UPDATE ON GREENHOUSE GAS PLANNING ACTIVITIES

Recent Policy and Technical Developments

Erin Morrow
TPB Transportation Engineer

Dusan Vuksan
TPB Transportation Engineer

TPB Technical Committee
September 6, 2019

Agenda Item 8

National Capital Region
Transportation Planning Board

Presentation Outline

- Federal Mandates for MPOs
- Criteria Pollutants versus Greenhouse Gases (GHG)
- National Capital Region Greenhouse Gas Initiatives
- Visualize 2045 Aspirational Initiatives
- Greenhouse Gas Inventory Update
- Regional GHG Initiative: Transportation and Climate Initiative

Federal Mandates for MPOs

- Carry out a “continuing, cooperative, comprehensive” planning process among local, state, regional, and federal transportation partners
- Develop and approve a financially constrained Long-Range Transportation Plan (LRTP) and short term Transportation Improvement Program (TIP)
- Collect and report data about the regional transportation system related to congestion mitigation, air quality, safety, freight, and more
- Demonstrate conformance to air quality plans (in Non-Attainment or Maintenance areas):

  Coordinate the development of the LRTP with the State Implementation Plan (SIP; Motor Vehicle emissions)

  Approve only those transportation plans or programs which conform with the SIP and/or develop transportation control measures for the SIP, as needed
- Currently there are no national greenhouse gas (GHG) emissions standards with respect to transportation conformity

Air Quality: Criteria Pollutants versus Greenhouse Gases

- In transportation planning, criteria pollutants are typically associated with federally mandated activities such as air quality conformity
- Criteria pollutants include nitrogen oxides (NOx) and volatile organic compounds (VOC), which are ozone precursors, particulate matter 2.5 (PM2.5) and winter time carbon monoxide (CO)
- Big improvements have been made in air quality in metropolitan Washington:
  - Based on the air quality monitor readings in the region, we are now "in attainment" of PM2.5 and winter CO air quality standards
  - The region still has some work to do to attain the 2015 National Ambient Air Quality standard for ozone, although tremendous improvements in air quality with respect to ozone have been made (32% reduction in "design value" for ozone between late 90s and now)*

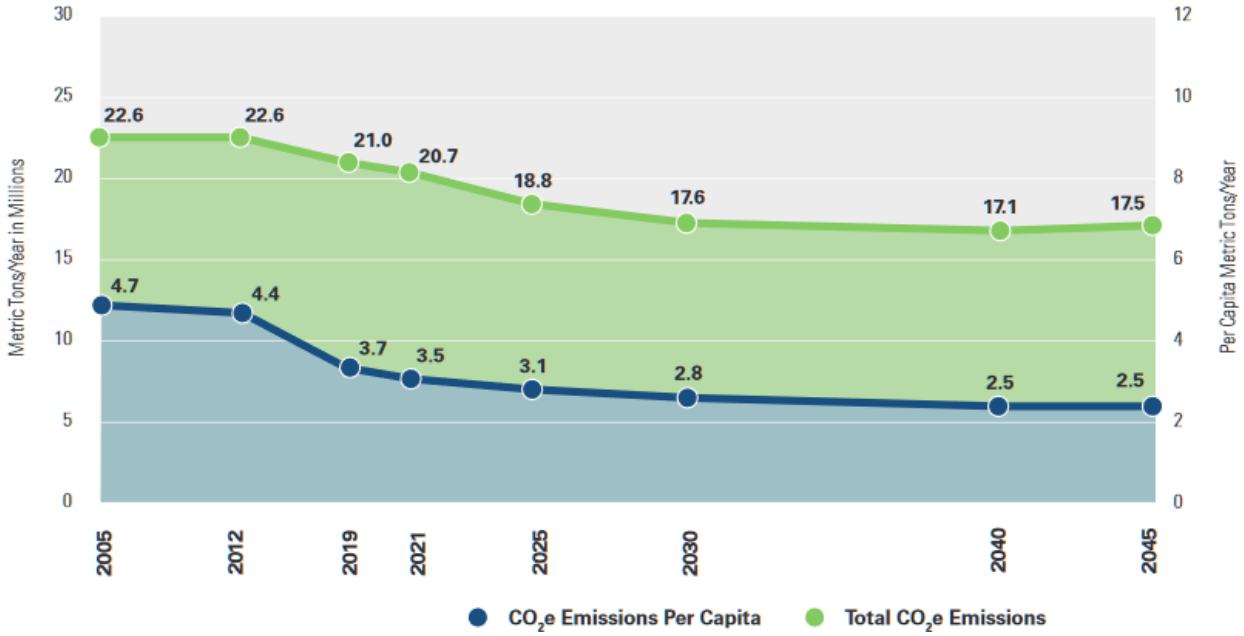
* Source: "Ozone Season Summary," Sunil Kumar, COG/DEP, Presentation to MWAQC, July 25, 2019

Air Quality: Criteria Pollutants versus Greenhouse Gases (continued)

- Greenhouse gases include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and fluorinated gases
- CO_2 is most prevalent, with GHG emissions often expressed in "million metric tons in CO_2 equivalent (CO_2e)"
- Although there are currently no associated federal requirements regarding GHG emissions, TPB has recognized the importance of addressing the issues related to GHGs
- TPB began estimating GHG emissions from the region's transportation system (present and future) in 2010
- TPB has supported systemwide measures to reduce GHG emissions from transportation system (recently wrote in opposition to the proposed roll-backs of federal emissions standards, i.e., SAFE rule)

Mobile Source Greenhouse Gas Emissions (Visualize 2045 Constrained Element)

Total and per capita CO_2e emissions are forecast to drop 16% and 32%, respectively, between 2019 and 2045



- A significant amount of the greenhouse gas reductions are due to new tougher federal fuel efficiency standards. In addition changes in development patterns and investments in transit and other travel options will contribute to reductions.
- Currently no federal standards exist for greenhouse gas emissions. These emissions estimates are not a required part of the transportation Air Quality Conformity Analysis.

National Capital Region Climate Change Report (2008)

- In November 2008, the COG Board adopted aspirational regional goals for GHG reduction established in the National Capital Regional Climate Change Report
  - By 2012, GHG levels will be 10% below "business as usual" forecasts
  - By 2020, GHG levels will be 20% below 2005 levels
  - By 2050, GHG levels will be 80% below 2005 levels
- TPB has also conducted and participated in a number of voluntary studies that are discussed in this presentation that aim to find ways to reduce GHG emissions
- The region met its first 2012 goal but there needs to be an immense undertaking to meet the 2020 and 2050 goals (from the Regional Climate and Energy Action Plan)

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)*

Visualize 2045 Aspirational Initiatives

- Bring Jobs and Housing Closer Together
- Expand Bus Rapid Transit Regionwide
- Move More People on Metrorail
- Provide More Telecommuting and Other Options for Commuting
- Expand Express Highway Network
- Improve Walk and Bike Access to Transit
- Complete the National Capital Trail

GHG Inventory Update: Background

- Department of Environmental Programs (DEP) staff periodically compile GHG emissions inventories for all sectors for certain milestone years to measure the progress toward achieving the goals stated in the National Capital Regional Climate Change Report
- TPB staff are asked to provide the mobile source GHG emissions estimates
- Major Milestone Years (from Climate Change Report): 2005, 2012, 2020 and 2050
- "Intermediate" Reporting Years (so far): 2015 and 2018
- Regional GHG inventories developed for analysis years 2005, 2012 and 2015 *

*** Source:** Metropolitan Washington Community-Wide Greenhouse Gas Emissions Inventory Summary, July 2018.

GHG Inventory Update: Current Activities

- Current effort: 2018 Regional GHG Inventory Update
- Analysis years: 2005, 2012, 2015 and 2018
- Transportation emissions estimates for 2005, 2012 and 2015 are being updated using the current set of tools and methods
- GHG emissions inventories for 2018 are being estimated for the first time
- Goal: Use consistent tools and methods for all four analysis years

GHG Inventory Update: Tools and Methods

- Cooperative Forecasts: Round 9.1*
- Long Range Transportation Plan / Networks: Visualize 2045
- Regional Travel Demand Model: Version 2.3.75
- Emissions Model: MOVES2014b
- Vehicle Registration Data ("VIN Data") MOVES Input: Varies for each analysis year

* Round 9.1 Cooperative Forecasts were used for analysis years 2012, 2015 and 2018. Data based on the Round 8.3 Cooperative Forecasts were used for 2005, which was the last time that 2005 estimates / adjustment factors were updated.

GHG Inventory Update: Next Steps

- Regional transportation GHG inventories will be developed by the end of this calendar year and provided to DEP staff for regional GHG inventory update
- Development of GHG inventories is still a relatively new and evolving field
- TPB staff will continue to monitor innovations in methodology and tools for estimation of GHG emissions for the upcoming 2020 milestone year

Transportation and Climate Initiative (TCI)

- Regional collaboration of twelve Mid-Atlantic and Northeastern states and the District of Columbia working to reduce carbon emissions from the transportation sector
- In December 2018, announced intention to design a regional cap-and-invest program or other pricing mechanism
- Plans to complete policy design process within one year
- Holding public workshops and webinars
- COGs and MPOs convening to learn more about TCI
- www.transportationandclimate.org

Erin Morrow

TPB Transportation Engineer
(202) 962-3793
emorrow@mwcog.org

Dusan Vuksan

TPB Transportation Engineer
(202) 962-3279
dvuksan@mwcog.org

mwcog.org/tpb

Metropolitan Washington Council of Governments
777 North Capitol Street NE, Suite 300
Washington, DC 20002

National Capital Region
Transportation Planning Board