ITEM #4

# TPB TRANSPORTATION SECTOR GREENHOUSE GAS ANALYSES

Presentation to the Greenhouse Gas Multi-Sector Working Group

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NATIONAL CAPITAL REGION TRANSPORTATION PLANNING BOARD

# Presentation Outline

- Analysis of the 2014 Constrained Long Range Plan (CLRP)
  - Forecast travel patterns and trends
  - Projected On-Road Mobile Emissions
- TPB's "What Would it Take?" Scenario Study (2010) WWIT
  - Transportation (on-road) sector's baseline $CO_2$
  - $CO_2$ reduction strategies analyzed and quantified

# What is the Long-Range Transportation Plan (CLRP)?

» **The CLRP identifies regionally significant transportation projects and programs that are planned between now and 2040**

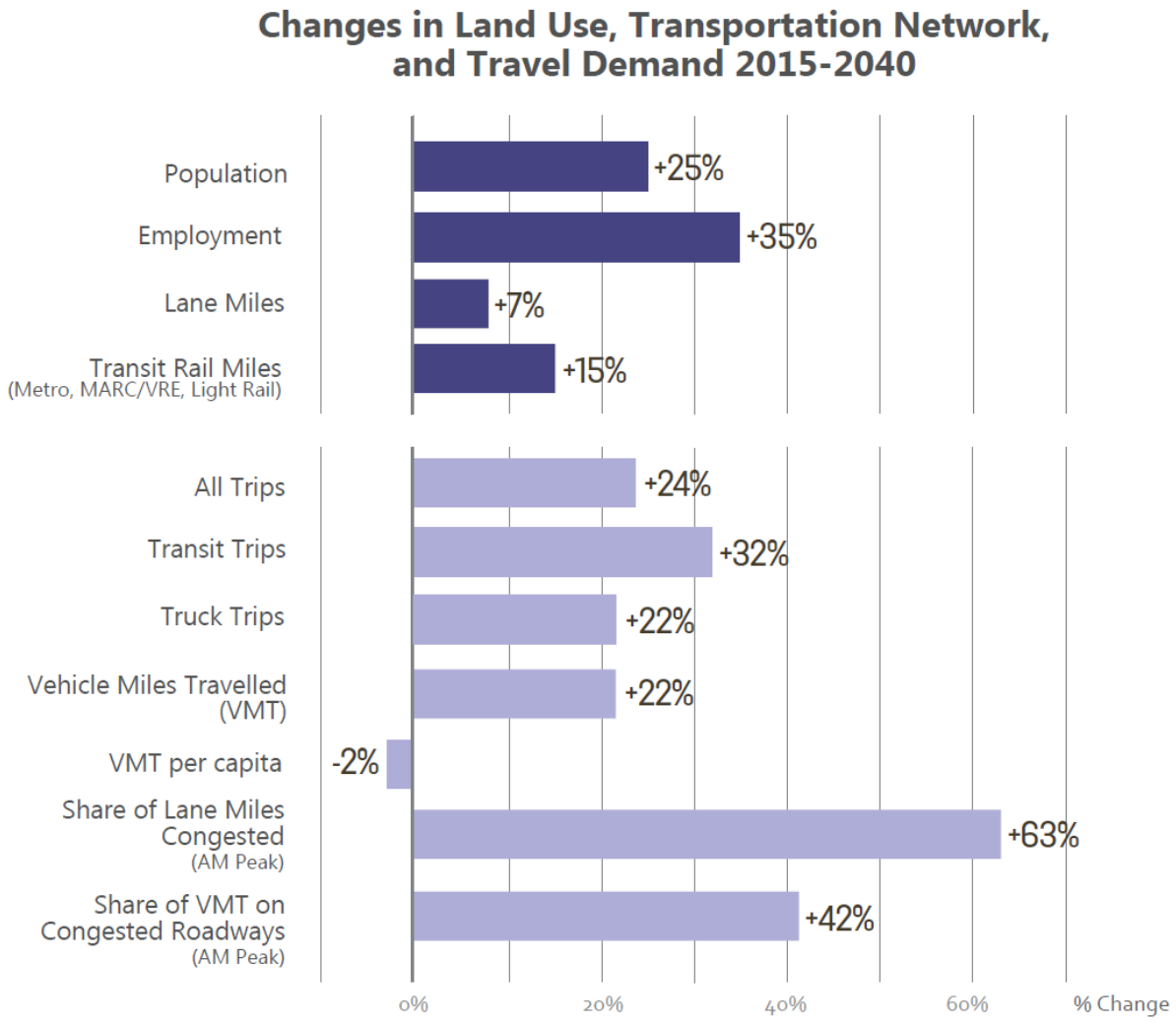
- Over 500 Projects are included from simple highway landscaping projects to billion-dollar highway and transit projects (includes 7% more lane miles of roadway, and 15% more miles of transit rail)
- Funding for programs that aim to make the transportation system in Metropolitan Washington better and more efficient

» **Some specific projects in the CLRP include:**

- Metro's Silver Line and Columbia Pike Streetcar (in VA)
- The Purple Line and the Corridor Cities Transitway (in MD)
- The H. St. / Benning Rd. Streetcar (in DC)
- Approx. 1,200 new lane-miles of roadway including Express Toll lanes on I-95 in VA
- 25 improved highway interchanges


**For a complete listing of projects and programs in the CLRP, visit:**
**http://www.mwcog.org/clrp/**

# 2014 CLRP Performance Summary (2015-2040)



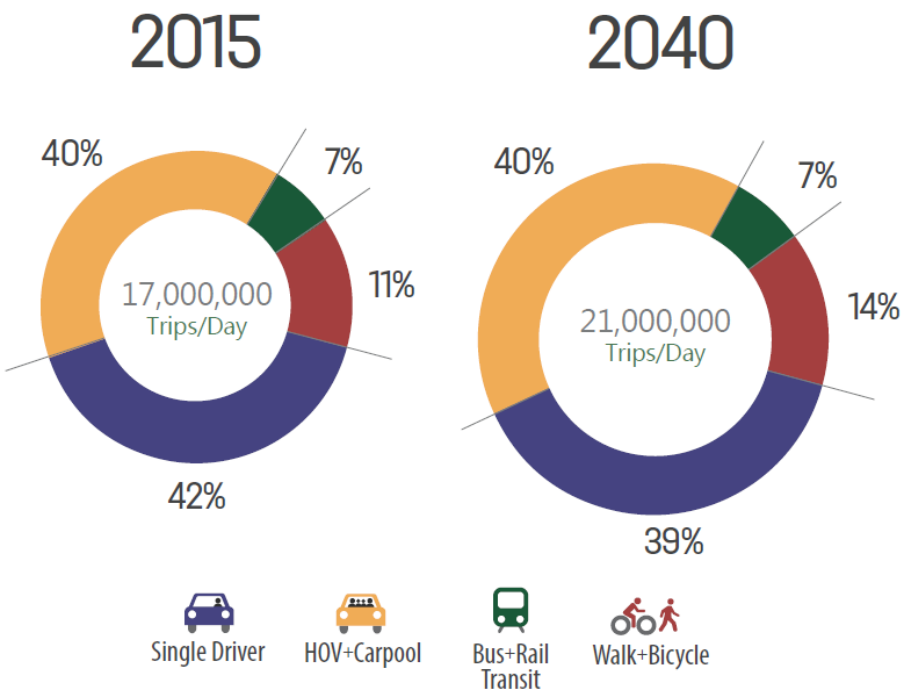

The region is forecast to be home to 25% more residents and 35% more jobs in 2040. To accommodate growth, 7% more lane miles of roadway and 15% more transit rail miles are planned to be constructed.

The total number of trips taken is expected to increase by 24%, while transit trips are expected to rise faster than overall trips.

The overall amount of driving (VMT) is expected to grow by 22%. This slightly less than forecast population growth, which means that VMT per capita is expected to drop by 2%.

The increase in demand on the roadways is forecast to out-pace the increase in supply, leading to a significant increase in congestion.

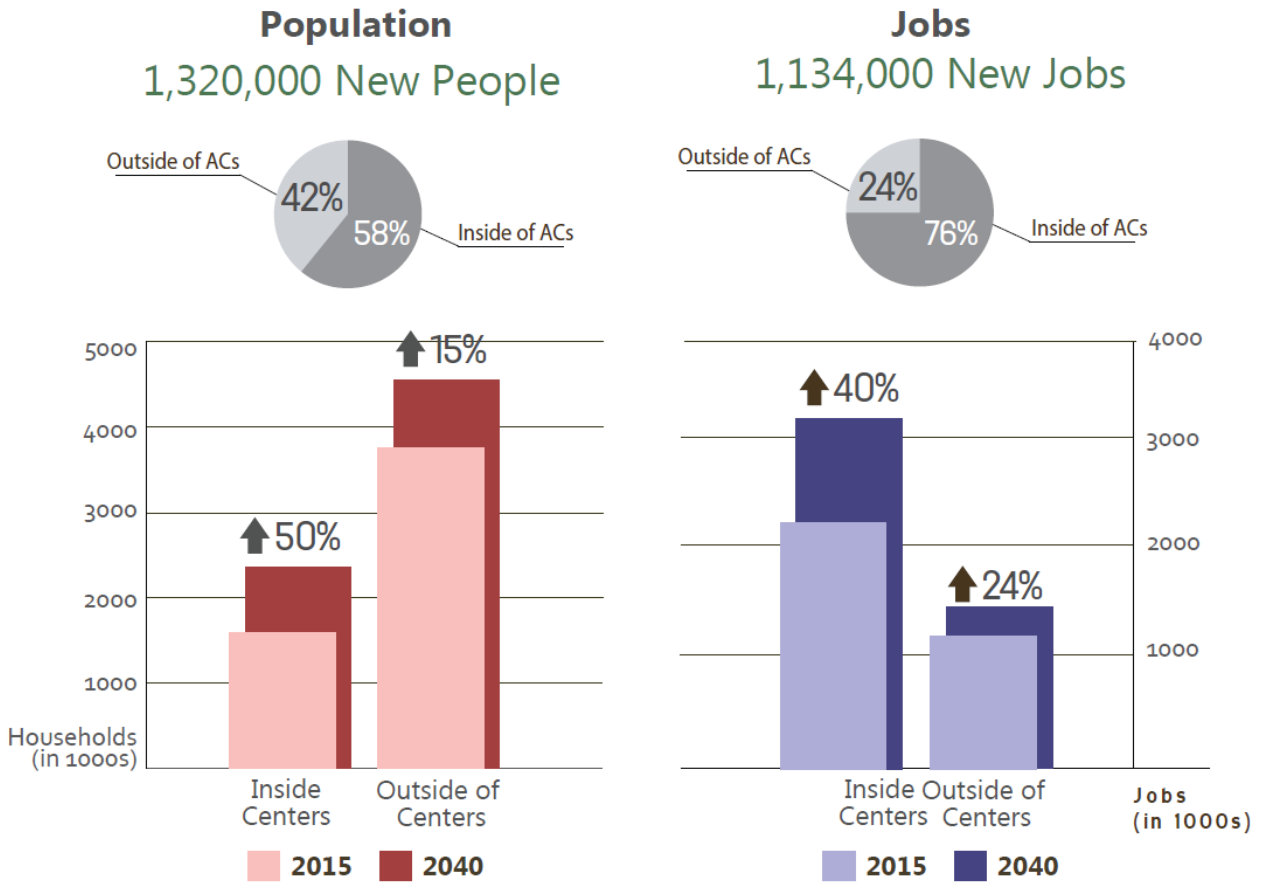
# **Daily Travel -** Mode Share (2015-2040)




In 2040, 4 million more trips are forecast to be taken everyday using all modes on the region's transportations system.

By 2040, the share of trips made by drivers of single-occupant vehicles are expected to drop by a few percentage points, while the share of carpool trips and non-motorized vehicle trips are expected to increase slightly.

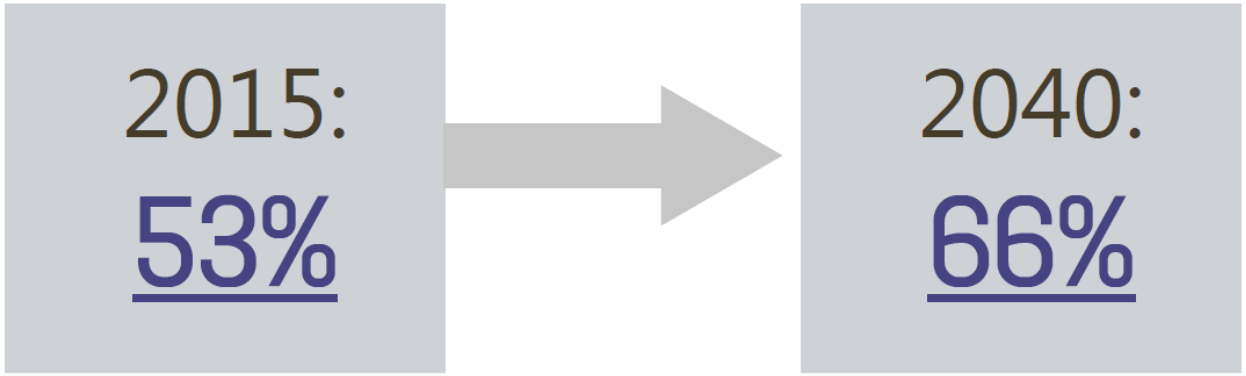
# Growth in Activity Centers (2015-2040)




The majority of new jobs and population are forecast to be in housing and job centers referred to as Regional Activity Centers. Though the majority of the regional population will remain outside of Activity Centers in 2040, population is forecast to increase at a faster rate inside Activity Centers over the next 25 years. The majority of jobs today are located in Activity Centers, and this trend will continue in the future.

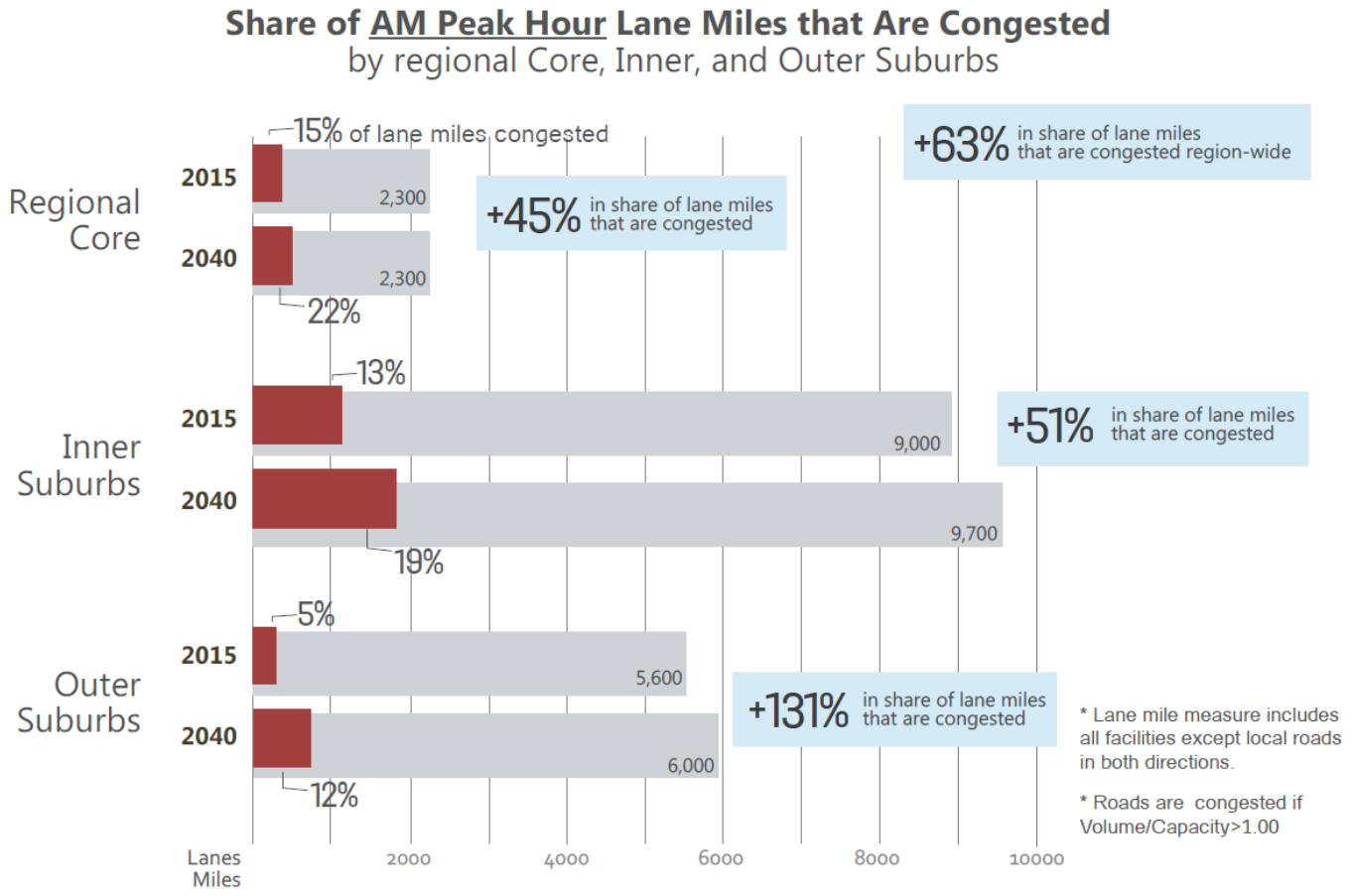
# New Transit in Activity Centers (2015-2040)

## Activity Centers with High Capacity Transit




Most of the new transit projects included in the 2014 CLRP will serve Regional Activity Centers throughout the region. In 2040, 66% of Activity Centers are expected to be served by high capacity transit compared to 53% today.

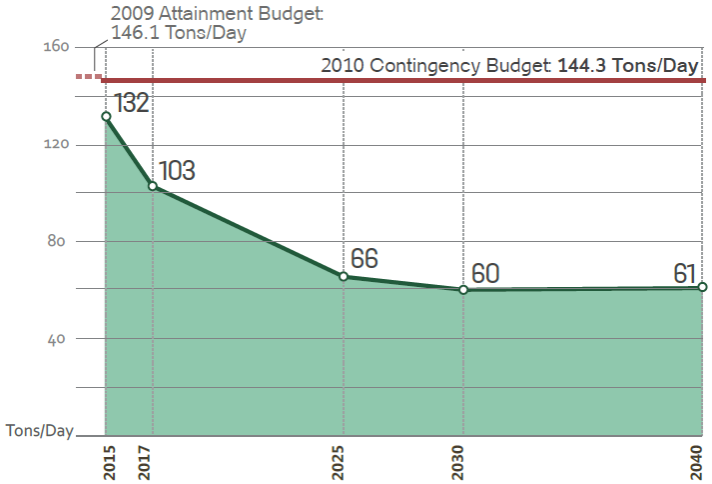
# Roadway Congestion (2015-2040)



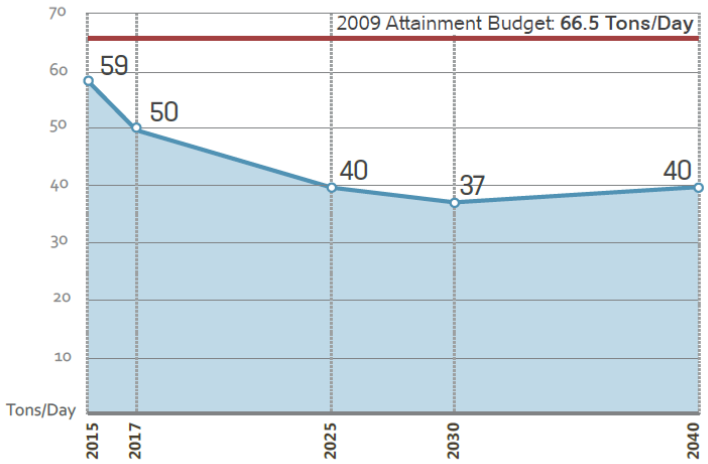

Overall, congested lane miles are a relatively small proportion of the total lane miles in the region both today and in 2040. However, the total number of congested lane miles is forecast to go up in all 3 sub-areas with the greatest expected increase in the inner suburbs. The share of lane miles that are congested is also expected to increase in all sub-areas, but the highest rate of increase is expected in the outer suburbs.

# Air Quality (2015-2040)

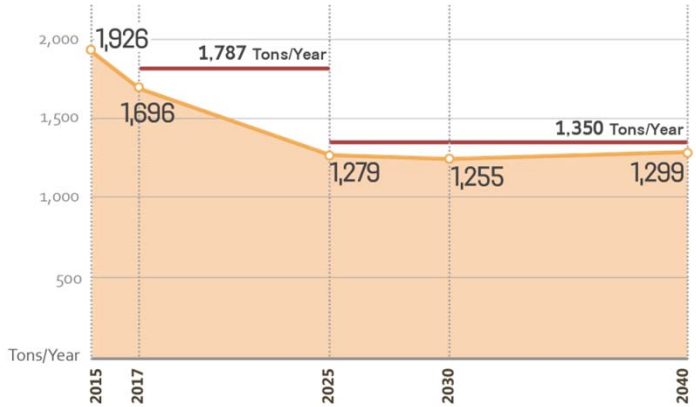
**Mobile Source NOx Emissions**
(1997 PM2.5 NAAQS, 15 mg/m3)



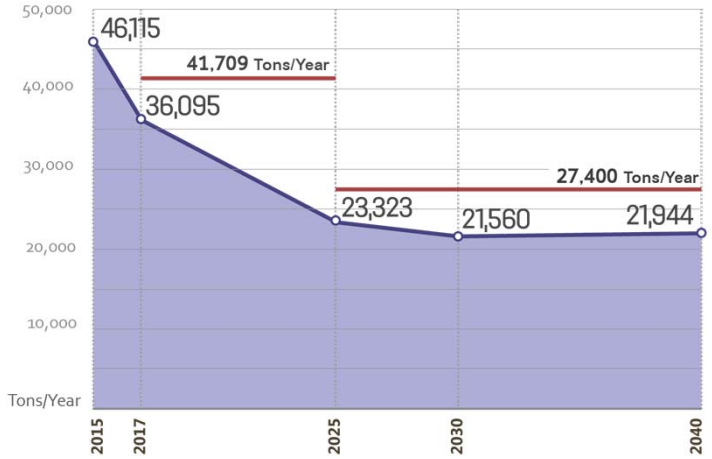

**Ozone Season VOC Emissions**
(1997 PM2.5 NAAQS, 15 mg/m3)



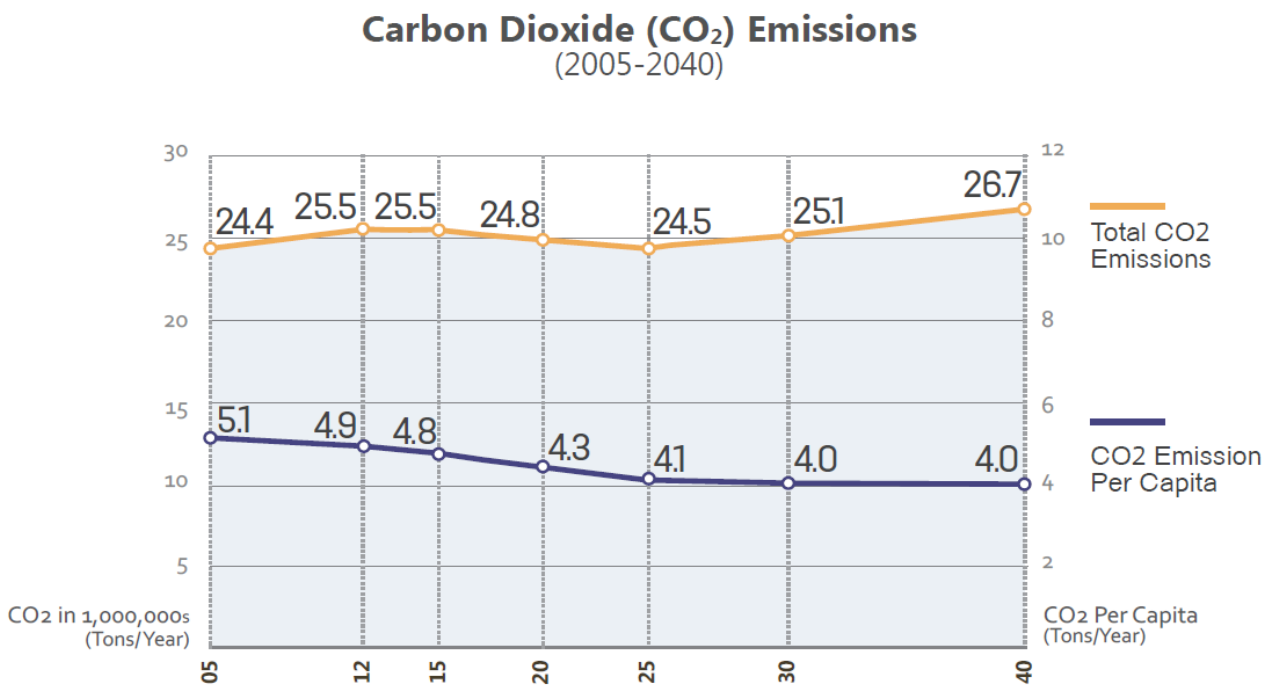

**PM2.5 Direct Emissions**
(1997 PM2.5 NAAQS, 15 mg/m3)




**Precursor NOx Emissions**
(1997 PM2.5 NAAQS, 15 mg/m3)



# Carbon Dioxide (2005-2040)



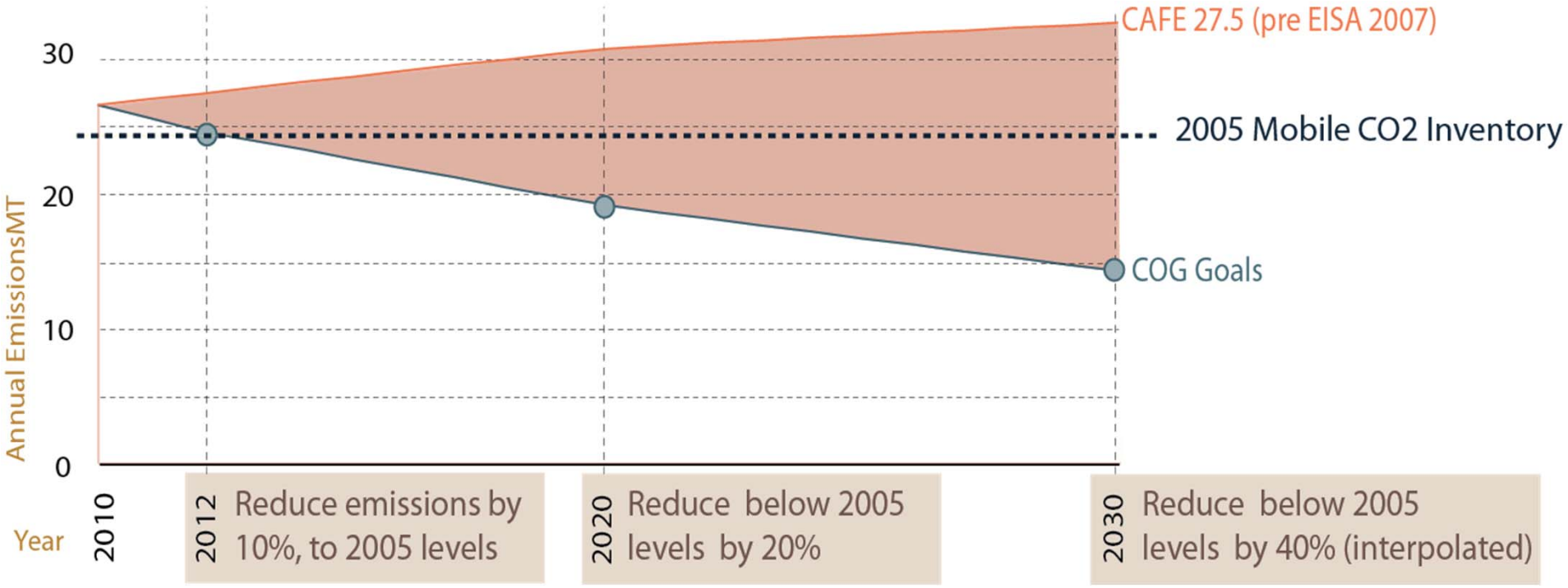

Per capita CO2 emissions are forecast to decrease by 17% between 2015 and 2040.

Total CO2 emissions are forecast to increase by 5% between 2015 and 2040, while the region will be accommodating 25% more people and a 35% more jobs.

When the emissions reduction benefits from CAFE and TIER 3 standards are included in the analysis, total CO2 emissions and CO2 emissions per capita are expected to decrease over this time period.

# TPB's Scenario Study: "What Would it Take?" (2010)

COG's regional CO2 reduction goals applied to the transportation sector



# Focus Areas To Reduce $CO_2$

## 1
## fuel efficiency

Enhanced CAFE
HDV CAFE
Local tax incentives
Cash for Clunkers

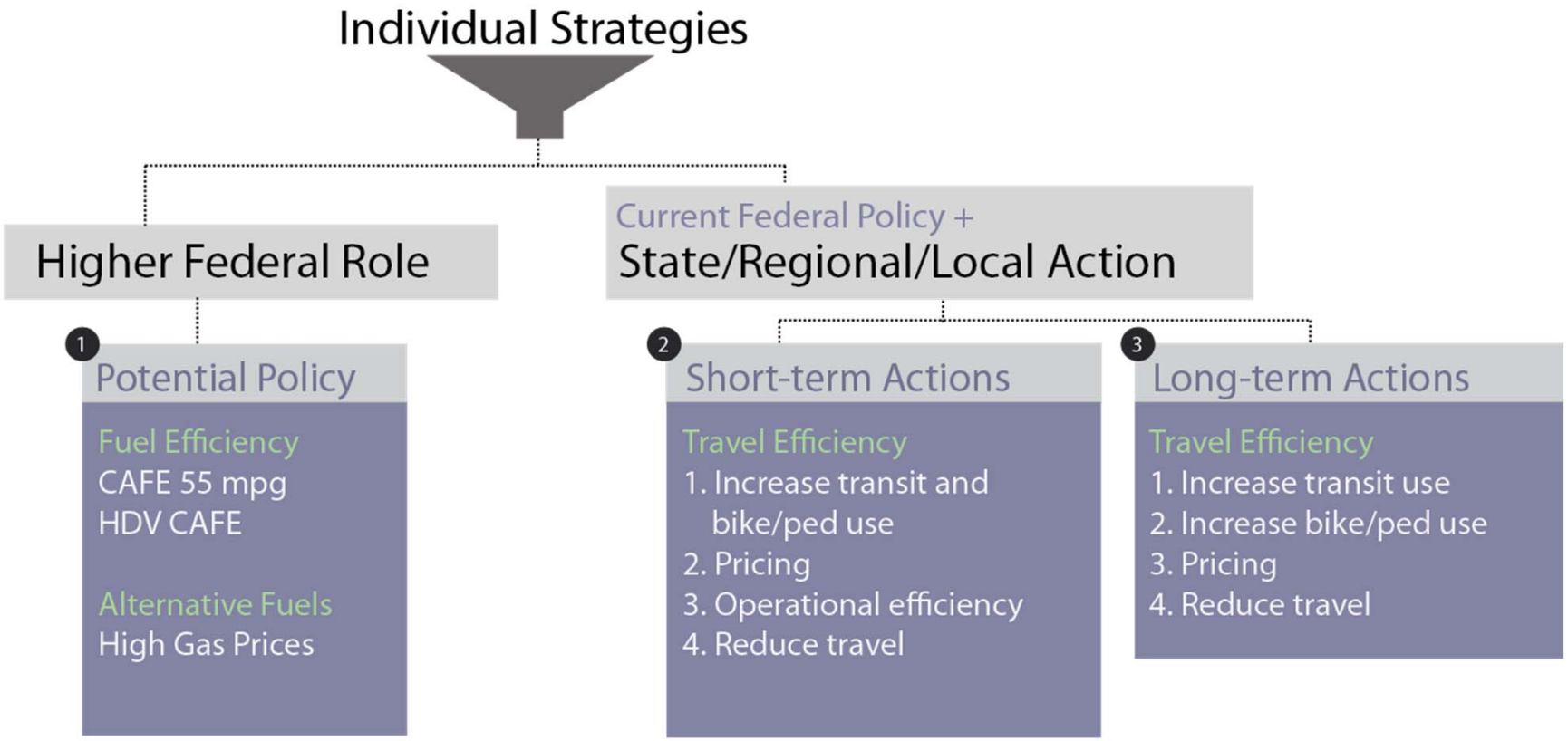
## 2
## alternative fuel

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



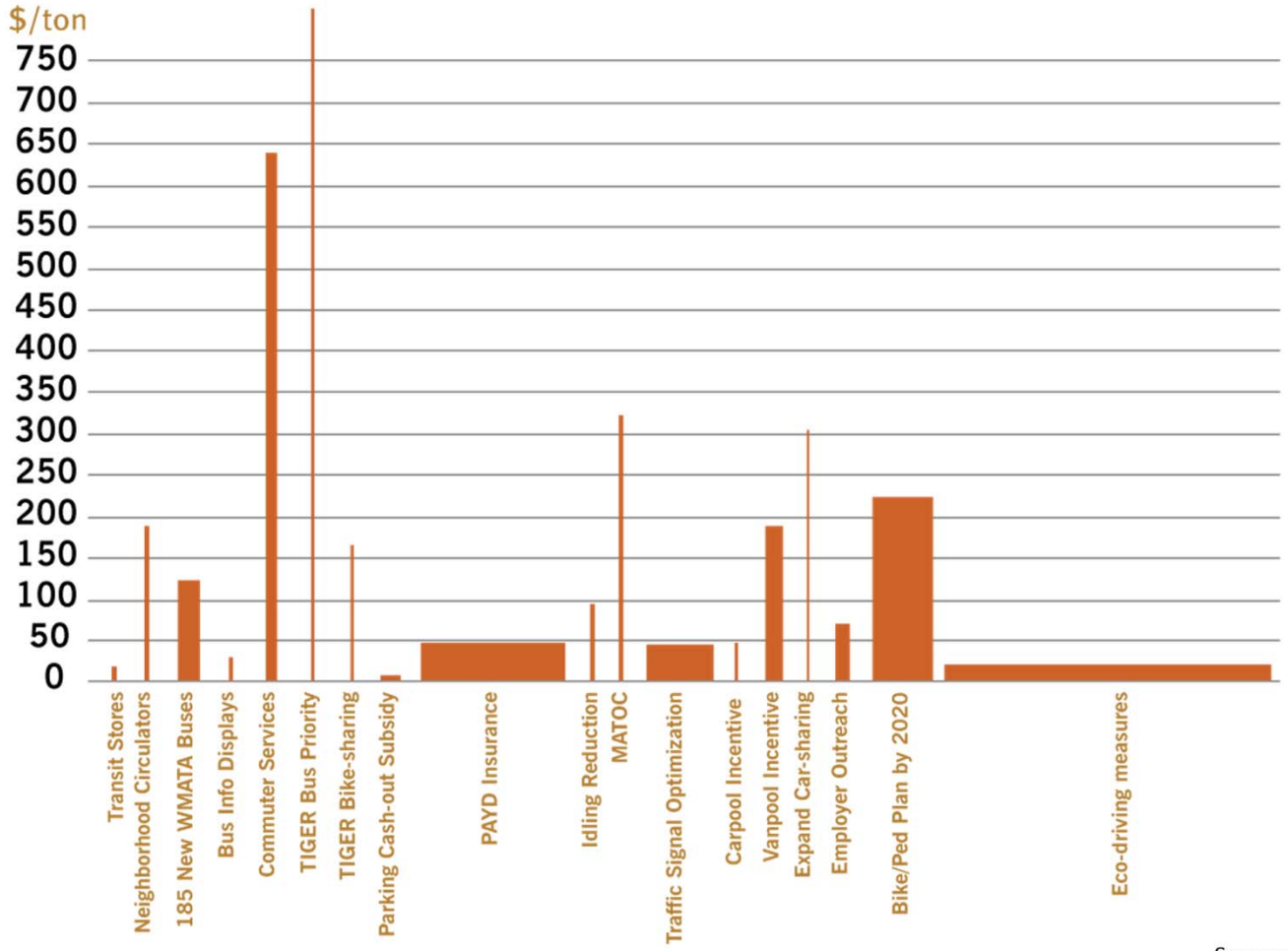

All groups combine additive strategies to the full extent currently possible.

# Potential Local/Regional/State Actions

| | | |
|---|---|---|
| Short-term Strategies | 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 |
| | 2. Pricing | Implement parking impact fees, pay-as-you drive insurance, parking cash-out subsidies |
| | 3. Improve operational efficiency | Promote eco-driving (public education campaign), incident management, traffic signal optimization, idling reduction |
| | 4. Reduce travel | Expand telecommuting, carpooling and vanpooling, car-sharing |
| Long-term Strategies | 1. Increase transit use | Major transit expansion, such as the Dulles Rail line, and park and ride lots at rail stations |
| | 2. Increase bike/ped use | Accelerated completion of the TPB Bicycle and Pedestrian Plan |
| | 3. Pricing | Variable pricing of new and existing freeway and select arterial lanes |
| | 4. Reduce travel | Land use strategy encouraging concentrated growth in activity centers and around transit |

Such actions would require major policy and funding commitments.

# Cost-Effectiveness




**1 million tons of cumulative reduction 2010-2030**

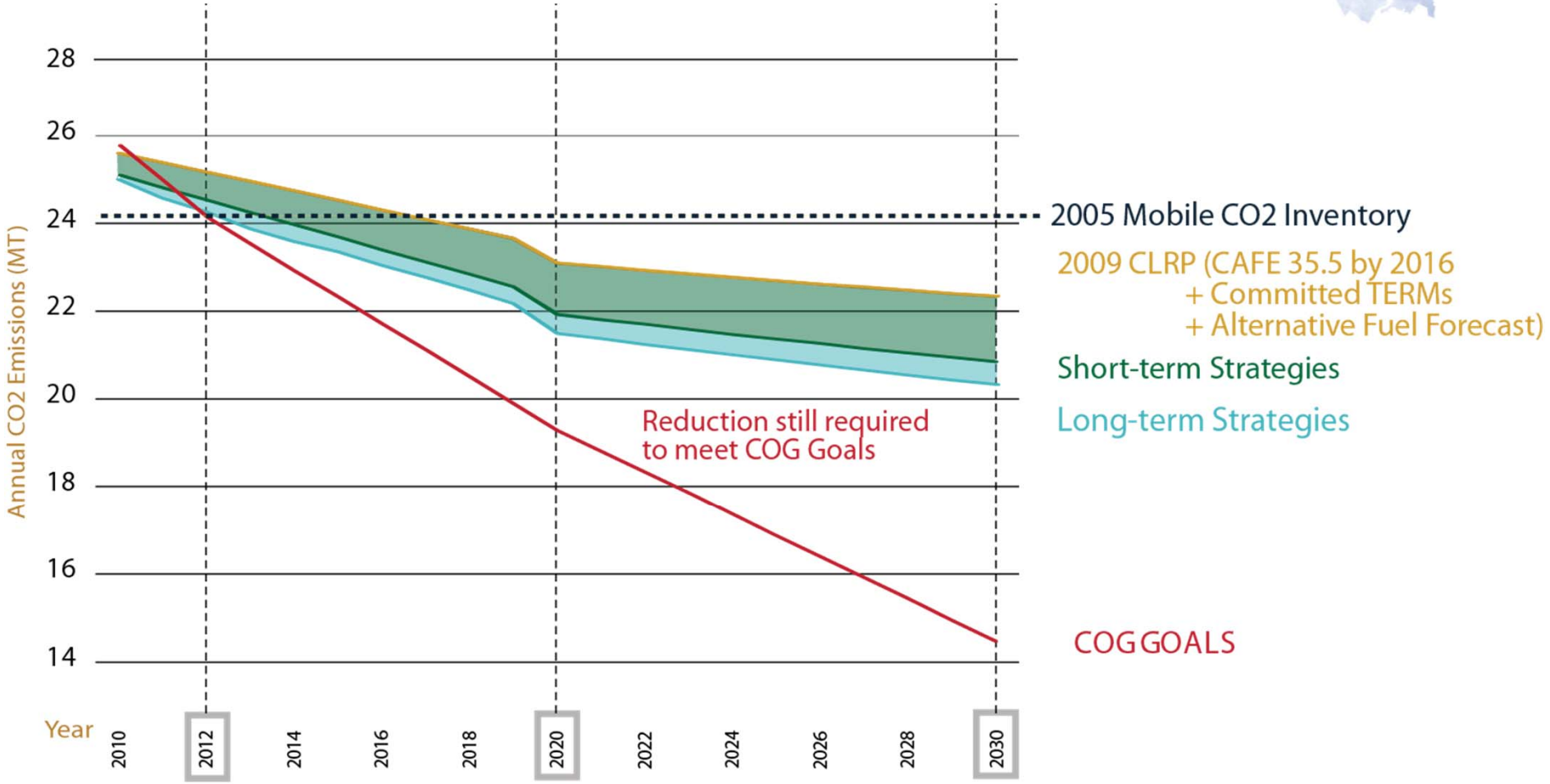
(width of bar indicates 20 year $CO_2$ reduction effectiveness)

Assumes current federal/local action

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

Source: What Would it Take? Scenario Study (2010)

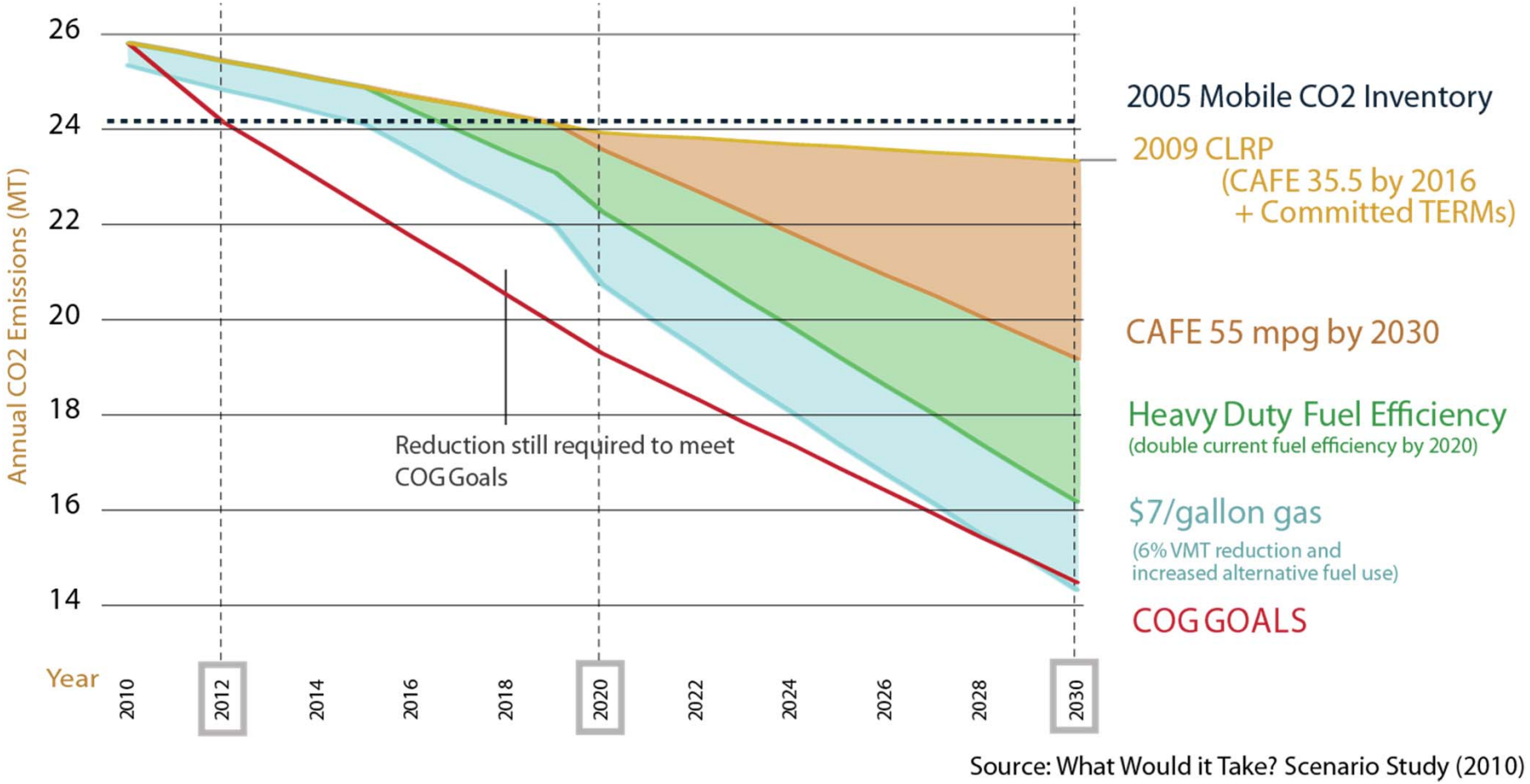
# Potential Local/Regional/State Actions




Source: What Would it Take? Scenario Study (2010)

These strategies would contribute to reductions in CO2 emissions but fall considerably short of the COG goals.

# Potential System-wide Strategies (Higher Federal Role)




Source: What Would it Take? Scenario Study (2010)

These strategies would provide substantial reductions toward achieving COG CO2 goals.

# Lessons Learned

1. Locally/regionally implementable strategies are most effective if they:
   a) Affect the whole fleet
   b) Affect all light duty vehicle owners/drivers
   c) Target the highest polluting vehicles
   d) Provide networks of non-polluting transportation options
   e) Incentivize alternative commute patterns

# Lessons Learned

2. Locally/regionally implementable voluntary strategies help but fall significantly short of providing needed $CO_2$ reductions.
3. Strategies that affect all vehicles system-wide involuntarily can provide substantial $CO_2$ reductions.
4. Most strategies studied have various other benefits that should be factored into decision-making including criteria pollutant reduction and increased mobility and accessibility.

# Contact Information

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