



Metropolitan Washington Council of Governments

22 JURISDICTIONS 5+ MILLION PEOPLE 300 ELECTED OFFICIALS

Greenhouse Gases from the Transportation Sector (On-Road)

Erin Morrow and Daivamani Sivasailam Department of
Transportation Planning

Metropolitan Washington Council of Governments

April 9, 2015

Presentation Outline

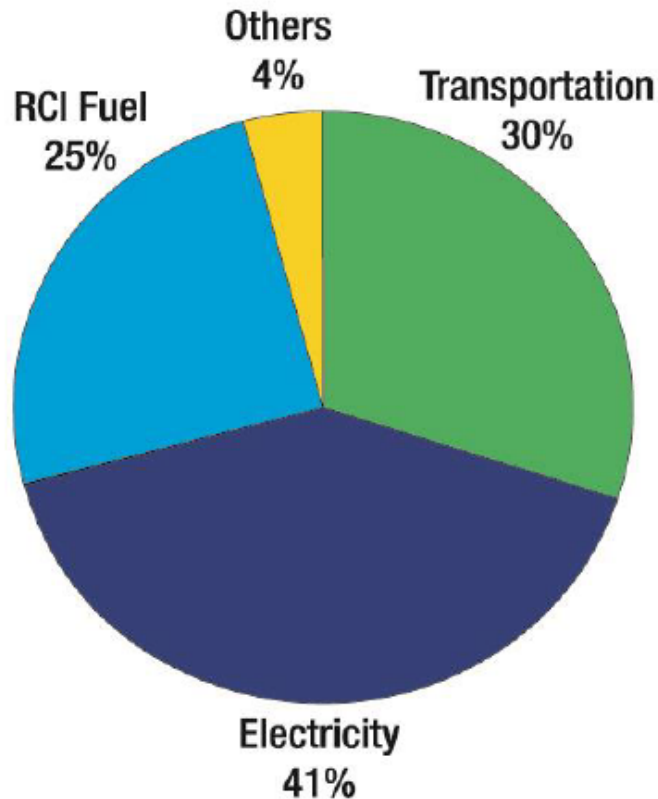
- 2005 regional greenhouse gas (GHG) inventory and regional GHG reduction goals
- Greenhouse gas primer
- Opportunities for GHG reduction from on-road sources



22 JURISDICTIONS 5+ MILLION PEOPLE 300 ELECTED OFFICIALS

COG Regional GHG Emissions

Metropolitan Washington Greenhouse Gas Emissions: 2005



Total – 74 million metric tons in 2005

Per Capita = ~ 15 metric tons per capita/year

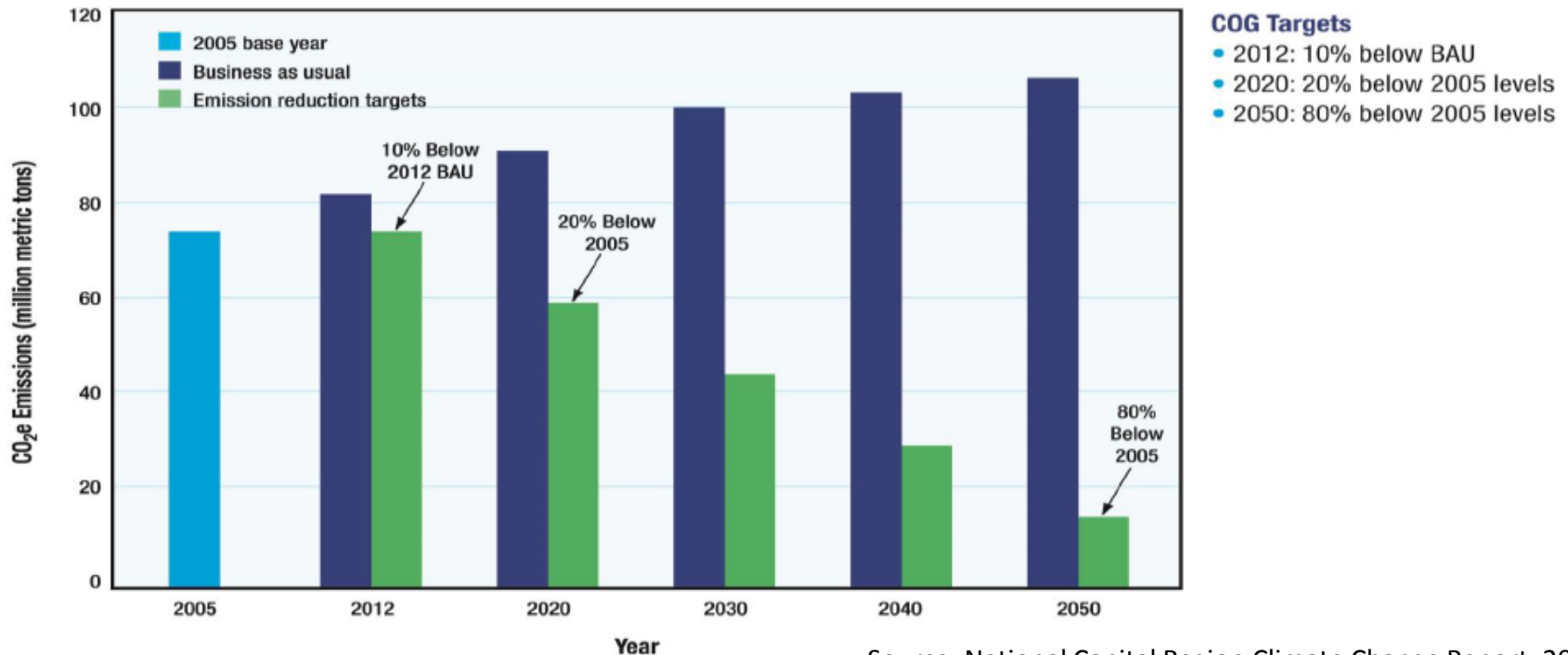
COG Regional GHG Reduction Goals

2012: Return to 2005 Levels

2020: 20% Below 2005

2050: 80% Below 2005

Recommended Regional Greenhouse Gas Emission Reduction Targets Compared to Regional Greenhouse Gas Emissions Under BAU: 2005–2050



What are the GHGs from transportation (on-road)?

- Carbon Dioxide (CO₂)
 - Directly proportional to fuel consumption
- Methane (CH₄) and Nitrous Oxide (N₂O)
 - Dependent on engine operating conditions and emissions control technologies
- Hydrofluorocarbons (HFC)
 - Emitted from air conditioners and refrigeration (freight)

CO₂ Equivalent (CO₂e) is a unit used to measure all GHGs which takes into account Global Warming Potential

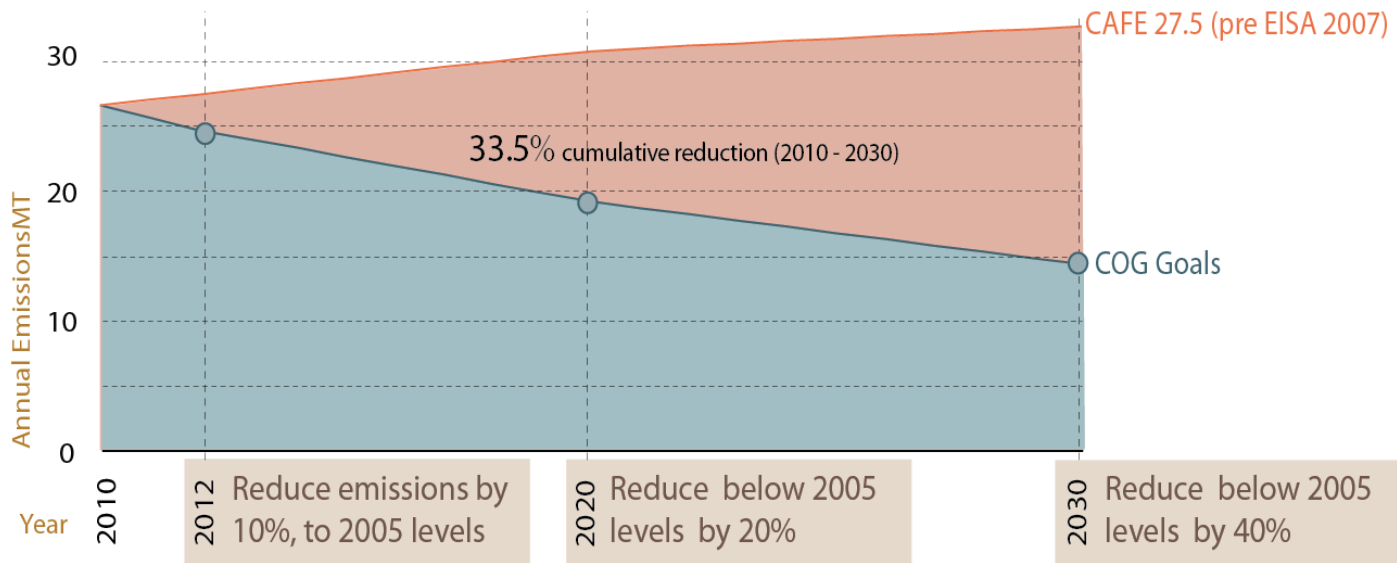


22 JURISDICTIONS 5+ MILLION PEOPLE 300 ELECTED OFFICIALS

Source: FHWA, 2013

Cumulative Impact of GHG Emissions

GHG emissions accumulate in the atmosphere over time

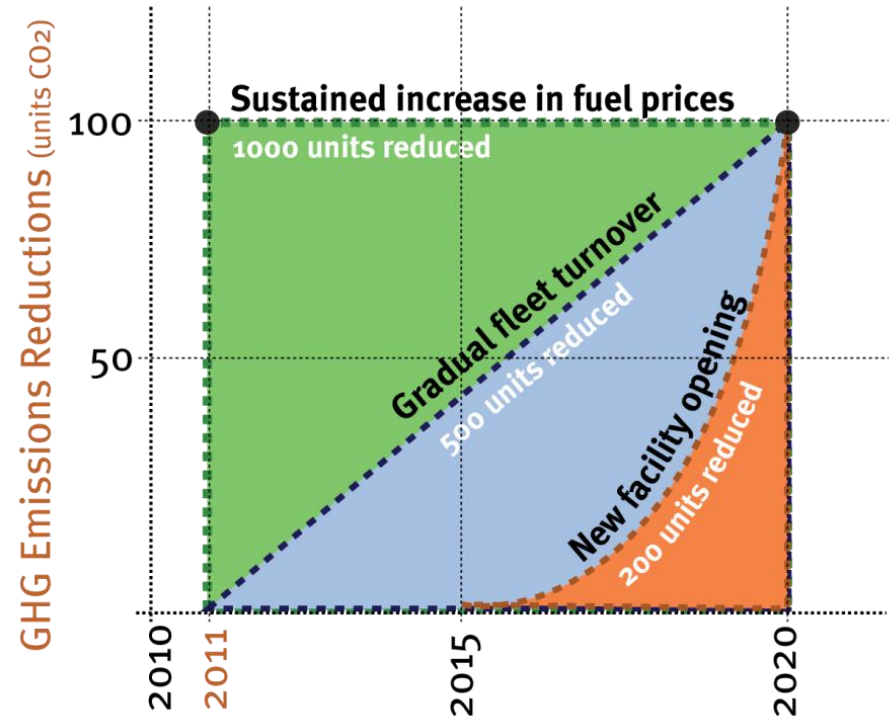


Source: What Would it Take? Scenario Study, 2010

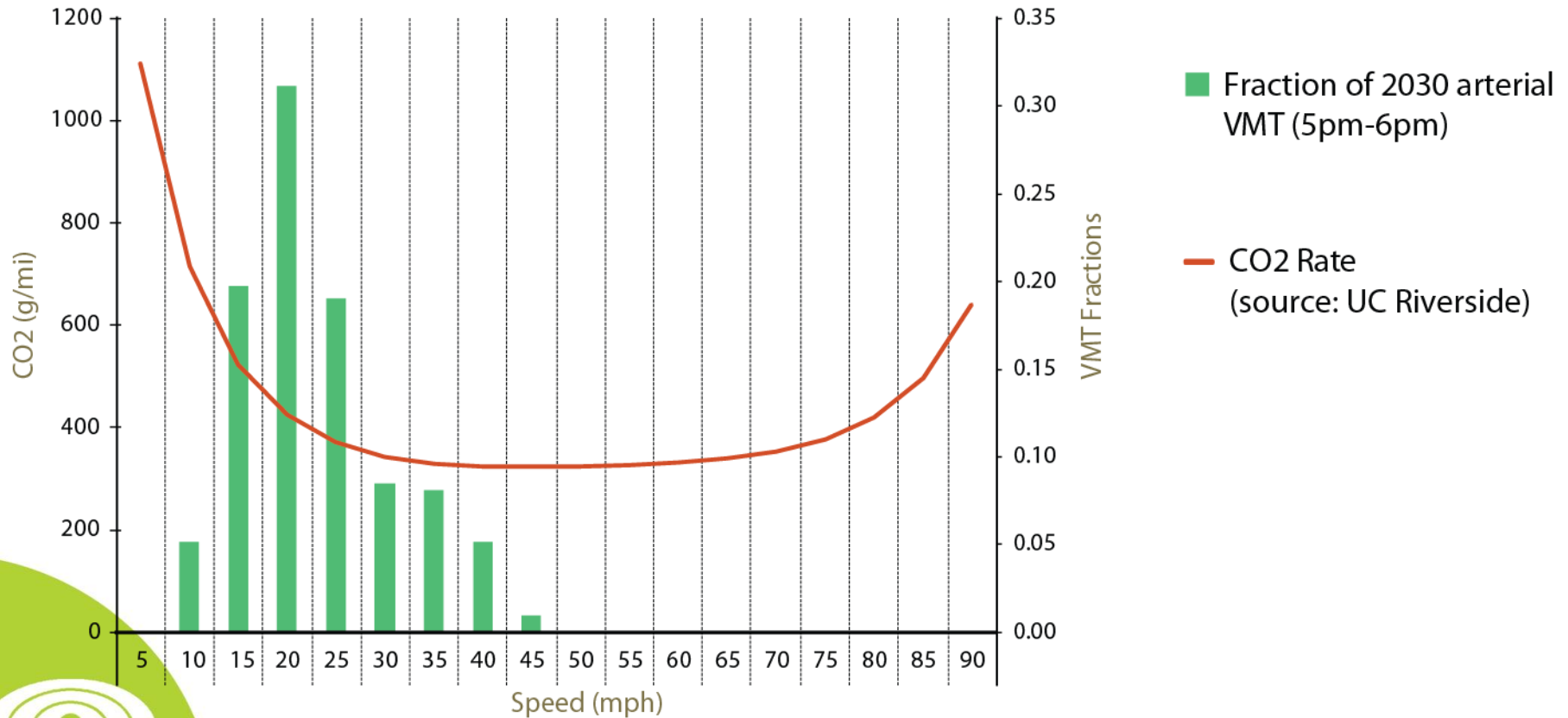
22 JURISDICTIONS 5+ MILLION PEOPLE 300 ELECTED OFFICIALS

Cumulative Impact of GHG Emissions

The timing of the implementation of GHG reduction strategies affects the long term impact



CO2 Emissions Relative to Speed



22 JURISDICTIONS 5+ MILLION PEOPLE 300 ELECTED OFFICIALS

Opportunities to Reduce On-Road GHG Emissions

- Increase fuel efficiency and introduce low-carbon fuels
- Improve system and operational efficiencies
- Reduce growth in vehicle-miles traveled (VMT) and single-occupant vehicle (SOV) travel activity



22 JURISDICTIONS 5+ MILLION PEOPLE 300 ELECTED OFFICIALS

Opportunities to Reduce On-Road GHG Emissions

- Fuel efficiency standards
 - Most effective way to reduce on-road GHG
 - Impact is dependent on fleet turnover rate
- Travel demand management and operational strategies
 - Smaller GHG reductions than fuel efficiency
 - Can be implemented in a shorter time frame
 - Become less effective as fleet fuel efficiency increases



22 JURISDICTIONS 5+ MILLION PEOPLE 300 ELECTED OFFICIALS

Other Considerations

- Co-benefits
 - Many transportation strategies are not cost-effective solely based on GHG reduction potential, but are important to the transportation system
- Cross-sector Considerations
 - Strategies can complement or work against strategies in other sectors
- Life-cycle
 - GHG emissions are produced during fuel production and transport



22 JURISDICTIONS 5+ MILLION PEOPLE 300 ELECTED OFFICIALS



Metropolitan Washington Council of Governments

22 JURISDICTIONS 5+ MILLION PEOPLE 300 ELECTED OFFICIALS

Questions?

Erin Morrow and Daivamani Sivasailam
Metropolitan Washington Council of Governments
Department of Transportation Planning
April 9, 2015