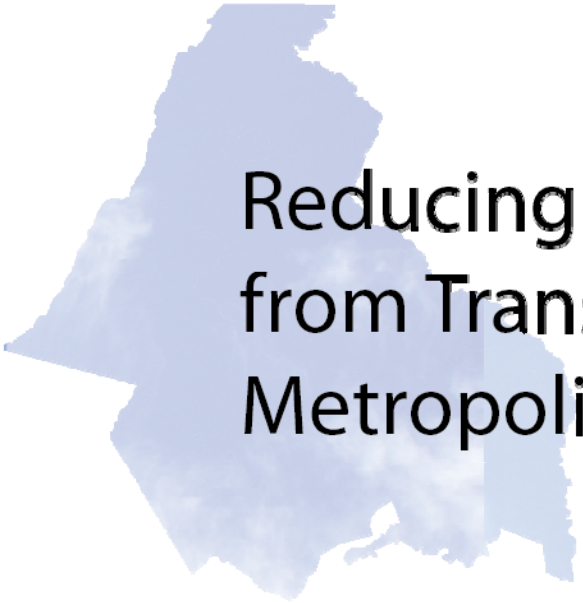
Item #5



Reducing Greenhouse Gas Emissions from Transportation in the Metropolitan Washington Region

September 13, 2011

Presentation to MANAGEMENT, OPERATIONS, AND INTELLIGENT TRANSPORTATION SYSTEMS (MOITS) POLICY TASK FORCE AND MOITS TECHNICAL SUBCOMMITTEE

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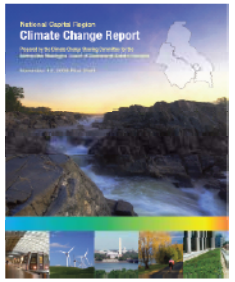
Addressing Climate Change

background | scenario | lessons | further study | action

1 In May 2007, COG set up a Climate Change regional committee

2 In November 2008, the committee completed a comprehensive multi-sector report with recommended goals to reduce GHG emissions to
- 2005 levels by 2012
- 20 percent below 2005 levels by 2020
- 80 percent below 2005 levels by 2050



3 Work is ongoing on sector-specific studies, including transportation which is 30 percent of GHG

Mitigation vs. Adaptation

- Climate Change Mitigation – employment of measures to *reduce greenhouse gas emissions*

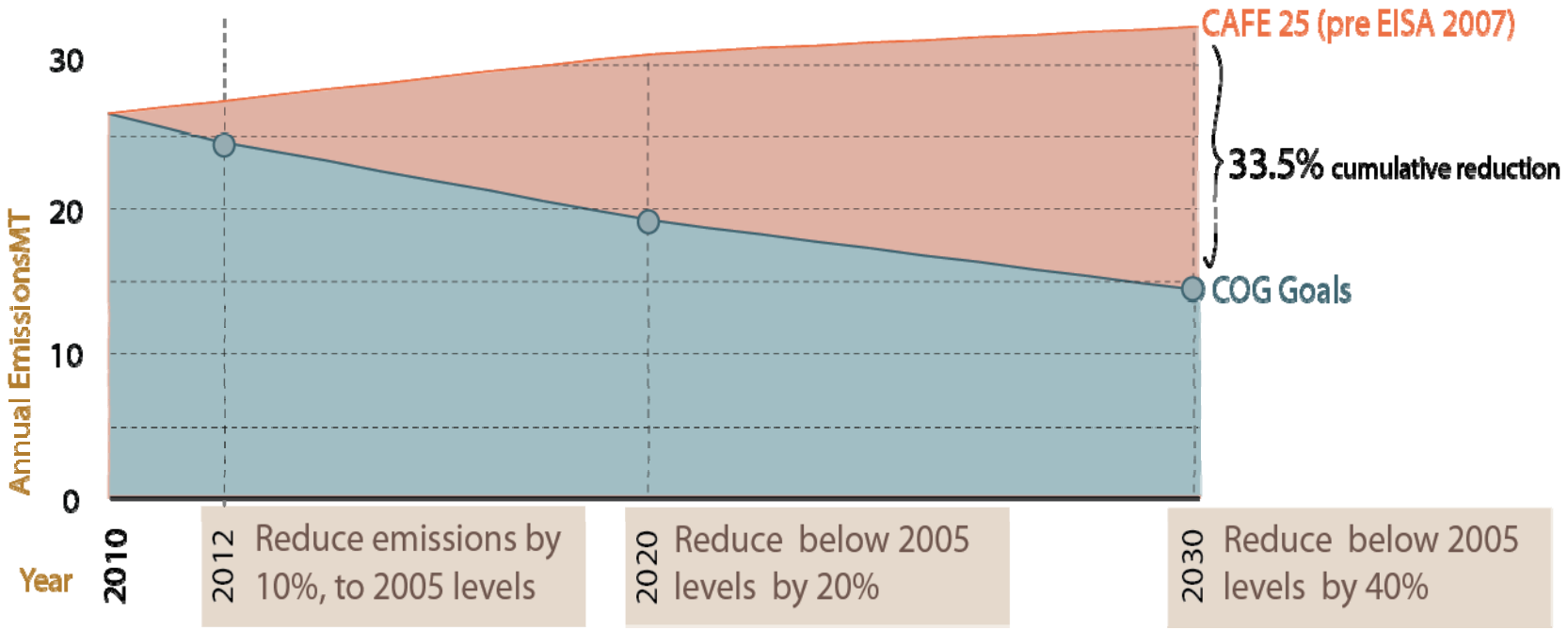
- Climate Change Adaptation – employment of measures that *reduce or avoid climate change impacts*, or create opportunities when changes are positive

Source: ICLEI

The TPB Scenario Study

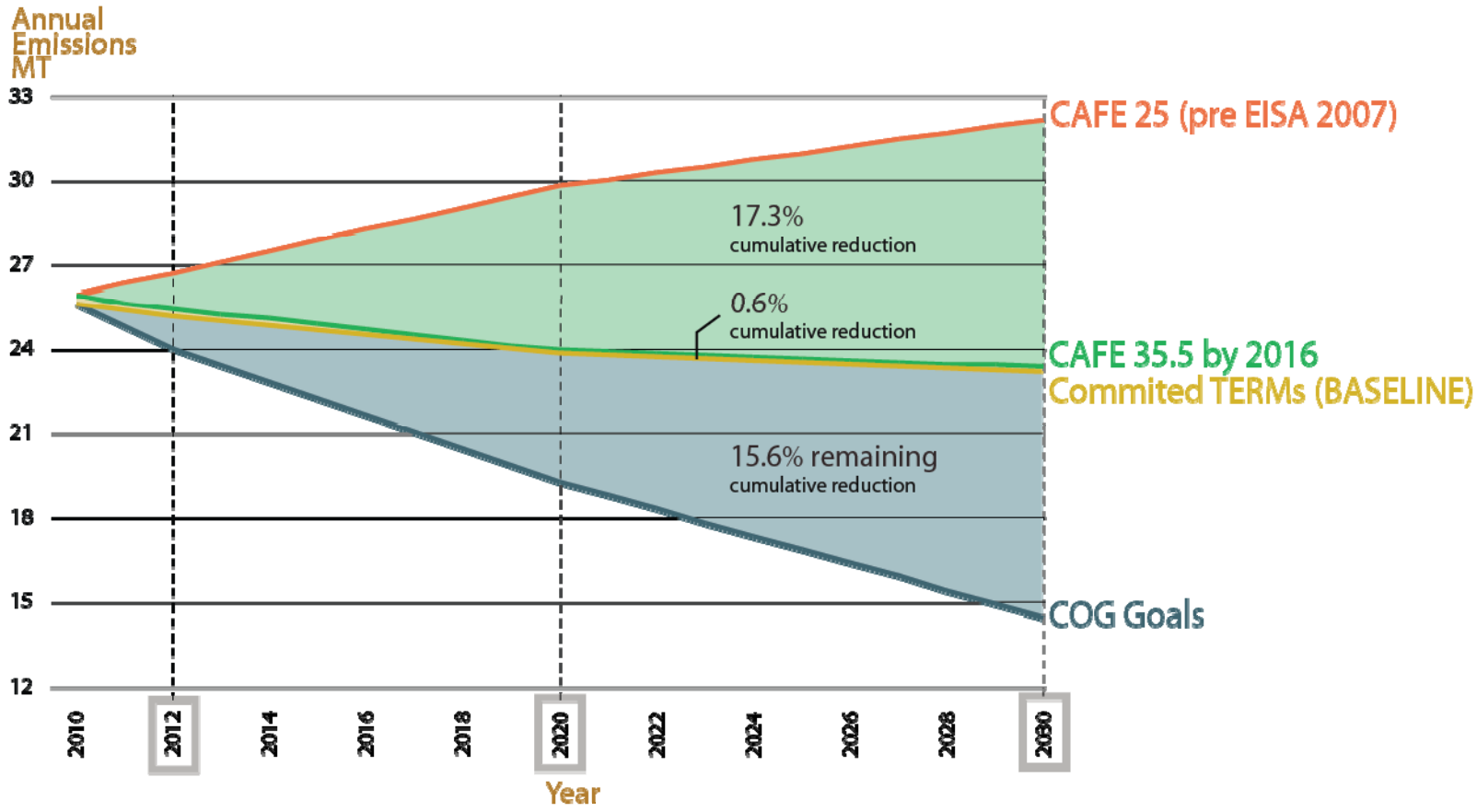
background | scenario | lessons | further study | action

What if we had to meet these COG multi-sector goals in the transportation sector?



What's Our GHG Baseline?

background | scenario | lessons | further study | action



Committed TERMS refers to the full TERM Tracking Sheet, including: Access and service improvements to transit, bike/ped projects, rideshare assistance programs, telecommute programs, traffic improvements, engine technology programs

What are the Emissions Sources?

There are 3 major areas affecting transportation emissions

1 

The composition of the fleet

fuel efficiency, heavy/light duty split

2 

The fuel we put in our fleet

gasoline, diesel, alternative fuels (electricity, ethanol, biofuels)

3 

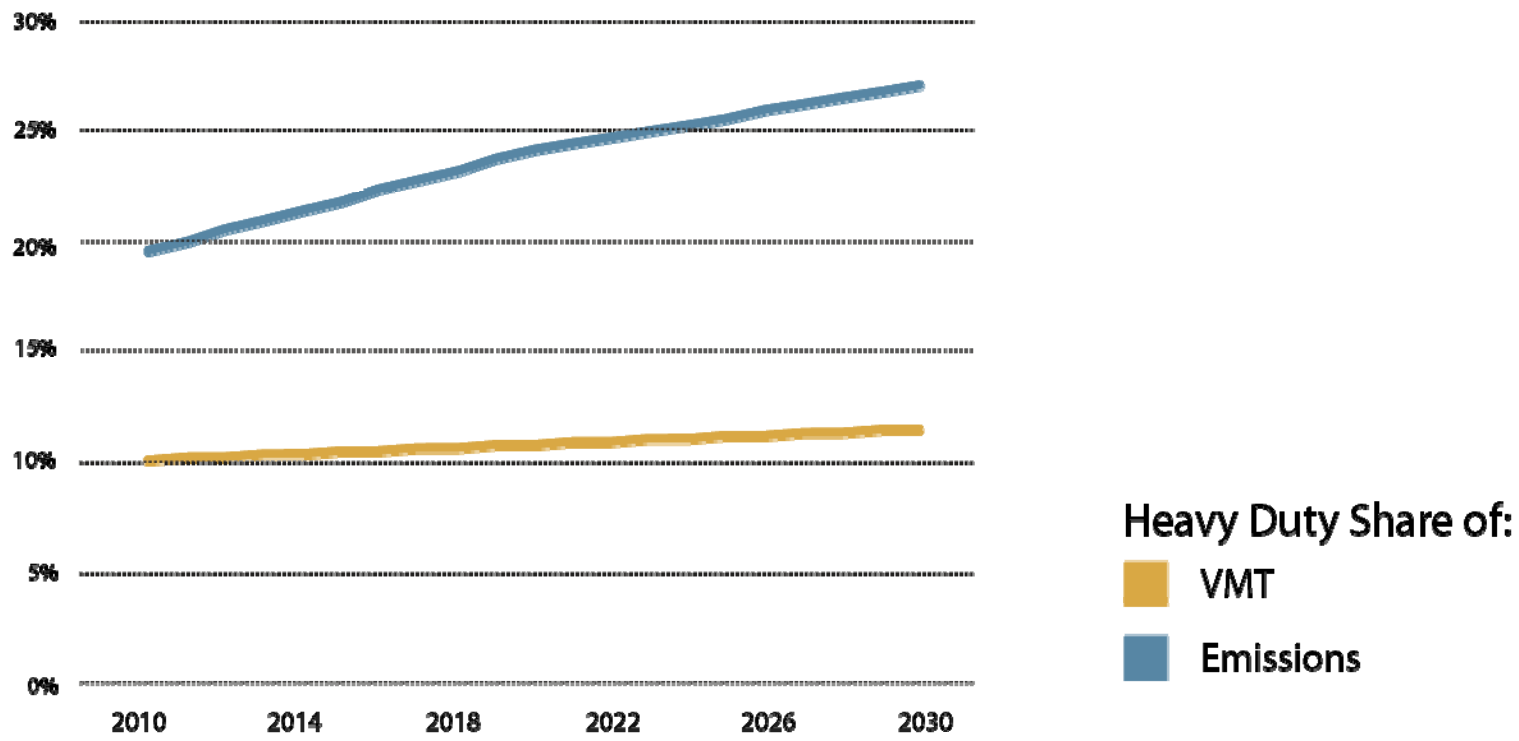
How we use our fleet

trip lengths, purpose, and mode, vehicle occupancy, congestion

What Does Our Fleet Look Like?

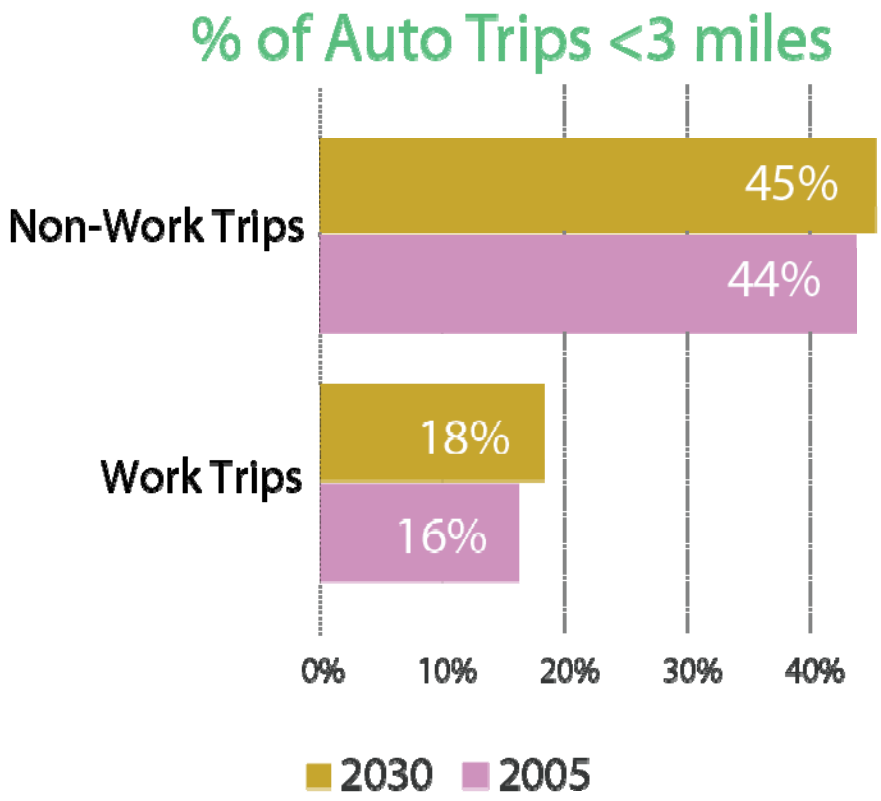
background | scenario | lessons | further study | action

Heavy Duty Share of Total Vehicle Miles of Travel (VMT) and CO_2 Emissions



How Do We Use The Fleet?

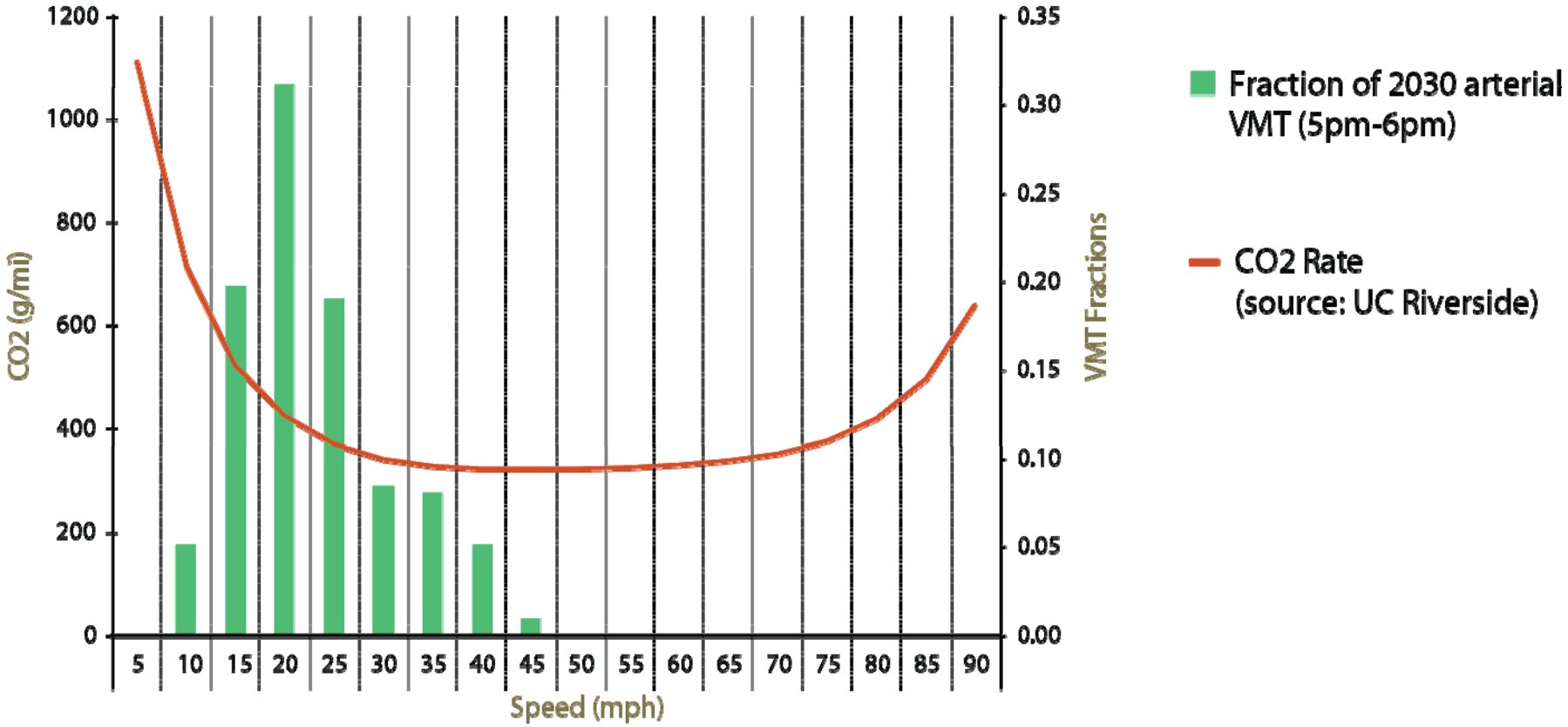
Many of our trips are short.



How Do We Use The Fleet?

background | scenario | lessons | further study | action

Congestion affects CO_2 emissions and is widespread.



How Can We Reduce CO_2?

1
fuel efficiency

Enhanced CAFE
HDV CAFE
Local tax incentives
Cash for Clunkers

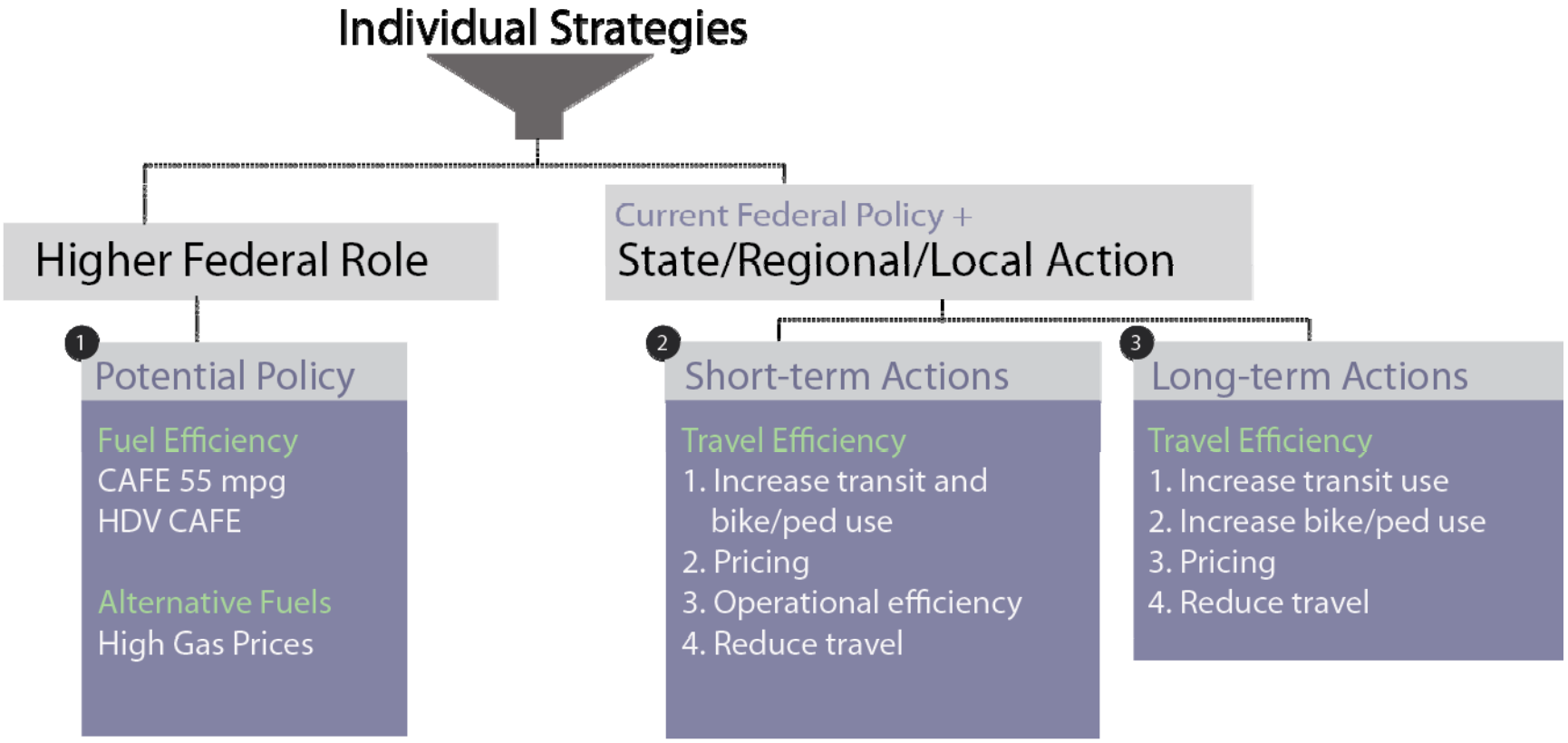
2
alternative fuel

DOE Forecasts:
Current regulation
High price case

3
travel efficiency

Telecommuting
Bike/ped facilities
Improved transit
Bike and Car-sharing
Car and Vanpooling
Pricing
Eco-driving
Incident Management
Signal optimization

Categories of Strategies

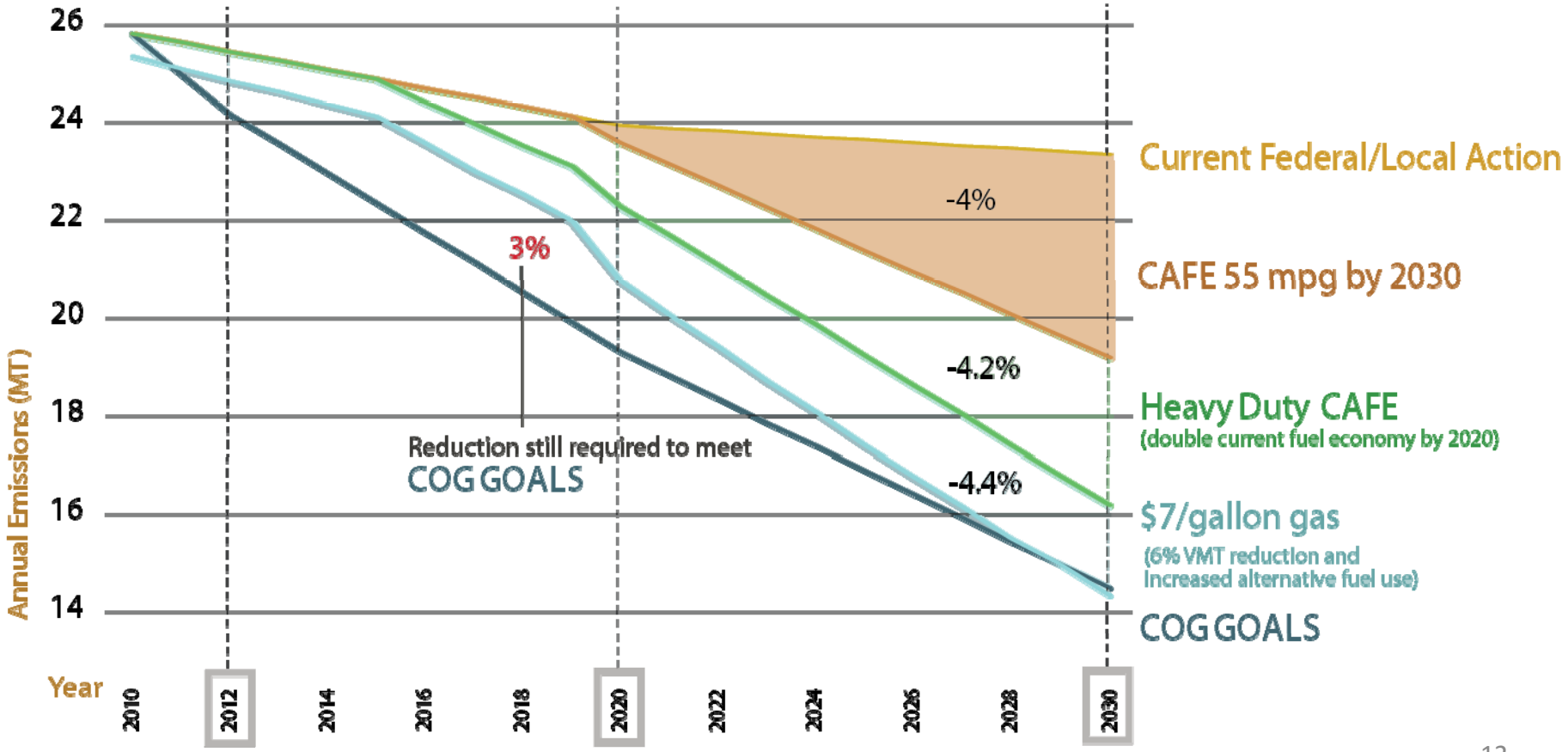


All groups combine additive strategies to the full extent currently possible.

Group 1: Higher Federal Role

background | scenario | lessons | further study | action

Aggressive federal measures would almost get us there.



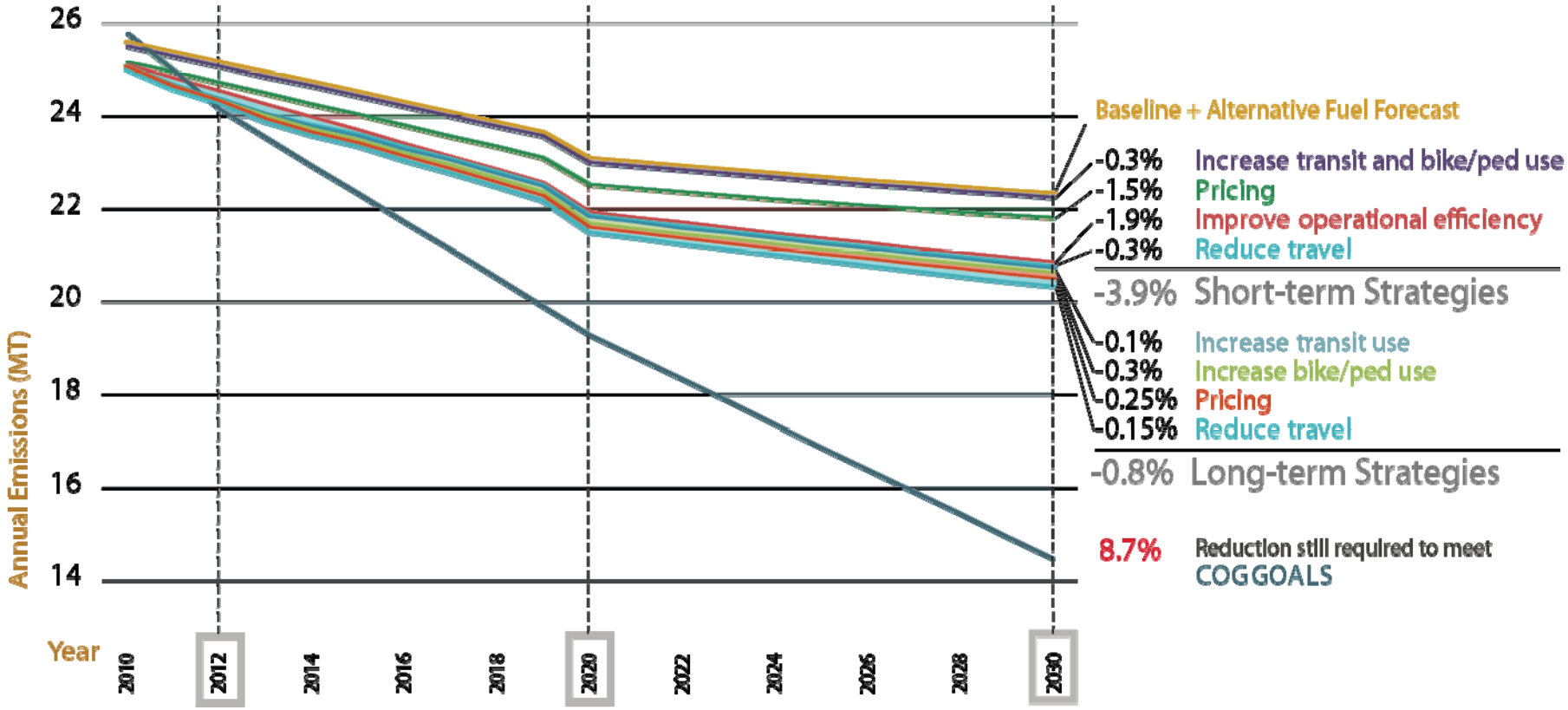
Scenario Development (Current Federal Role)

1. Inventory and baseline forecast: regional travel demand model, Mobile 6.2, and off-model analysis for CAFE
2. Identified strategies: 37 strategies, including those already considered for reducing criteria pollutants and other measures considered feasible
3. Individual strategy analysis: VMT reduction strategies analyzed using travel forecasting procedures and sketch planning methods; Traffic flow improvements analyzed using CO2 emissions changes by speed developed by UC Riverside
4. Grouped strategies: all regional strategies assumed to be additive (further study needed on this)

Group 2: State/Regional/Local Action (Current Federal Role)

background | scenario | lessons | further study | action

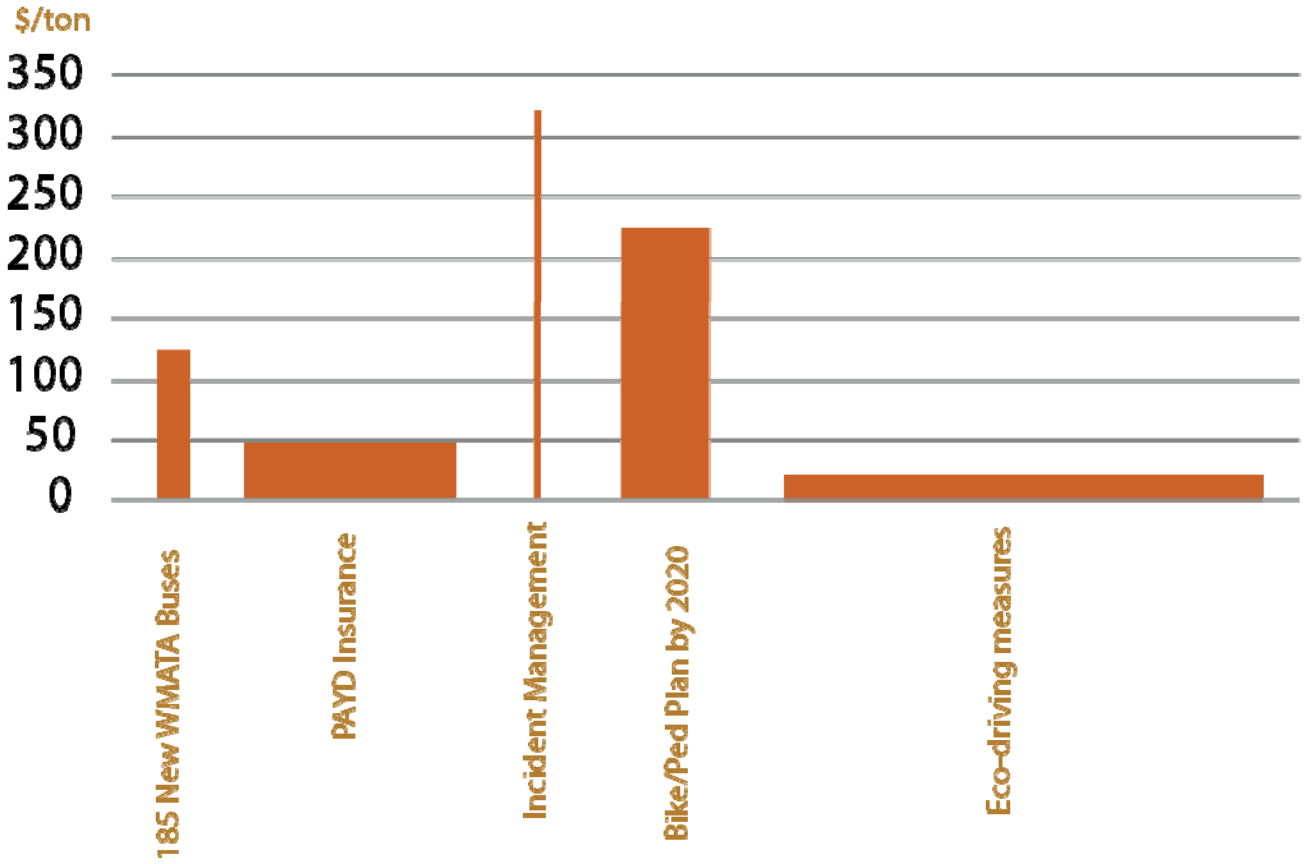
Many strategies can be done soon, almost meeting the 2012 goal



Cost-Effectiveness

background | scenario | lessons | further study | action

Some strategies are both cost-effective and effective.



1 million tons of cumulative reduction 2010-2030

(width of bar indicates 20 year CO_2 reduction effectiveness)

Assumes current federal/local action

USG assumes the Social Cost of CO_2 to be $21 in 2010 rising to $45 in 2050.

Benefit-Cost Analysis

EXAMPLE

Bike-sharing

Modest CO_2 benefits are a contributing factor to large overall benefits.

Costs	**$231,000,000**
Capital	$16,000,000
Operating	$75,000,000
Increased Accidents	$145,000,000
Benefits	**$625,500,000**
User Cost Savings	$197,000,000
Travel Time Savings	$378,000,000
Reduced Accidents (from reduced VMT)	$1,300,000
Public Health	$2,000,000
Increased Access	$38,000,000
Congestion Reduction	$3,500,000
Environmental Benefits	$5,700,000
CO_2	66,000 tons

All numbers over 20 year horizon from 2010-2030

Biggest Reductions?

Strategies that:

1. **Affect the whole fleet.**
   (eco-driving, traffic signal optimization, incident management)

2. **Affect all light duty vehicle owners/drivers.**
   (pay-as-you-drive insurance)

3. **Target the highest polluting vehicles.**
   (CNG buses for 36 most crowded WMATA routes)

4. **Provide networks of non-polluting transportation options.**
   (accelerated completion of the TPB Bike/Ped Plan)

5. **Incentivize alternative commute patterns.**
   (car/vanpool rewards, telecommuting)

COMMUTER CONNECTIONS
1-800-745-RIDE
www.commuterconnections.org

Incident Management

background | scenario | lessons | further study | action

The Metropolitan Area Transportation Operations Coordination (MATOC) Program is designed to provide real-time situational awareness and information to support management of transportation operations in the National Capital Region, especially during emergencies and other incidents with significant impacts on travelers.

Projected CO_2 Reduction by 2030:
124,000 tons
(over 20 year horizon)

What Next?

background | scenario | **lessons** | further study | action

1 Further study GHG inventory modeling and strategy analysis

2 Investigate the possible role for MPOs in climate change adaptation planning

3 Support state/regional/local actions to mitigate GHG emissions

Further Study

background | scenario | lessons | **further study** | action

1. Use the MOVES model
2. Analyze additional strategies (broader transit, pricing, freight)
3. Analyze strategies in bundles
4. Consider second order demand effects of all strategies
5. Conduct comprehensive benefit-cost analysis
6. Estimate life cycle emissions for the entire CO2 inventory

Adaptation Planning: Possible Climate Change Impacts

background | scenario | lessons | further study | action

- Warmer average temperatures
- Increased precipitation variability
- Increase in number and severity of severe storms and increase in intensity of hurricanes
- Sea level rise

Source: COG/DEP

Adaptation Planning - Possible Role for MPOs

background | scenario | lessons | **further study** | action

1. Coordination of state and local maintenance, capital, and operating priorities into long-range planning
   - Example: With high heat, commuter rail service capacities may be limited, requiring integrated planning with other transit and highway operations
2. Adapting long-range planning to handle uncertainty of future climate change impacts
   - This will be a major change, since current planning processes do not include potential climate changes

Adaptation Planning - Possible Role for MPOs

background | scenario | lessons | **further study** | action

3 Coordination of multi-sector planning

- Stress importance of coordinating transportation with other sectors (health, public safety, water) as is currently done for evacuation plans and weather emergency plans

4 Modeling of transportation demand, service, and air quality impacts

- Modeling can be used to assess indirect impacts of climate change on service levels, travel, and emissions

What Actions Can the TPB Take Now?

background | scenario | lessons | further study | action

TPB can begin designing some actions that the region could consider for the near-term:

1. Begin an eco-driving public education campaign
2. Continue to support incident management programs
3. Accelerate the TPB Bike/Ped Plan completion
4. Promote expansion of pay-as-you-drive insurance to the whole region
5. Promote state/local incentives to accelerate use of fuel efficient/ alternative fuel vehicles for both public fleets and private use
6. Strengthen long-term focus on mixed use activity centers and transit-oriented development

Eco-Driving

background | scenario | lessons | further study | action

COG/TPB partnered with the I-95 Corridor Coalition for the July 4th Weekend re-launch of the "Drive Green, Save Green Campaign

http://i95coalition.org/i95/CoalitionEcoDrivingCampaign/tabid/216/Default.aspx

Eco-driving information is available on the COG website

http://www.mwcog.org/transportation/ecodriving/

A study in Denver, CO showed that drivers can improve fuel economy by 10%