf of seven jurisdictions, which was coordinated though the Regional Electric Vehicle Deployment (REVD) Working Group. COG's application was awarded $3.9 million!
- COG recently submitted a Request for Funding for CFI Round 2. The REVII Strategy was used in the development of the application.

National Electric Vehicle Infrastructure (NEVI) Formula Program

- Bipartisan Infrastructure Law provides $5 billion in funding from FY 2022 though FY 2026.
- “States to strategically deploy EV charging infrastructure and establish an interconnected network to facilitate data collection, access, and reliability.”
- Statewide funding for FY 2022 and FY 2023:

	FY 2022	FY 2023
District of Columbia	$ 2,468,807	$ 3,552,641
Maryland	$ 9,298,080	$ 13,380,042
Virginia	$ 15,745,244	$ 22,657,583

- Requires states to develop statewide plan, which will be updated annually. Initial plans were submitted in August 2022.
- States should consult with MPOs. TPB Technical Committee received briefing on state NEVI plans in October 2022. TPB’s Freight Subcommittee received briefings in March and April 2023.

Low or No Emission (Low-No) Vehicle Program

- Bipartisan Infrastructure Law increased the amount of funding available for this competitive grant program from $84 Million in FY 2019 to $1.22 Billion in FY 2023.
- FY 2023 round of grants included four awards in the TPB region: WMATA ($104 million), University of Maryland ($40 million), City of Alexandria ($24 million), and Loudoun County ($14 million).
- The TPB continues to support applications by agencies in the region through support letters and makes amendments to the Transportation Improvement Program (TIP) to ensure the receipt of federal funding.