TRANSPORTATION AND CLIMATE INITIATIVE (TCI)

Collaboration of Northeast and Mid-Atlantic States

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TPB Citizens Advisory Committee
April 7, 2020

Agenda Item #2

National Capital Region
Transportation Planning Board

Presentation Outline

- National Capital Region Climate Change Initiatives
- Regional and Transportation Greenhouse Gas Emissions
- Transportation and Climate Initiative (TCI)
- COG Board Resolution
- COG/MPO convening on TCI

National Capital Region Climate Change Initiatives

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

- *10% below "business as usual" projections by 2012*
- *20% below 2005 levels by 2020*
- *80% below 2005 levels by 2050*

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

2010: Regional Climate and Energy Work Plan *(CEEPC; 2013, 2017, 2021 under development)*

2010: "What Would it Take?" Scenario Study: Transportation sector local/regional/state strategies *(TPB)*

2010*:* TPB begins voluntarily reporting GHG emissions in Performance Analysis of Long Range Transportation Plan *(TPB)*

National Capital Region Climate Change Initiatives

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

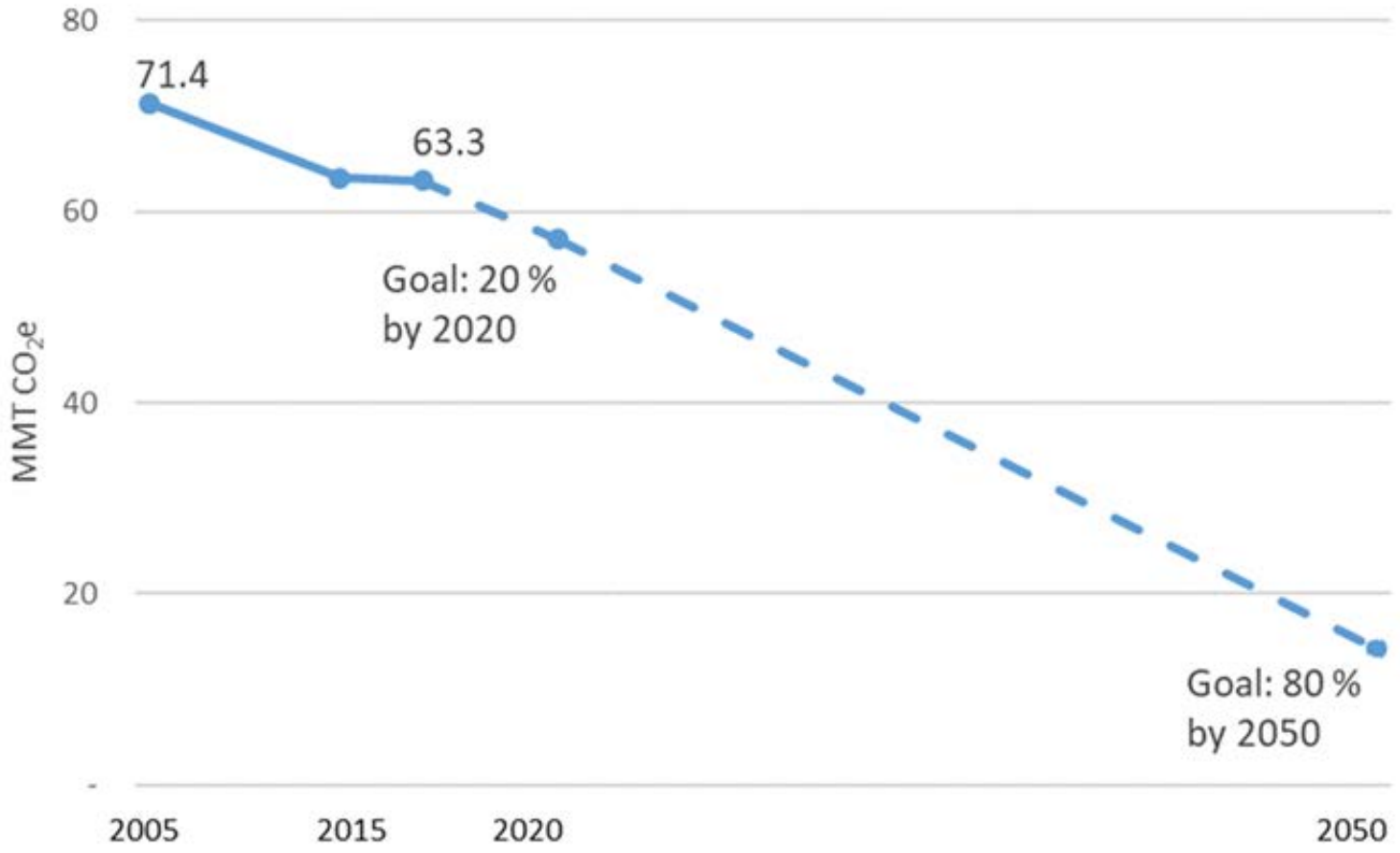
2014: TPB and MWAQC adopt resolutions affirming greenhouse gas emission reduction goals and support for Multi-Sector Working Group

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

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

2020: COG Board and TPB Chair identify climate change as a focus area *(COG, TPB)*

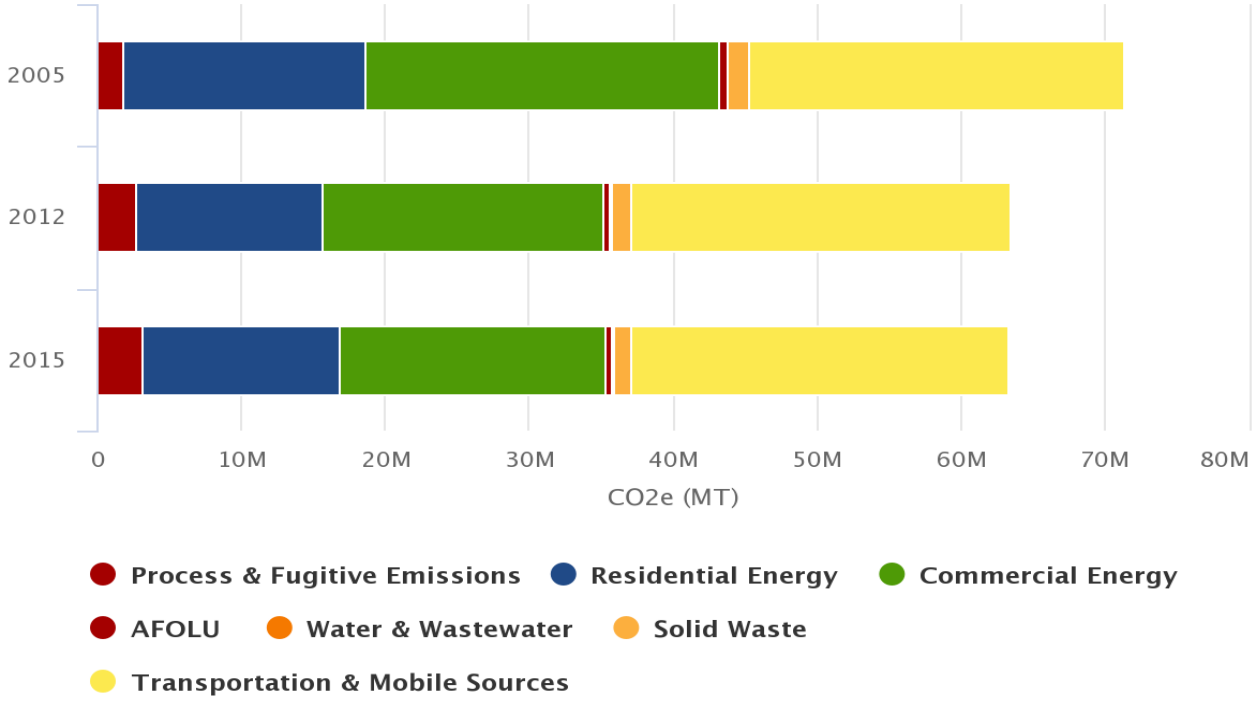
Regional GHG Emissions



Source: 2017-2020 Regional Climate and Energy Action Plan (CEEPC, March 2017)

Regional GHG Emissions

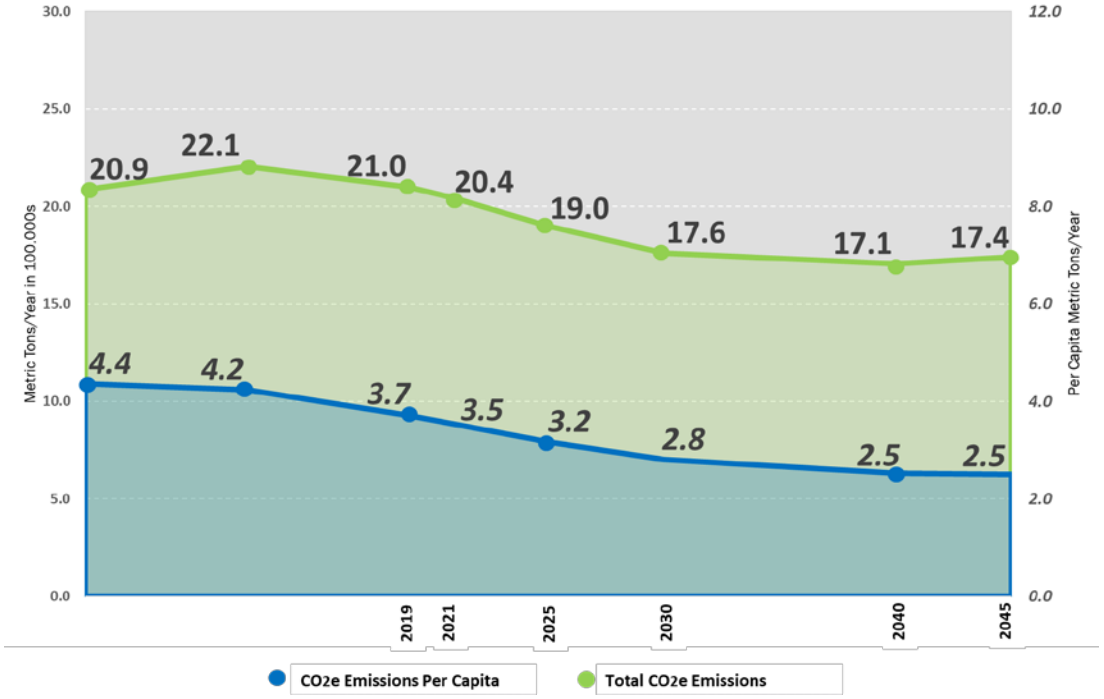
- Transportation-related emissions make up 41 percent of the region's GHG emissions, second only to the 52 percent from the built environment



Source: Metropolitan Washington Community-Wide Greenhouse Gas Emissions Inventory Summary (MWCOG, July 2018)

Transportation GHG Emissions

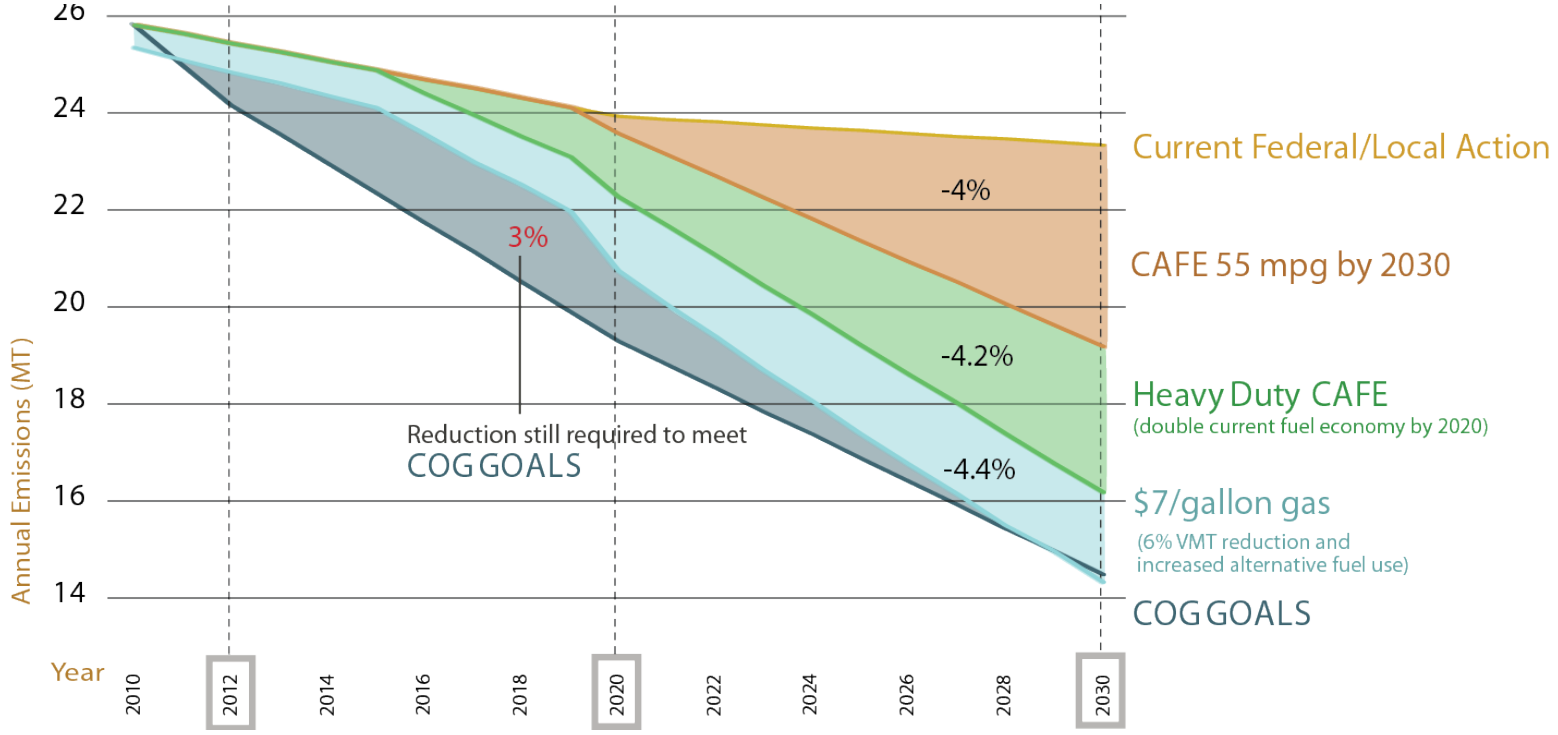
- Total and per capita GHG emissions are forecast to drop 17% and 32%, respectively, between 2019 and 2045



- 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.

Transportation GHG Emissions

- "What Would it Take?" Scenario Study (TPB, 2010) showed that systemwide measures can provide substantial and dependable GHG reductions
- Near terms goals will not be met just with systemwide measures - state/regional/local actions are needed



Source: "What Would it Take?" Scenario Study (TPB, May 2010)

Transportation and Climate Initiative

- Regional collaboration of 12 Northeast & Mid-Atlantic states (including Maryland and Virginia) and the District of Columbia to reduce carbon emissions from the transportation sector
- TCI region consists of 72 million people, $5.3 gross domestic product (GDP), and 52 million registered vehicles

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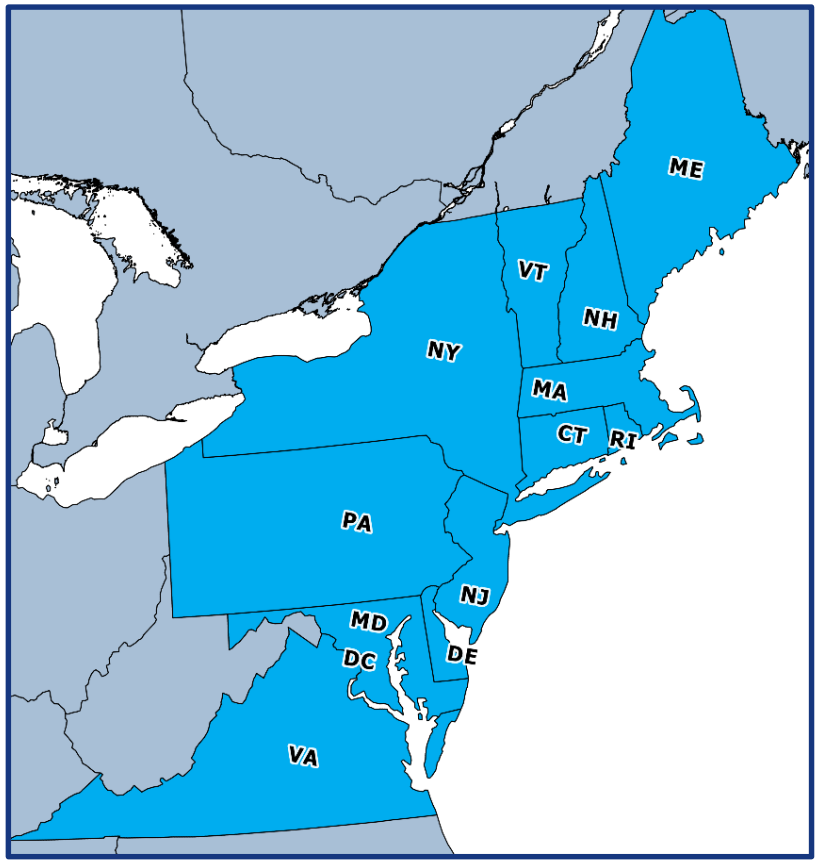

Transportation and Climate Initiative

- June 2010: Declaration of Intent released
  - Supported by the Georgetown Climate Center
  - Topic areas include clean vehicles, freight analysis, and sustainable communities policies
- December 2018: Announced intention to design a regional cap-and-invest program or other pricing mechanism
- October 2019: Draft framework released
- December 2019: Draft Memorandum of Understanding (MOU) released outlining a proposal for a regional cap-and-invest program

Transportation and Climate Initiative

- Proposed cap-and-invest program to
  - Regulate motor vehicle gasoline and on-road diesel fuel destined for final sale or consumption in participating jurisdictions
  - Cap CO_2 emissions from the transportation sector
  - Invest proceeds into projects and programs that further reduce CO_2 emissions
- Revenue generated would allow jurisdictions to "strategically invest" to
  - Help transition to affordable, low-carbon transportation options
  - Provide substantial public health benefits, reduce congestion, and increase economic and job opportunities
- Jurisdictions to ensure underserved communities receive equitable benefits
- Preliminary modeling analysis showed potential emissions reductions benefits in 2022-2032 for three different cap scenarios

2019 TCI Modeling & Analysis Overview

- Develop Reference Case assumptions
  - Public input following webinar
- Run Reference Case (what happens with no cap?)
  - Public input following webinar
- Revised Reference Case
- Run emissions cap scenarios (what happens with emissions caps?)
- Conduct macroeconomic & initial public health analysis
- Release modeling results and solicit stakeholder input on policy scenarios

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How does the **CAP** affect the transportation sector (& others)?

How do the **INVESTMENTS** affect the transportation sector?

What are the impacts from the program?

(economic effects, public health benefits)

How are the benefits and costs distributed?

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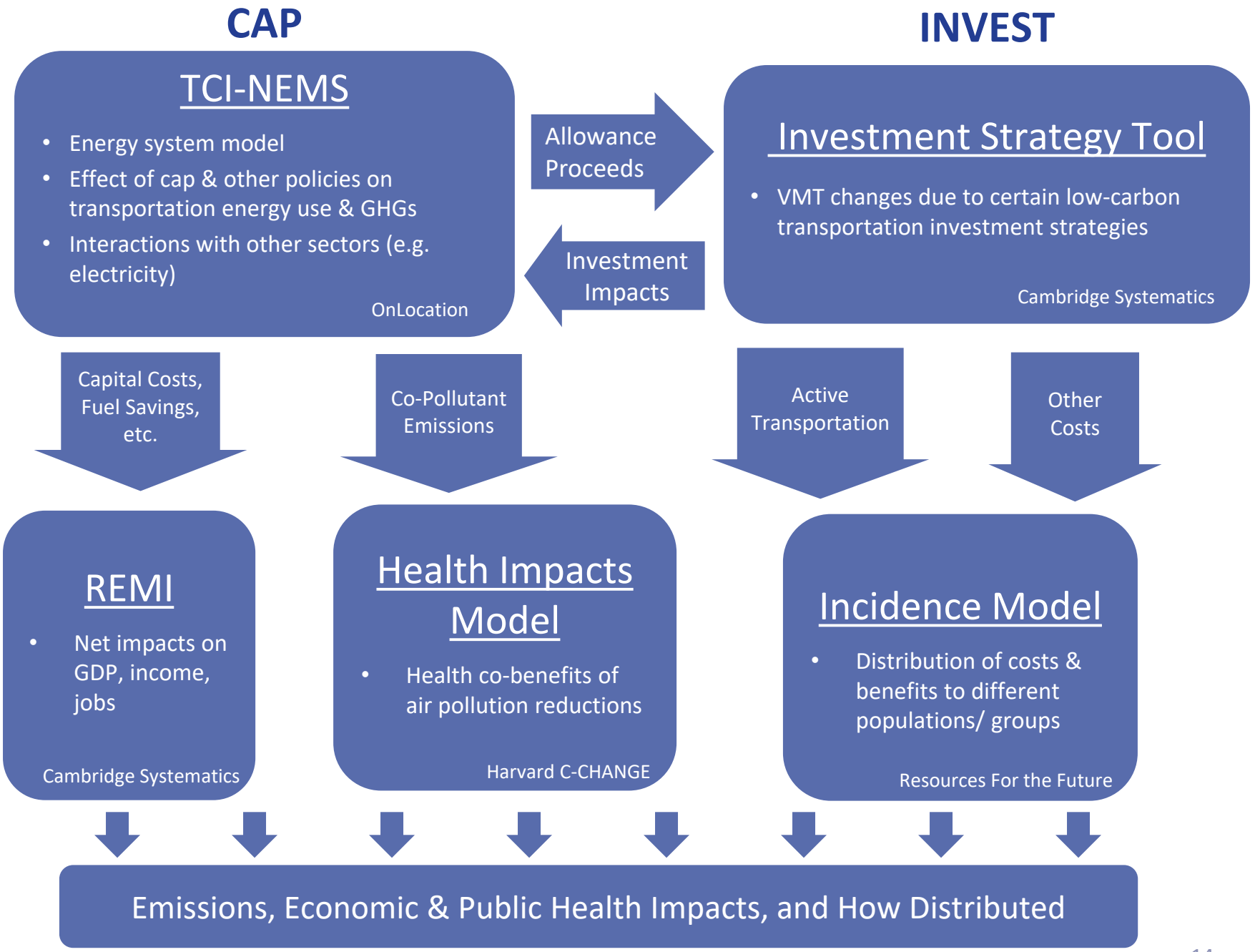
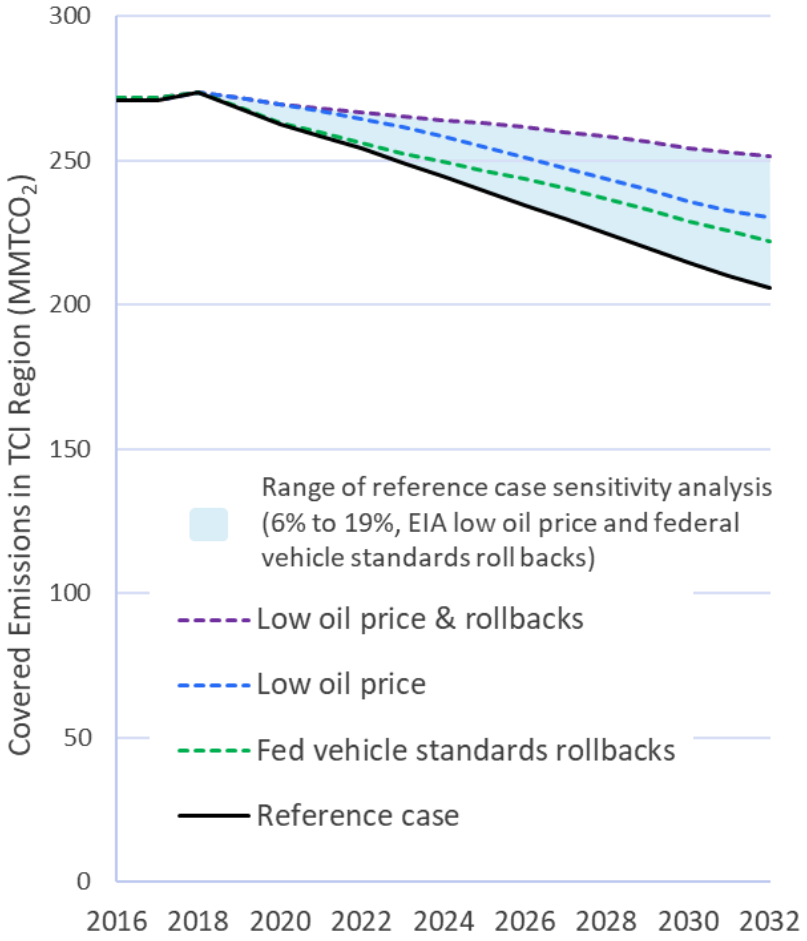

CAP
INVEST
TCI-NEMS
Energy system model
Effect of cap & other policies on transportation energy use & GHGs
Interactions with other sectors (e.g. electricity)
OnLocation
Allowance Proceeds
Investment Impacts
Investment Strategy Tool
VMT changes due to certain low-carbon transportation investment strategies
Cambridge Systematics
Capital Costs, Fuel Savings, etc.
Co-Pollutant Emissions
Active Transportation
Other Costs
REMI
Net impacts on GDP, income, jobs
Cambridge Systematics
Health Impacts Model
Health co-benefits of air pollution reductions
Harvard C-CHANGE
Incidence Model
Distribution of costs & benefits to different populations/ groups
Resources For the Future
Emissions, Economic & Public Health Impacts, and How Distributed

TCI Reference Case & Reference Case Sensitivity Analyses

- Transportation emissions in the Reference Case are projected to decline by 19% from 2022 to 2032 in the TCI Region
- Sensitivity analyses included EIA Low Oil Price scenario and rollbacks of federal vehicle emissions and fuel economy standards
- Policy actions by states and cities could help lock in needed reductions.



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Modeling Runs Conducted

All policy scenarios assume a regional CO_2 emissions cap is applied to the fossil portion of motor gasoline and on-road diesel combusted in vehicles (e.g., light-duty cars and trucks, commercial light trucks, freight trucks, and buses).

Model Run	Projected Emissions
Reference Case	19% CO_2 reductions from 2022 to 2032
Combined Sensitivity: Rollback of federal vehicle standards and low oil price	6% CO_2 reductions from 2022 to 2032
Below are policy cases with the same investment portfolio but different cap levels	
Policy: 20% Cap Reduction	20% CO_2 reductions from 2022 to 2032
Policy: 22% Cap Reduction	22% CO_2 reductions from 2022 to 2032
Policy: 25% Cap Reduction	25% CO_2 reductions from 2022 to 2032

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Modeled Clean Transportation Investment Scenario

For the purposes of modeling, an illustrative portfolio of clean transportation investments was developed. This includes a broad range of options, with a significant portion of proceeds focused on the most cost-effective emission reduction strategies.

30% Electric cars, light trucks and vans

23% Low & zero-emission buses and trucks

18% Transit expansion and upkeep

14% Pedestrian and bike safety, ride sharing

8% System efficiency

8% Indirect/ Other

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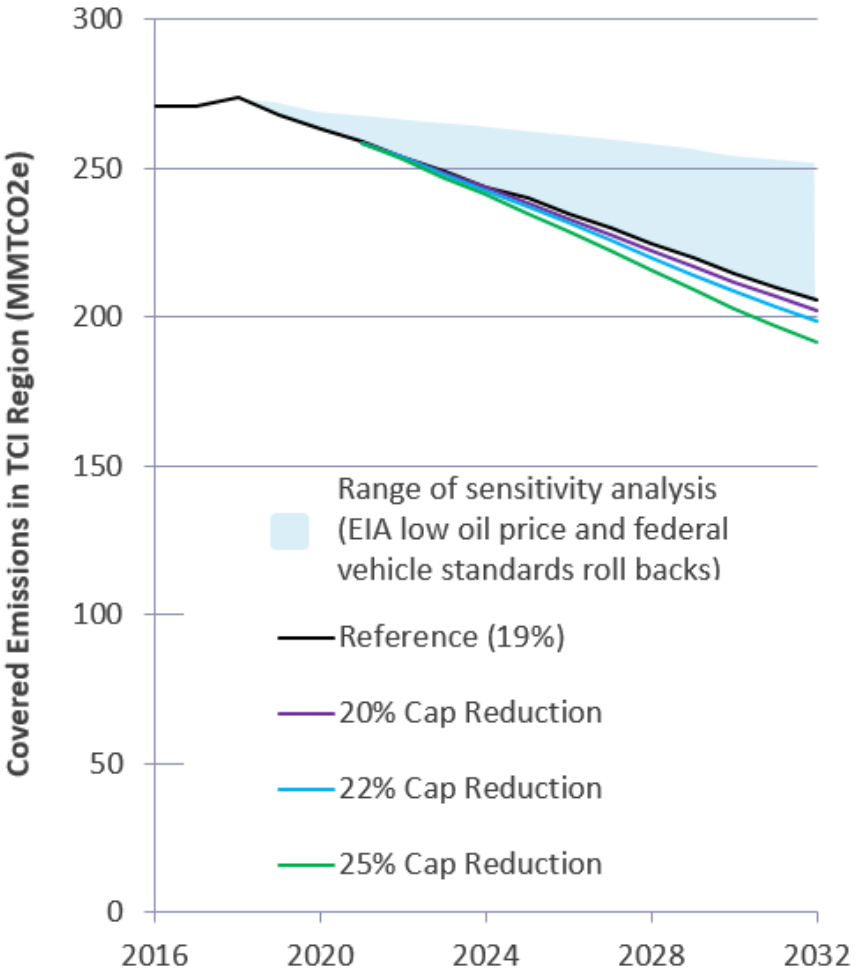
Emissions Cap Scenarios Results: Projected Transportation CO_2 Emissions

- A declining emissions cap could lock in decreases in CO_2 emissions that are expected through 2032 and drive additional reductions.
- More stringent caps result in greater emissions cuts and more proceeds for investments.
- Initial annual proceeds range from $1.4 billion at start in the 20% case up to $5.6 billion in the 25% case.



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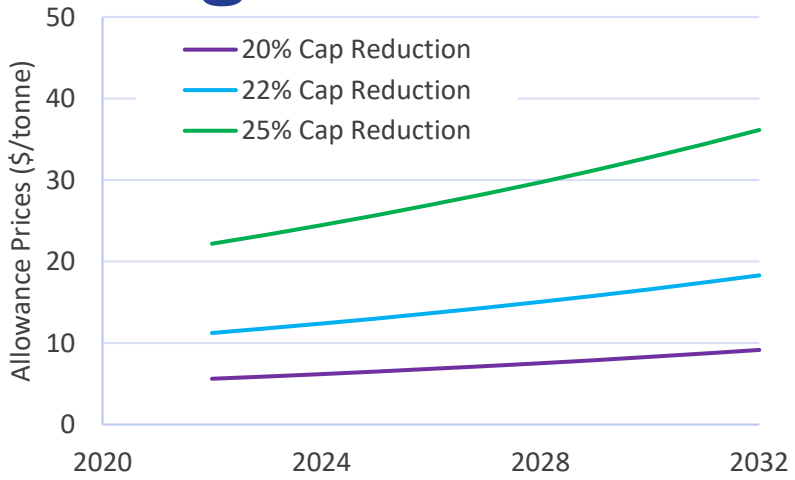
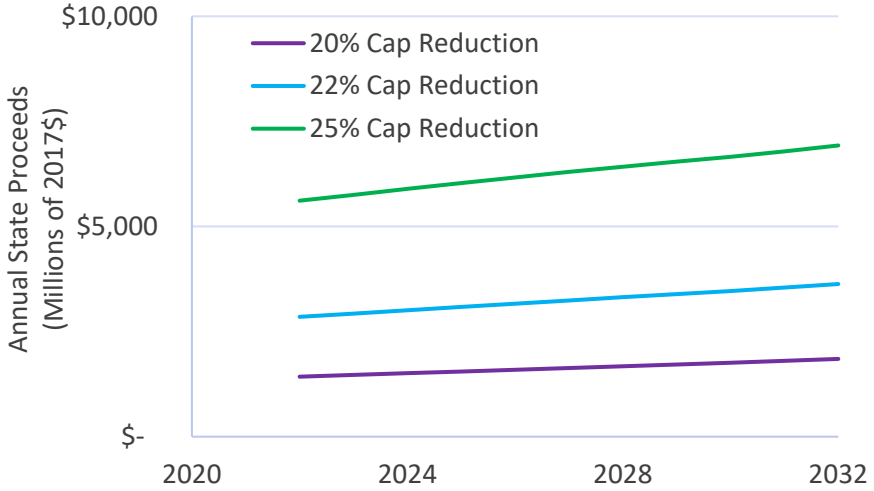
Emissions Cap Scenarios Results: CO_2 Allowance Prices & Program Proceeds

- Initial annual proceeds range from $1.4 billion at start in the 20% case up to $5.6 billion in the 25% case.
- Allowance prices reflect the combined effect of the cap and the investments
- More stringent caps result in greater proceeds for investments.





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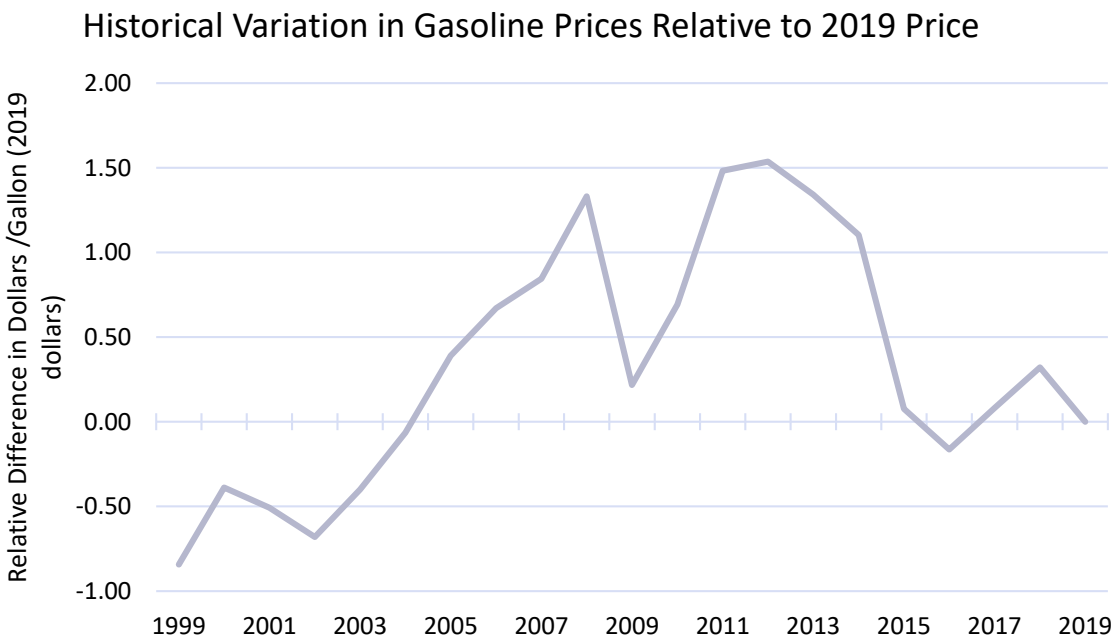
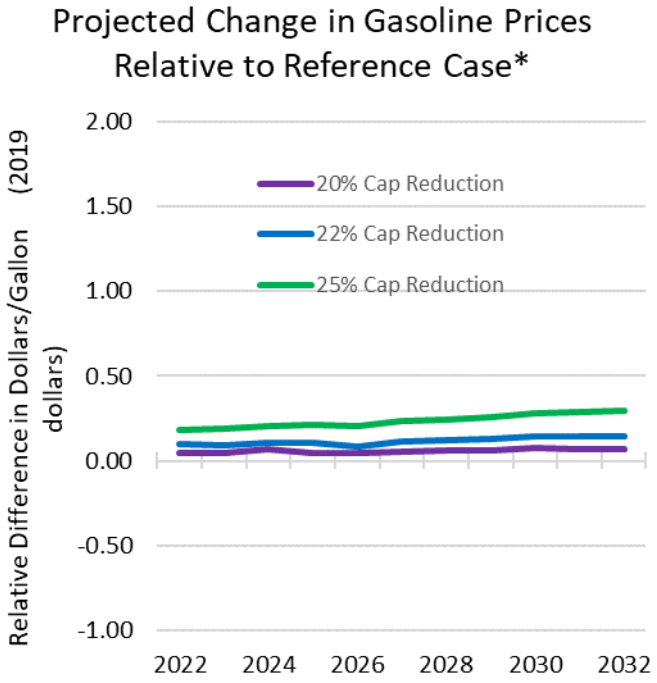
Modeled Changes in Fuel Price in Policy Scenarios

Compared with historical variations





*If fuel companies decide to pass on allowance costs it could mean an incremental price increase in 2022 of $0.05, $0.09 or $0.17 / gallon in the 20%, 22% and 25% Cap Reduction Scenarios, respectively. This is not a prediction of gasoline prices in the future. Several factors affect future gas prices, including policy and market forces.

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Range of Clean Transportation Investments in Modeled TCI Scenarios

- Modeled **annual clean transportation investments by strategy** in 2032
- Combined $1.84 billion to $6.92 billion in modeled scenarios

	**$554 million to $2 billion**	Electric cars, light trucks and vans
	**$425 million to $1.6 billion**	Low & zero-emission buses and trucks
	**$333 million to $1.2 billion**	Transit expansion and upkeep
	**$259 million to $970 million**	Pedestrian and bike safety, ride sharing
	**$148 million to $554 million**	System efficiency
	**$148 million to $554 million**	Indirect/ Other

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Clean Transportation Investments to Reduce Pollution in Modeled TCI Scenarios

- **Electric Transit Buses:**
  Up to 44,000 transit buses by 2032
- **Bus Service and Transit Improvements:**
  Up to $1.1 billion annually
- **Electric School Buses:**
  Up to 42,000 by 2032
- **Electric Trucks:**
  Up to 84,000 by 2032
- **Bike Lanes and Sidewalks:**
  Up to $5.6 billion region-wide through 2032

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Preliminary Public Health Benefits (in 2032)

- 1,300 Fewer asthma symptoms
- 1,000 Fewer premature deaths
- 1,700 Fewer traffic-related injuries
- Total estimated public health benefits: **$3 billion to $10 billion**

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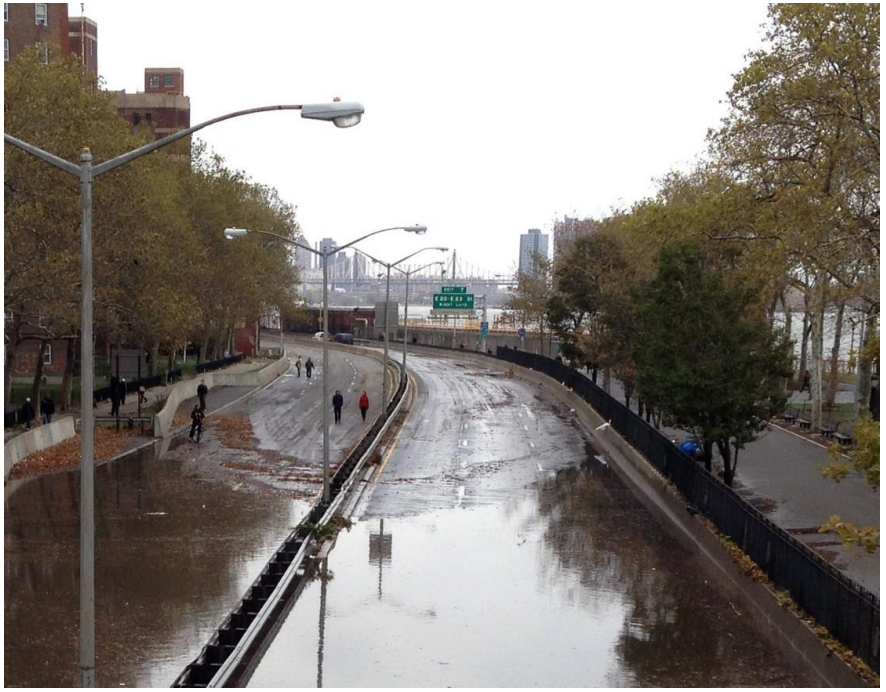
Avoided Climate Impacts



$249 million – $892 million annually in avoided climate impacts

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Transportation and Climate Initiative

- Final MOU to be released in the spring
  - Establish a regional carbon dioxide emissions cap that will decline over time
  - Establish a methodology to apportion proceeds to each Participating Jurisdiction to invest at each jurisdiction's discretion to support the goals of the program
- Jurisdictions will decide whether to sign the final MOU and participate
  - Jurisdictions would then take any necessary legislative & executive steps to implement the program
- Cap-and-invest program could begin as early as 2022

COG Board Resolution R10-2020

- Applauds leadership of Governors and Mayor
- Endorses TCI as positive path forward to reduce transportation-related GHG emissions
- Encourages continued participation by the states and the District in developing the TCI cap-and-invest program
- Directs transmittal to the Governors and Mayor

COG/MPO Convening on TCI

- COG staff are participating in a group of Councils of Governments and Metropolitan Planning Organizations in the TCI states led by the Metropolitan Area Planning Council (MAPC), the regional planning agency for metropolitan Boston

- The purpose of the convenings is to learn more about TCI's objectives and the policy development process from members of the TCI leadership team, discuss the proposal and accompanying analysis, consider how COGs and MPOs can engage with their membership, offer a thoughtful response to the proposal, and to encourage a robust and equitable program design

- The group has met on conference calls and at two in-person convenings, the most recent hosted by COG on January 16, 2020

- A comment letter based on the group discussion was sent to TCI

GHG Planning Resources

- Regional Climate and Energy Action Plan (CEEPC, 2017): https://www.mwcog.org/documents/2017/03/23/regional-climate-and-energy-action-plan-climate--energy-climate-change-energy/
- Metropolitan Washington Emissions Inventory, 2005-2015 (CEEPC, 2018): https://www.mwcog.org/newsroom/2018/07/26/inventory-shows-region-halfway-to-greenhouse-gas-emissions-2020-goal/
- Multi-Sector Working Group (TPB/MWAQC/CEEPC, 2016/2017): https://www.mwcog.org/committees/multi-sector-working-group/
- "What Would it Take?" Scenario Study (TPB, 2010): https://www.mwcog.org/documents/2010/05/18/what-would-it-take-scenario-land-use-projects/
- National Capital Region Climate Change Report (COG, 2008): https://www.mwcog.org/documents/2008/11/12/national-capital-region-climate-change-report-climate-change/

TCI Resources

- TCI website: www.transportationandclimate.org
- Draft MOU: https://www.transportationandclimate.org/sites/default/files/FINAL%20TCI_draft-MOU_20191217.pdf
- Preliminary Modeling Results Webinar Recording: https://www.youtube.com/watch?v=EUmxoMrzSI0&feature=youtu.be
- Preliminary Modeling Results Slide Deck: https://www.transportationandclimate.org/sites/default/files/TCI%20Public%20Webinar%20Slides_20191217.pdf
- Presentations from COG/MPO Convenings on TCI: https://www.mapc.org/resource-library/transportation-climate-initiative/

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