

# TRANSPORTATION AND CLIMATE CHANGE PLANNING

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National Capital Region  
Transportation Planning Board

# Presentation Outline

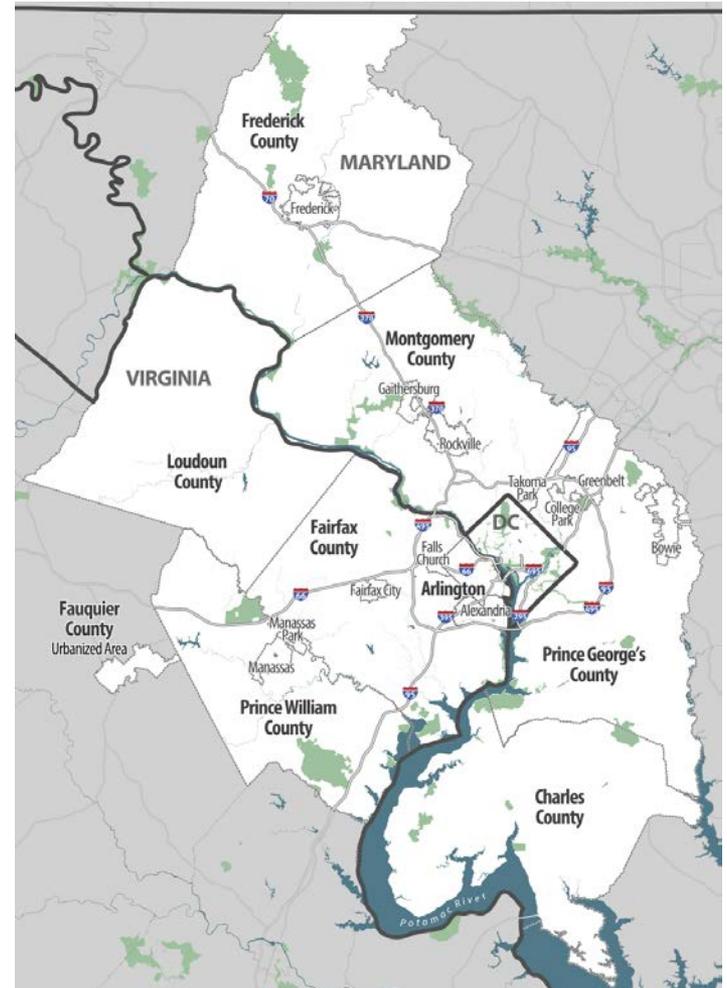
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- What is the TPB?
- Federal Mandates for MPOs
- TPB Planning Process
- Federal Requirements to Address Air Quality
- TPB Initiatives Beyond Conformity
- What We Can Do



# What is the TPB?

- A regional body comprising:
  - County and city governments
  - State transportation agencies
  - State legislative bodies
  - WMATA
- Other ex-officio entities
- Federally designated Metropolitan Planning Organization (MPO) for the Washington region
- Independent Board staffed by COG's Department of Transportation Planning



# Federal Mandates for MPOs

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- 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 and short term Transportation Improvement Program
- 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 CLRP with the State Implementation Plan (SIP; Motor Vehicle emissions)
  - Approve only those transportation plans or programs that conform with the SIP and/or develop transportation control measures for the SIP, as needed



# Roles for the TPB

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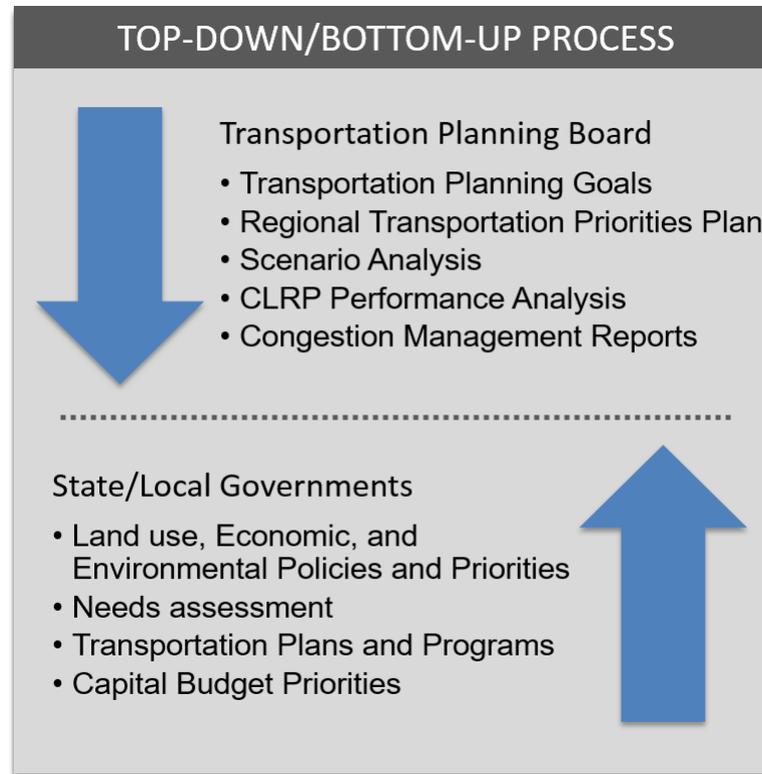
- Carry out the federally required planning process
- Serve as a forum for regional coordination among local, state, and regional entities
- Provide policy guidance and technical resources for decision-making

An overarching goal of the TPB is to encourage decision-makers to consider regional needs when developing local projects and programs for funding and implementation.

Successful examples of the TPB's "think regionally, act locally" approach include greater focus on Activity Centers and more development around Metrorail stations.



# TPB Long-Range Planning Approach



# TPB Project Authority: A Dose of Reality

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- **Project Development/Selection**  
Project development typically occurs at the state and local levels. The TPB usually does not select and fund projects.
- **Project Funding Decisions**  
D.C., Maryland and Virginia each controls its own funding stream. Each has its own system for moving projects forward.
- **Influence of the TPB process is often indirect.**  
Regional policies and federal transportation planning requirements exert an influence on the types of projects that are developed and submitted by the states and locals to the TPB.



# Clean Air Act Requirements

- EPA establishes National Ambient Air Quality Standards (NAAQS) for six “criteria pollutants”
- States develop State Implementation Plans (SIPs) and/or Maintenance Plans for areas found to be in Non-Attainment of EPA standards
- In Non-Attainment areas, transportation plans and programs must be consistent with the purpose of the SIP



# Air Quality Conformity Analysis

Demonstrates that future vehicle emissions under both the CLRP and TIP will remain below the mobile emission budgets established in the EPA-approved SIP and/or maintenance plan

SIPs developed accounting for emissions from all four sources  
Air Quality Conformity Analysis required only for Mobile sector



**Mobile Source**



**Point Source**



**Non-Road Source**

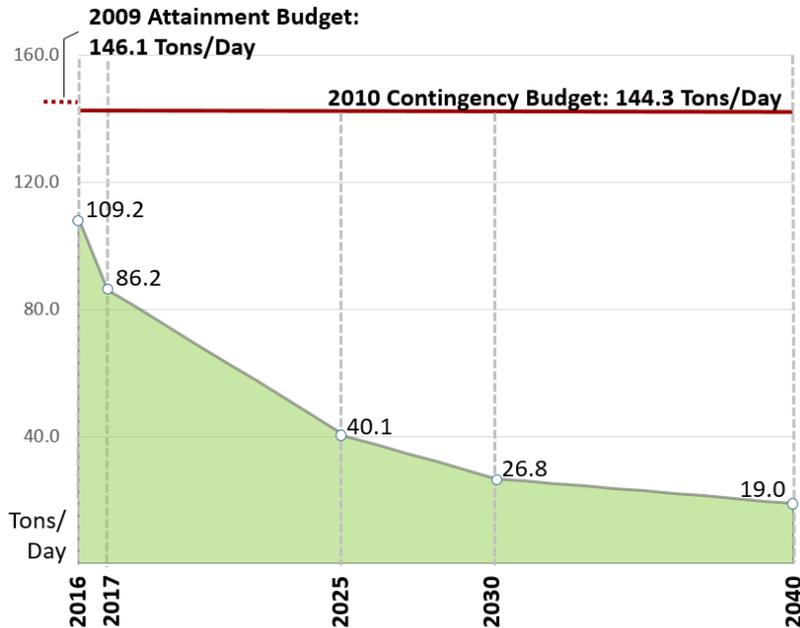


**Area Source**

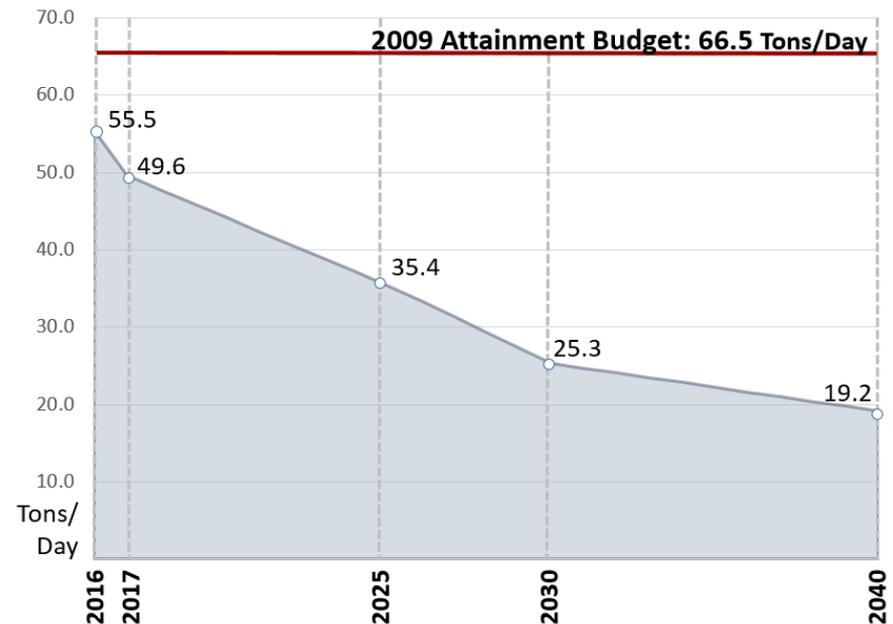


# Mobile Source Emissions

## Precursor Nitrogen Oxide (NO<sub>x</sub>) Emissions



## Volatile Organic Compounds (VOC) Emissions



Emissions of all criteria pollutants are expected to drop steadily between now and 2040.

- Emissions reductions are expected due to tougher federal fuel and vehicle efficiency standards.
- Changes in development patterns, investments in transit and other travel options, and improved operational efficiency of area roadways will also contribute to reductions in vehicle related emissions.



# Transportation Sector: Progress to Date

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- Significant reductions in on-road vehicular (mobile source) emissions in the region since the 1990s
- Mobile emissions under the regional Plan and Program continue to remain below all federally approved emissions budgets
- The CLRP shows promising trends in achieving regional mobility and emissions (*more to do*)
- Coordination of development patterns and transportation investments effectively addressing mobility and environmental goals (*more to do*)
- Region continues implementing emission reduction measures outside of the conformity requirements (*more to do*)



# National Capital Region Greenhouse Gas Initiatives

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- 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)
- 2012:** Region Forward Report and Compact adopted: incorporates regional greenhouse gas emission reduction goals
- 2014:** TPB and MWAQC resolutions: affirm greenhouse gas emission goals and support for multi-sector working group
- 2015:** Multi-Sector Working Group Convened (COG, TPB, MWAQC, CEEPC)
- 2017:** Resolution endorsing voluntary multi-sector HG reduction (COG)



# Beyond Compliance/Conformity

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## Select TPB initiatives:

### Land use, Environment, and Efficiency Goals as Context for Better Transportation Plans:

- Regional Activity Centers (2003, 2007, 2013)
- Regional Mobility Accessibility Study (2006)
- Value Pricing Network Scenario Study (2008)
- CLRP Aspirations Scenario Analysis (2013)
- Acceptability of Congestion Pricing Study (2013)

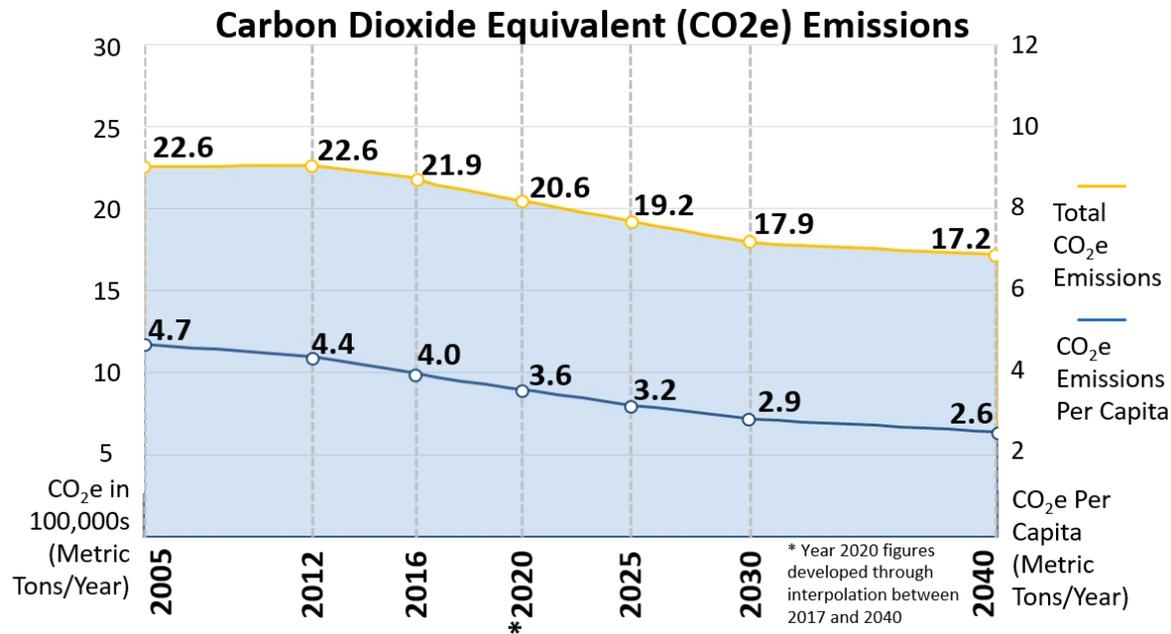
### COG's 2008 Climate Change Report as Context for Better Transportation Plans:

- GHG Reduction from Long Range Transportation Plan (2010...)
- What Would It Take (2010)
- Multi-sector Working Group (2016)
- Regional Climate and Energy Action Plan (CEEPC 2017-2020)



# Mobile Source Greenhouse Gas Emissions (2016 CLRP)

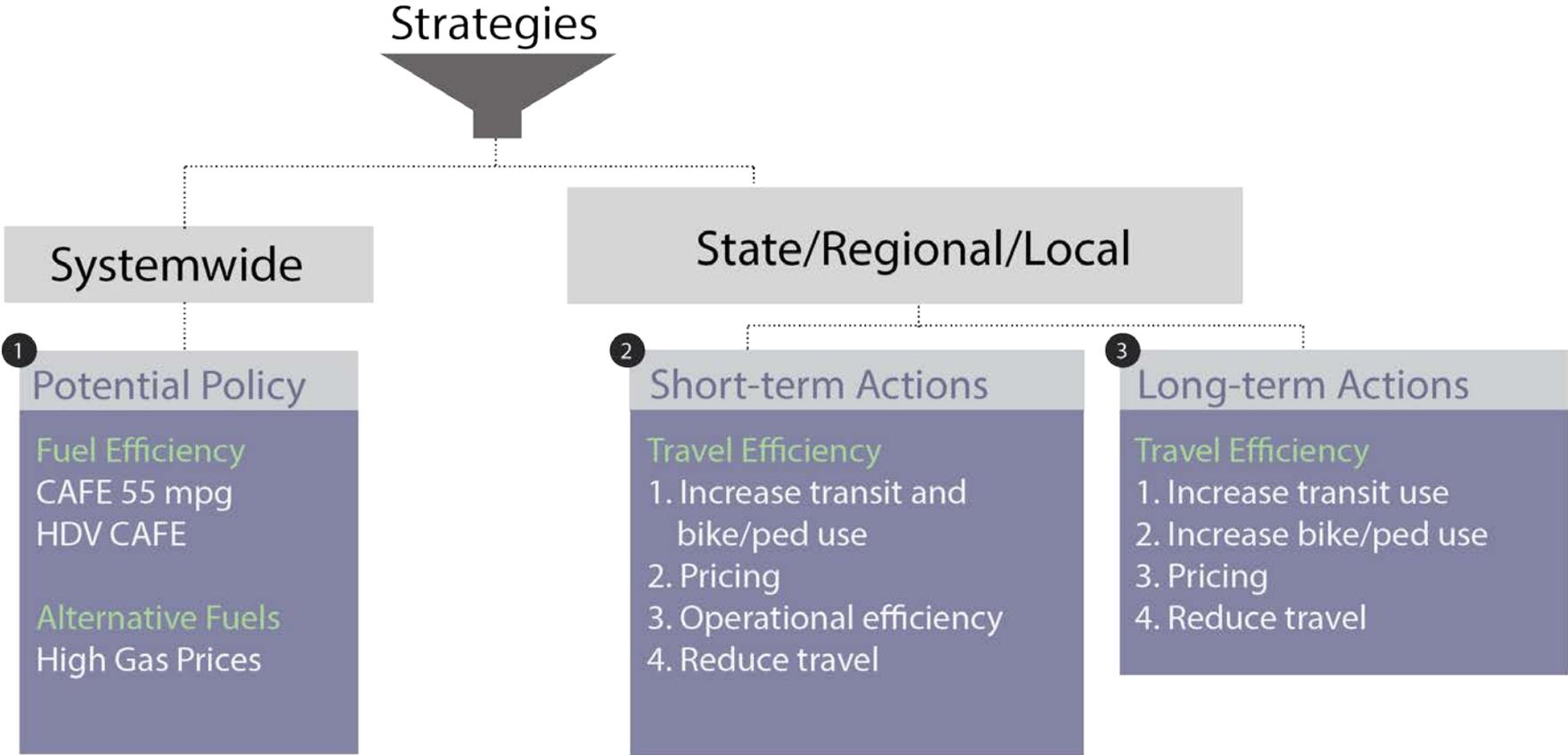
Total and per capita CO<sub>2</sub>e emissions are forecast to drop 24% and 45%, respectively, by 2040



- 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 are not a required part of the transportation Air Quality Conformity Analysis.

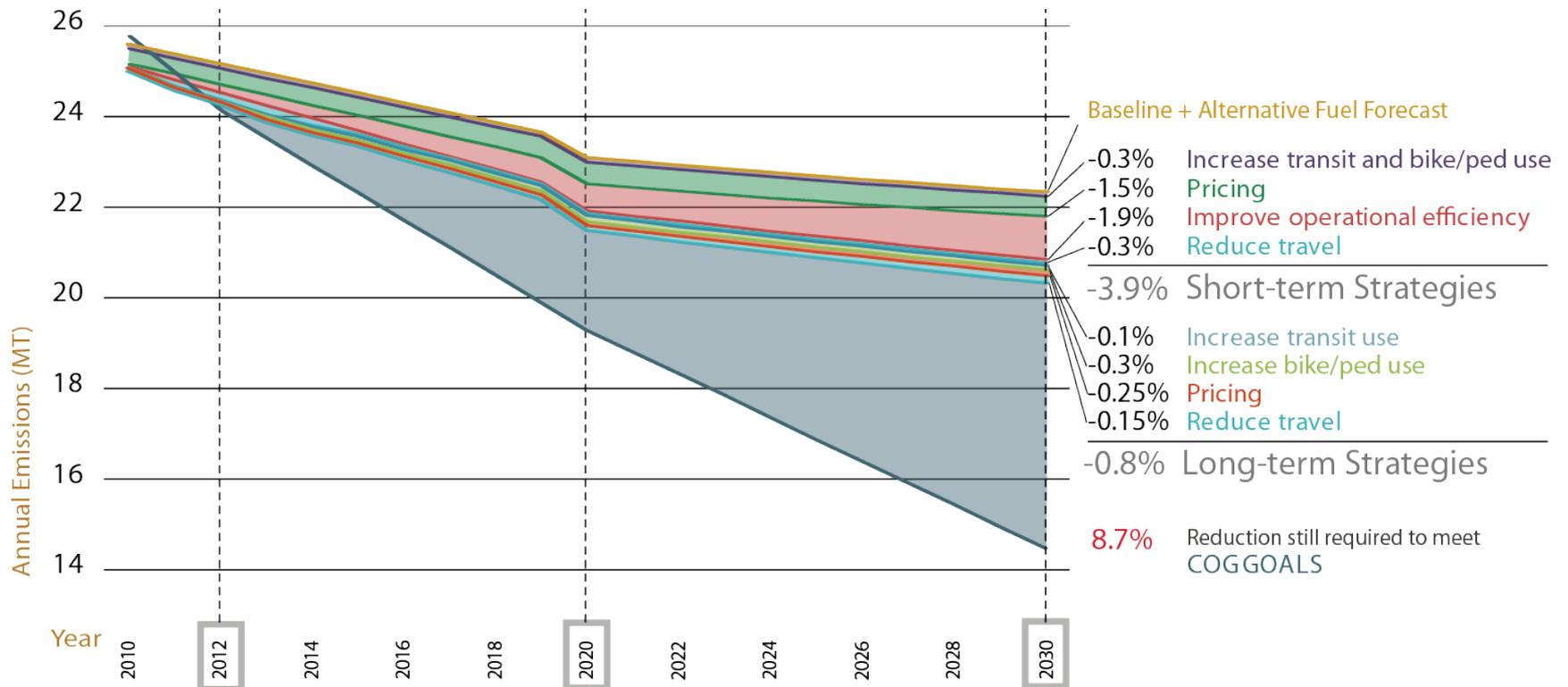


# What would it take? Transportation



# What would it take? Transportation

Local/regional/state strategies can contribute to reduce GHG BUT will fall considerably short of the region's goals



# What would it take? Transportation

Significant enhancements to existing policy and funding efforts needed to harness potential of local/regional/state strategies

## Short term

Category	Example Strategies	Reduction (% off BAU)
1. Increase transit and bike/ped use	Implement kiosks, feeder buses and circulators, real-time bus information, bus priority, free transfers, bike stations, improved bike/ped access to transit, bike sharing	-0.3%
2. Pricing	Implement parking impact fees, pay-as-you drive insurance, parking cash-out subsidies	-1.5%
3. Improve operational efficiency	Promote eco-driving (public education campaign), incident management, traffic signal optimization, idling reduction	-1.8%
4. Reduce travel	Expand telecommuting, carpooling and vanpooling, car-sharing	-0.3%
<b>TOTAL</b>		<b>-3.9%</b>

## Long term

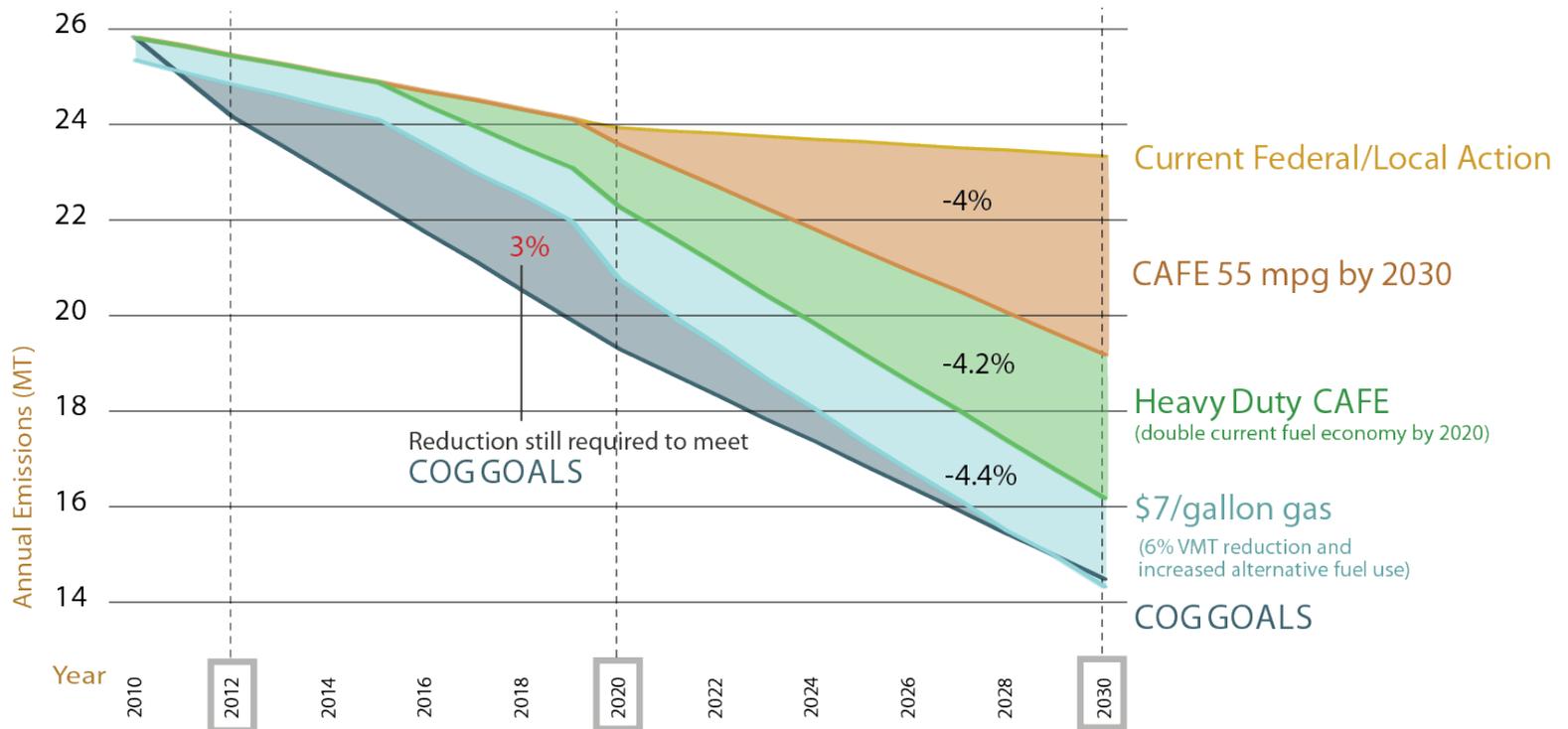
Category	Example Strategies	Reduction (% off BAU)
1. Increase transit use	Major transit expansion, such as the Dulles Rail line, and park and ride lots at rail stations	-0.15%
2. Increase bike/ped use	Accelerated completion of the TPB Bicycle and Pedestrian Plan	-0.3%
3. Pricing	Variable pricing of new and existing freeway and select arterial lanes	-0.25%
4. Reduce travel	Land use strategy encouraging concentrated growth in activity centers and around transit	-0.15%
<b>TOTAL</b>		<b>-0.85%</b>



# What would it take? Transportation

Systemic measures can provide substantial dependable GHG reductions and ensure attaining regional goals.

Aggressive federal measures would almost get us there.



# Multi-sector Working Group

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## What

- COG Board recommending voluntary implementation of a set of strategies to help reduce regional Greenhouse Gas emissions

## Why

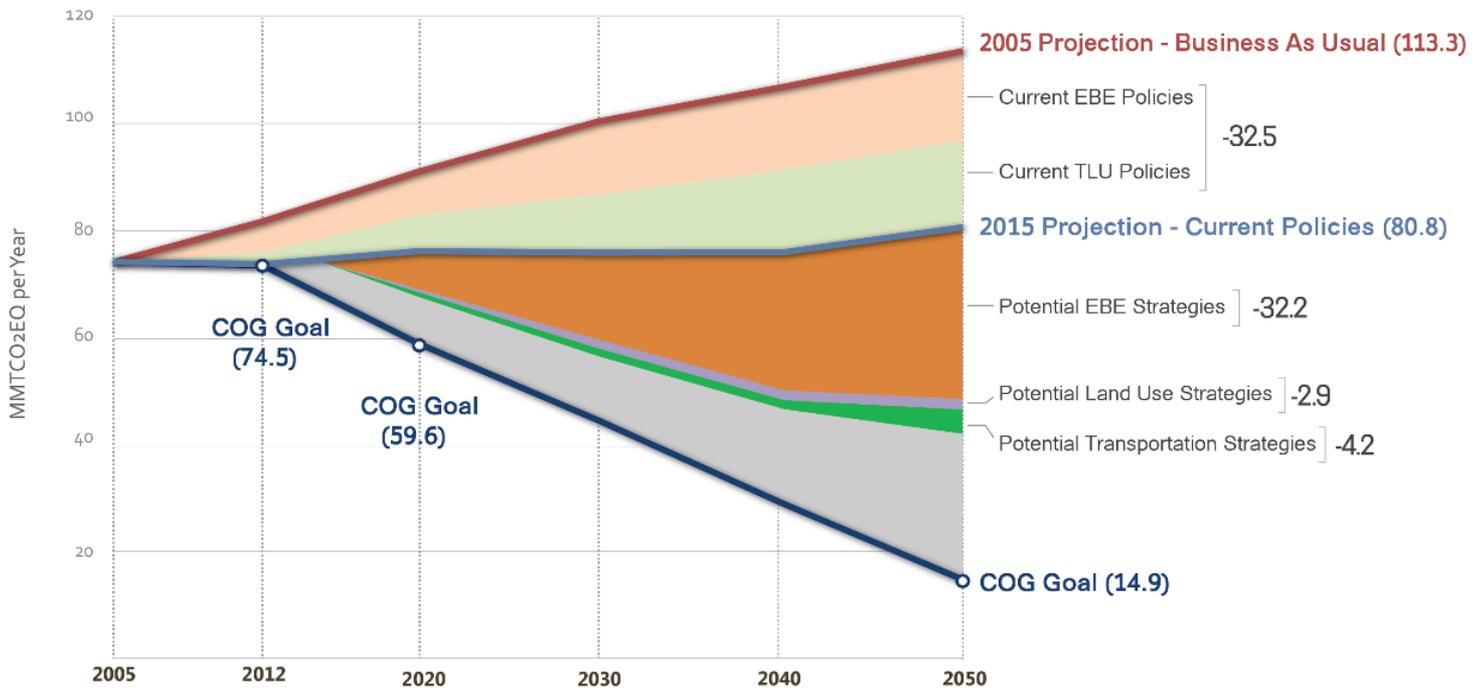
- MWAQC-CEEPC Joint Resolution and TPB Resolution asked COG to establish Greenhouse Gas Multi-sector Working Group
  - Consensus on technically viable and cost-effective actions to reduce energy use and GHG emissions
- Move the region toward the regional GHG emission reduction goals from 2008 NCR Climate Change Report and Region Forward

## Regional Goals

- Short term: Reduce 2012 GHG emission to 2005 baseline
- Interim: Reduce 20% below 2005 baseline by 2020
- Long-term: Reduce 80% below 2005 baseline by 2050



# Multi-sector Working Group: Initial Findings



EBE = Energy and Built Environment  
 TLU = Transportation and Land Use

Land use strategies include carbon sequestration from tree canopy strategy



# Potential strategies: Local, regional, state survey

COG staff surveyed environmental, planning & transportation staff from local, regional, & state departments

- Are proposed strategies consistent with local, regional or state policy?
- Are proposed strategies implementable by the locality/agency and at the level analyzed?
- What actions could be taken to implement the strategy?

## Conclusions

- Many strategies are implementable either regionally or locally, but may be at a different level than analyzed.
- Additional strategies could be implemented at the state or federal level with supporting action at local level
- Strategies can have multiple benefits such as ozone pollution reduction, reduced congestion, energy resiliency



# COG Board Resolution R68-2016

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- Notes survey findings
  - Voluntary actions can be taken at the local and regional levels
  - Other strategies could be implemented at the state & national levels
- Recognizes progress made to reduce emissions from work at local, regional, state, & federal levels
- Finds recommendations responsive to Resolution establishing the Policy Task Force
- Encourages MWAQC, TPB, and CEEPC to review, consider and take appropriate action to implement strategies as part of local, regional, and statewide planning and programming activities
- Directs COG staff to assist COG members and boards in implementation actions and provide periodic status reports



# COG Consensus Recommendations

## Energy and Built Environment Strategies

Implemented Regionally	Implemented Jurisdictionally	Implemented State/Federally
Reduce emissions from solid waste management (Note that three responding localities said while this was consistent with local policy, they lacked any current implementation plan)	Increase infrastructure systems efficiency & renewable energy use	Reduce emissions from electric generation through supporting state and federal actions
Reduce energy use from new buildings (Note that some localities have limited implementation authority due to state control of building energy codes)	Reduce energy use from existing buildings	Reduce natural gas pipeline emissions
	Increase use of distributed renewable energy resources	
	Reduce emissions from non-road equipment	



# COG Consensus Recommendations

## Land Use Strategies

Implemented Regionally	Implemented Jurisdictionally	Implemented State/Federally
Increase proportion of new development in activity centers		
Reduce loss of tree cover due to land development		



# COG Consensus Recommendations

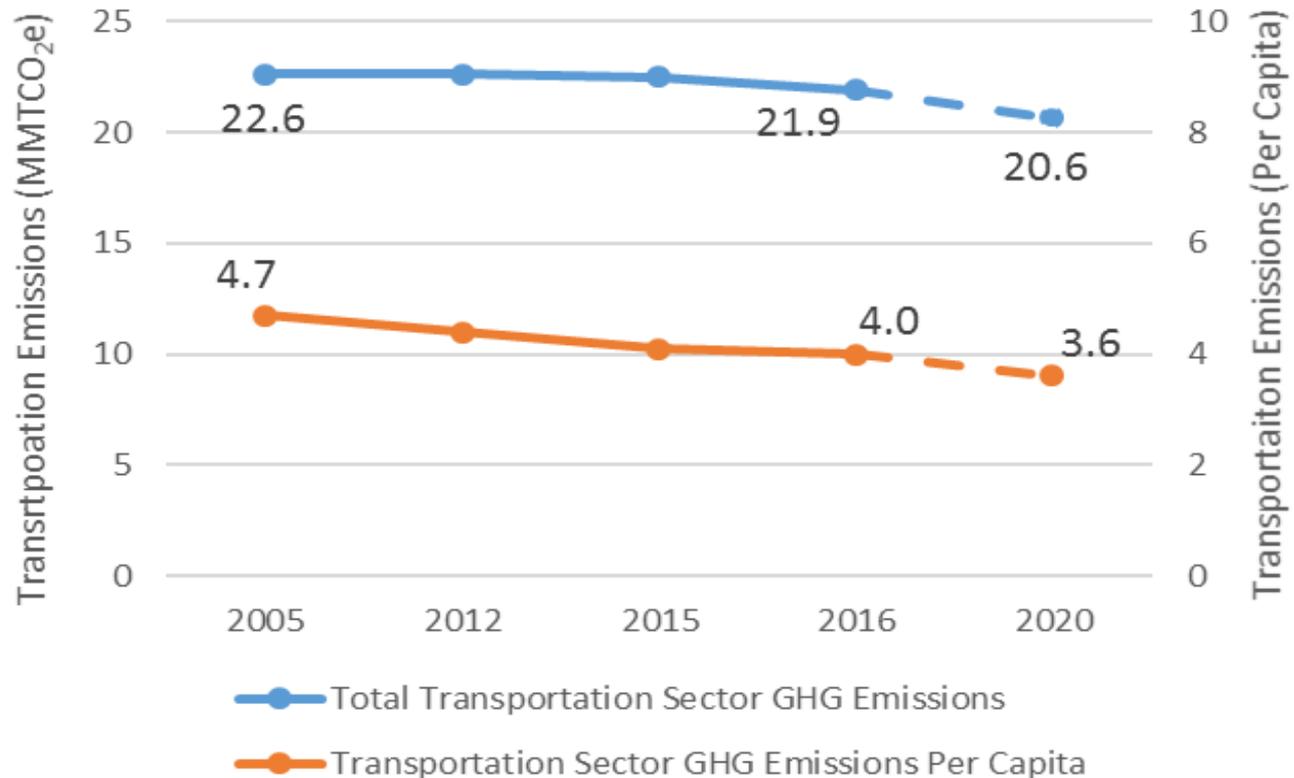
## Transportation Strategies

Implemented Regionally	Implemented Jurisdictionally	Implemented State/Federally
Increase alternate fuel vehicles in public sector fleet	Implement programs/projects to improve traffic operations on local roadways	Implement programs/projects to improve traffic operations on state and federal roadways
	Encourage cash subsidy for public and private sector commuters using alternates modes of travel	Encourage cash subsidy for state or federal employee commuters using alternates modes of travel and offer assistance through a commuter subsidy program
	Increase frequency and/or reduce run-time for local and regional transit services	Increase speed enforcement on Interstates and limited access facilities
	Implement or expand existing transit fare buy-down programs on local and regional transit services	Offer funding assistance to localities operating transit fare buy down programs.
	Promote zero emissions vehicles in private sector fleet	Implement low carbon fuel standards for roadway vehicles (with local support)
	Install electric power units at truck stops	



# Recent Mobile Sector GHG Emissions

- Transportation sector GHG emissions decreased 9% since 2005, despite a 15% growth in population.
- In the same timeframe, transportation per capita emissions decreased 15%.



# CEEPAC Action Plan Goals: Jurisdictions

## Increase Efficiency of Public Sector Fleets

ADVANCE SUSTAINABLE REGIONAL MOBILITY		%
1	Adopt a green fleet policy or fleet management plan aimed at improving fleet efficiency and reducing emissions of GHGs and other pollutants.	100%
2	Adopt anti-idling policies for public fleets and off-road equipment.	75%
3	Add alternative fuel and charging equipment and infrastructure (e.g., natural gas, biofuel, electric, hydrogen) to public sector fueling facilities. Retrofit garages and refueling facilities, as needed.	75%
4	Incentivize or encourage alternative trip modes for work trips as an alternative to expanding fleet (e.g., car share membership, bike sharing programs, transit incentives, etc.).	50%
5	Provide staff education and training for efficient use of and maintenance on all vehicle types in the fleet with a focus on alternative fuel vehicles.	50%
6	Implement innovative pilot initiatives to advance new technologies (e.g., vehicle-to-grid, regenerative power, solar powered charging stations, etc.).	25%



# CEEPAC Action Plan Goals: Jurisdictions

## Improve Local Fuel Economy

ADVANCE SUSTAINABLE REGIONAL MOBILITY		%
1	Support expanding a system of publicly accessible EV charging stations and other AFV fueling stations.	75%
2	Support state and national incentives for low-emitting, efficient vehicles, infrastructure, and technology.	75%
3	Actively promote and enforce community-wide anti-idling regulations (adopted locally or by state).	75%
4	Update comprehensive, small area, and development plans to provide guidance for EV and other AFV infrastructure locations.	50%
5	Provide or promote incentives for electric vehicles and charging stations.	50%
6	Provide outreach and education on the benefits and availability of zero emission vehicles.	25%
7	Require new buildings to install EV charging stations or require them to be EV-Ready.	25%
8	Require space for bicycle and car sharing in development plans.	25%



# CEEPC Action Plan Goals: Jurisdictions

## Mobility Management

ADVANCE SUSTAINABLE REGIONAL MOBILITY		%
1	Offer a commute options program for government employees (e.g., telework, flex-time, alternative work schedule, car pool, van pool, guaranteed ride home, bike/pedestrian, or financial incentive).	100%
2	Provide or promote travel demand management programs (e.g., Commuter Connections) to encourage citizens to take alternative commute options and to help employers offer alternative commute options to their employees.	100%
3	Adopt a bicycle and pedestrian plan that works towards providing convenient accessibility and an interconnected system to reduce reliance on automobiles.	100%
4	Adopt a complete streets policy.	75%
5	Expand park and ride facilities to meet anticipated increase in rideshare and transit demand.	50%
6	Implement transit enhancements to increase capacity and improve services (e.g., enhanced commuter bus service, real-time bus schedule information, bus rapid transit, etc.). Place emphasis on increasing accessibility and expanded transit options to vulnerable populations. *	50%
7	Enhance system operational performance of roadways (e.g., signal retiming, intersection efficiency improvements, etc.).	50%
8	Implement transit fare reductions to vulnerable populations and other targeted audiences. *	50%
9	Achieve a Bike Friendly or Walk Friendly Community Designation.	25%



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