What Would it Take?

Transportation and Climate Change in the National Capital Region

Draft Results

January 8, 2010

Presentation to TPB Technical Committee

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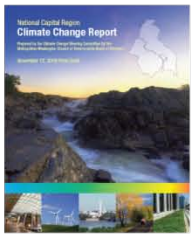
Why "What Would it Take"?

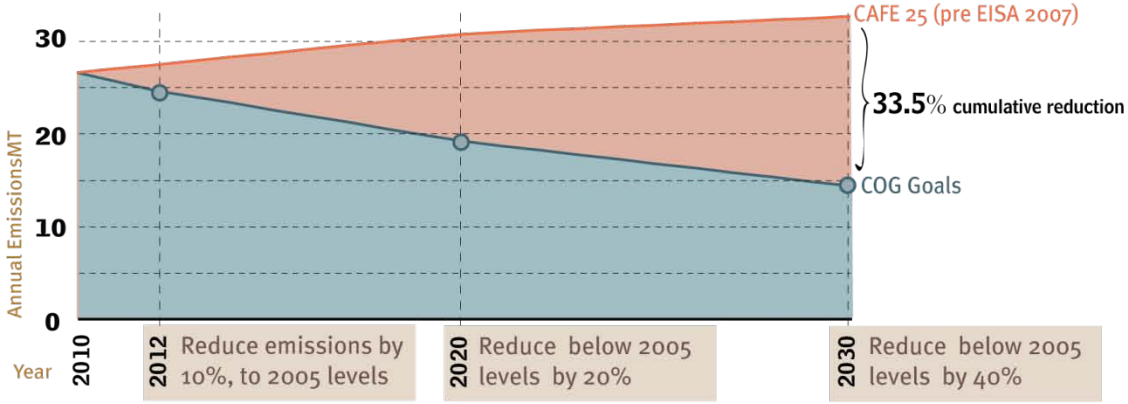
purpose | baseline | analysis | results | conclusions

1



Build off regional climate action momentum

2



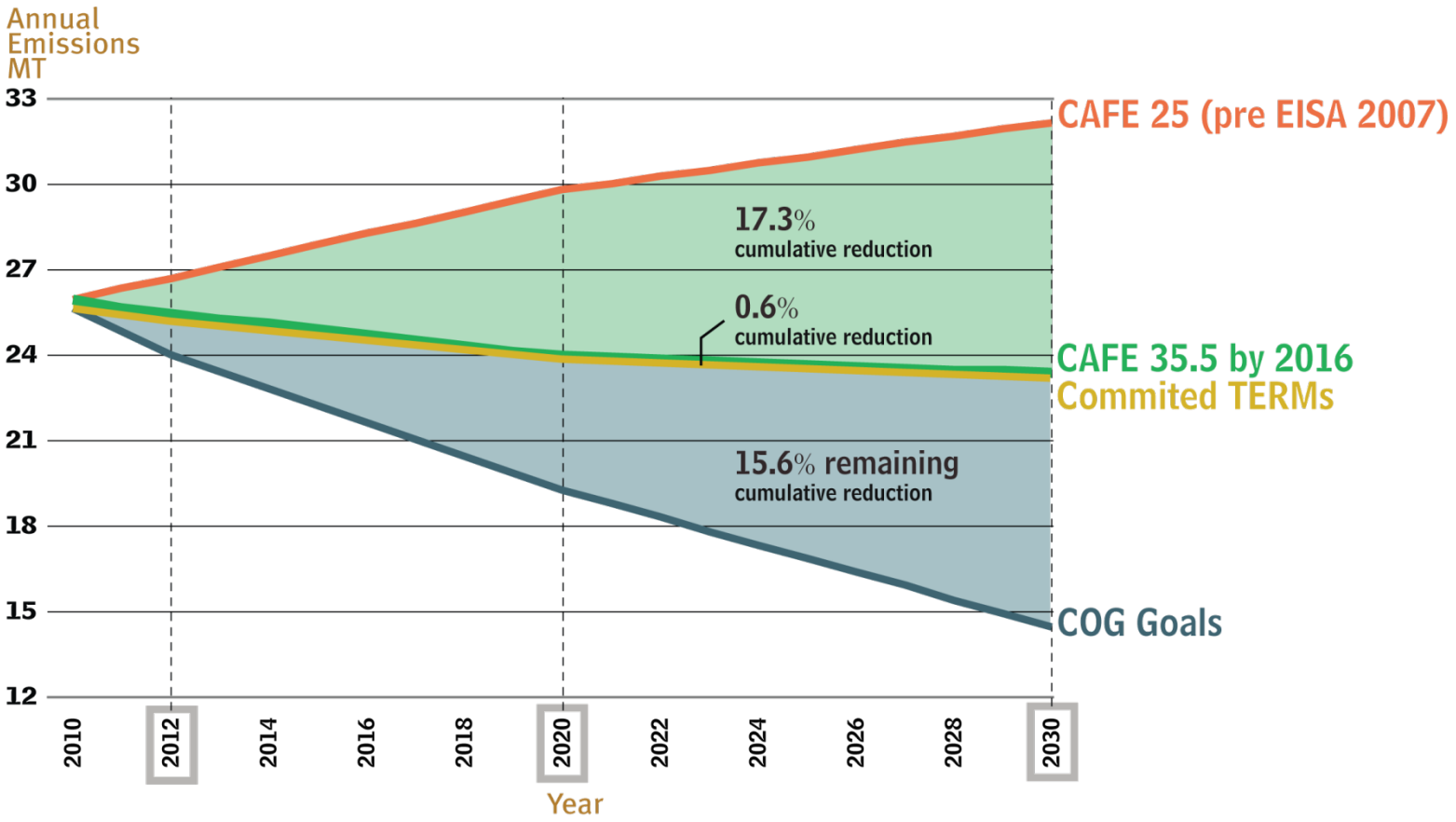
To see how we can meet these goals in transportation

3

Support local jurisdictions by identifying **effective, cost-effective, and feasible** strategies to adopt

What's Our GHG Baseline?

purpose | baseline | analysis | results | conclusions



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

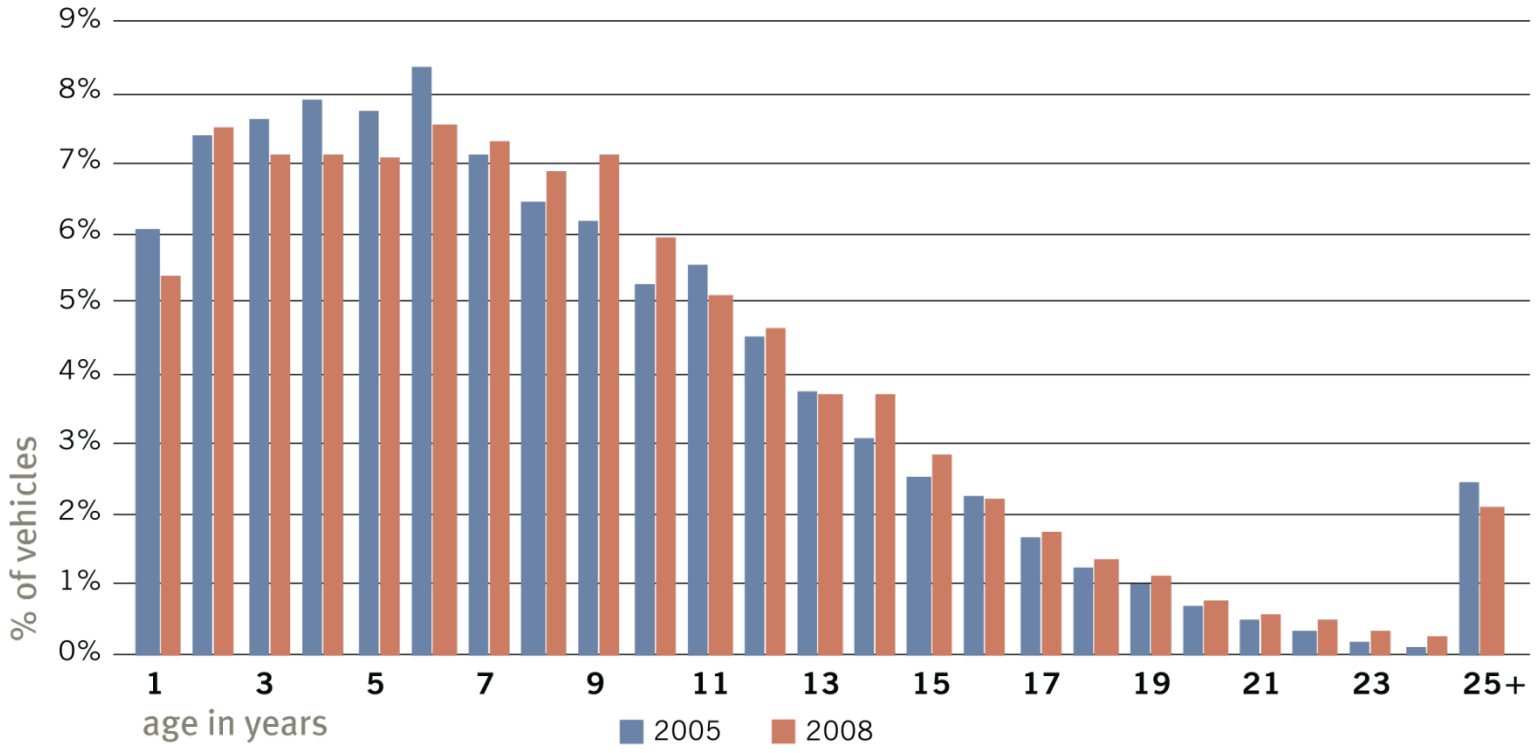
trip lengths, purpose, and mode, vehicle occupancy, congestion

What Does Our Fleet Look Like?

purpose | baseline | analysis | results | conclusions

From 2005-8, the fleet got older and dirtier than expected

Regional Light Duty Age Distribution



What Does Our Fleet Look Like?

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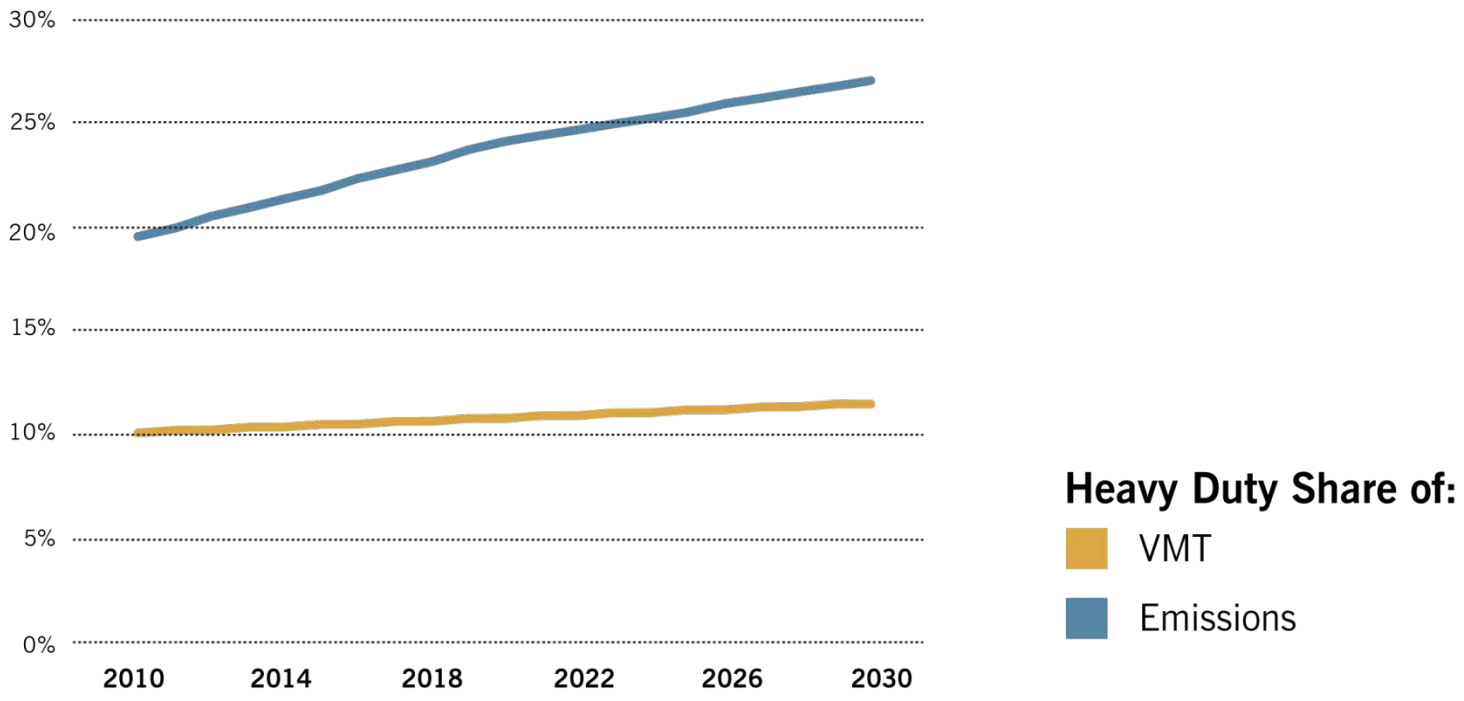
Trucks account for a growing share of CO_2 emissions

Heavy Duty Share of Total VMT and CO_2 Emissions

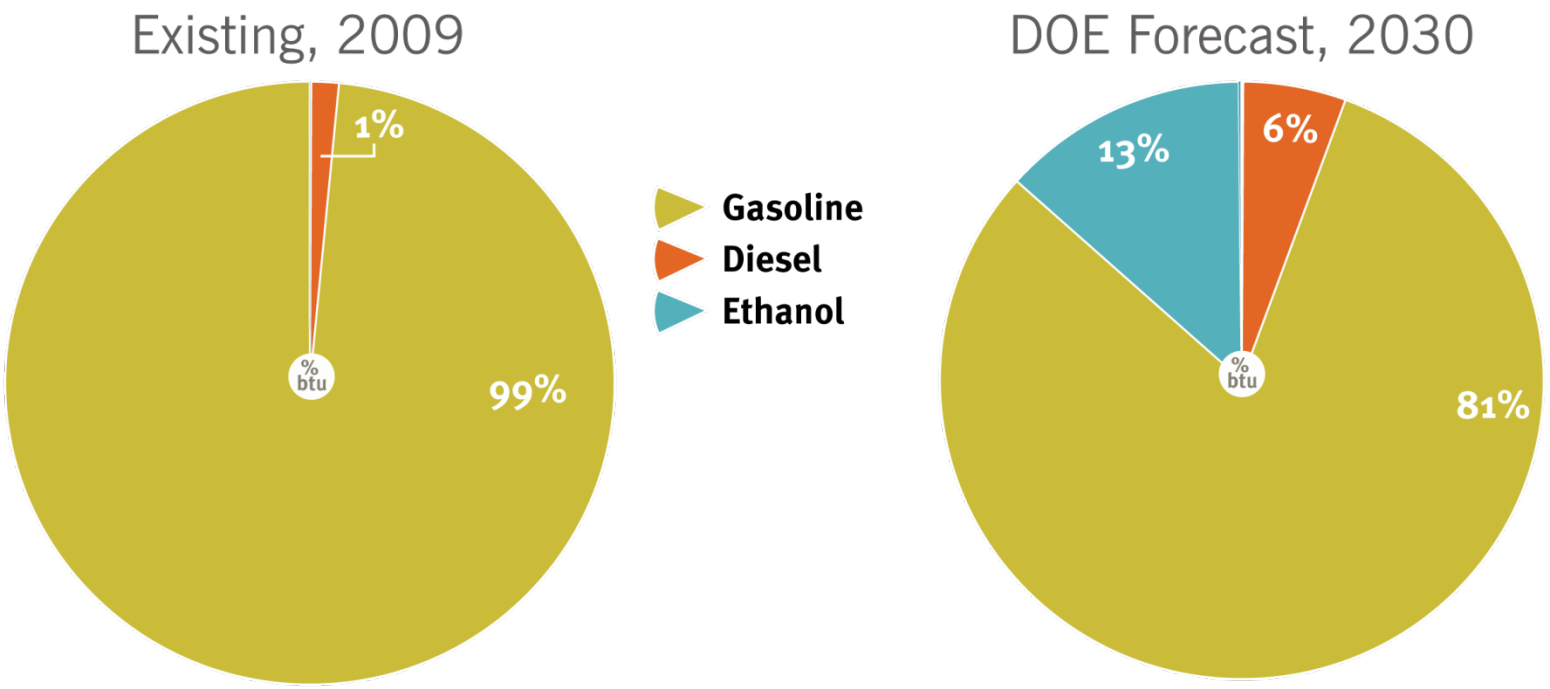


What's Our Fuel Mix?

purpose | baseline | analysis | results | conclusions

There is a lot of room for increasing alternative fuel use

National Light Duty Fuel Mix

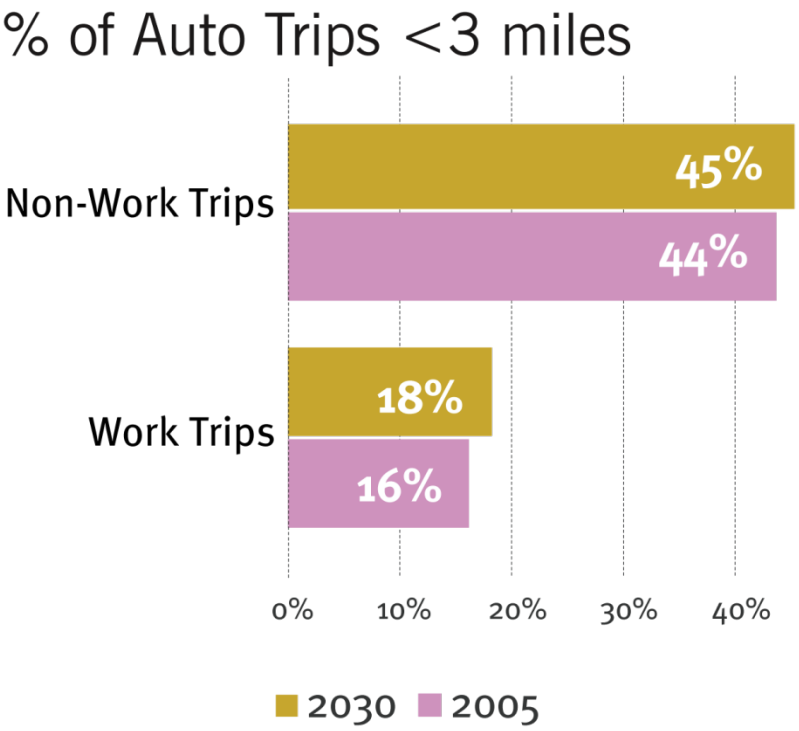


Source: US DOE, EIA, Annual Energy Outlook (AEO) 2009

How Do We Use The Fleet?

purpose | baseline | analysis | results | conclusions

Most of our trips are short.



Shifting 10% of these auto trips to non-polluting modes now, reduces 3 MT of CO_2 by 2030
(shifting 50% reduces 14.8 MT)

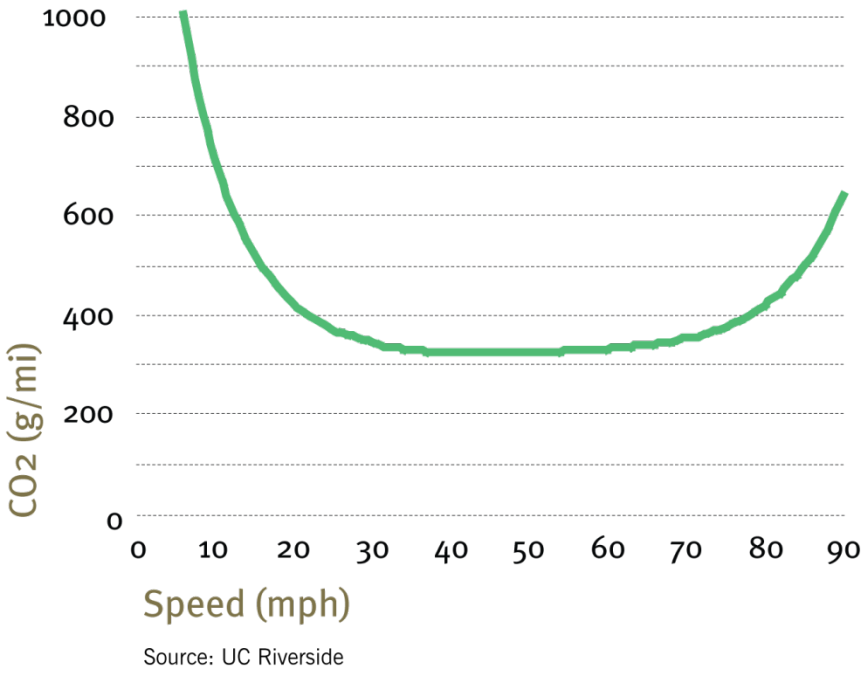
Compared to overall reduction goal of 84 MT

How Do We Use The Fleet?

purpose | baseline | analysis | results | conclusions

Congestion affects CO_2 emissions and is widespread.

CO_2 Emissions Rates by Speed



Source: UC Riverside

Forecast Congestion, 2030

How Can We Reduce CO_2?

purpose | baseline | analysis | results | conclusions

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
Eco-driving
Pricing
Incident Management
Signal optimization
Bike and Car-sharing
Commuter services

Sources for Specific Strategies

purpose | baseline | analysis | results | conclusions

1. COG Climate Change Report
2. Transportation Emissions Reduction Measures (TERMs)
3. Potential TERMs Report
4. TPB Initiatives (e.g. CLRP Aspirations Scenario, TIGER)
5. Other Federal/State/Local Sources

Analyzing Individual Strategies

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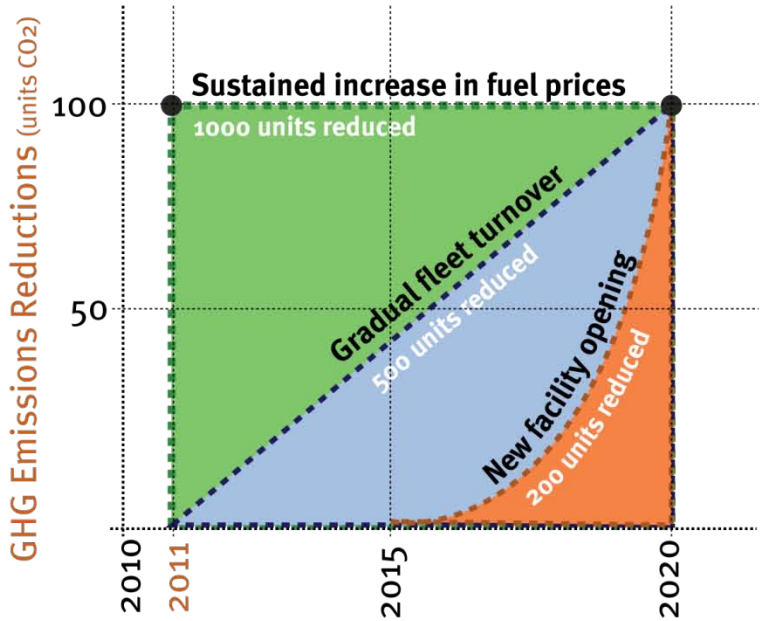
1 Effectiveness, Cost-effectiveness, Timeframe

2 GHGs analyzed **cumulatively** over time



Grouping Strategies

purpose | baseline | analysis | **results** | conclusions

Fuel Efficiency and Alternative Fuels

1 No Further Federal/Local Action (U.S. DOE energy forecast)

2 High Federal Role (enhanced CAFE, heavy duty CAFE, high energy prices)

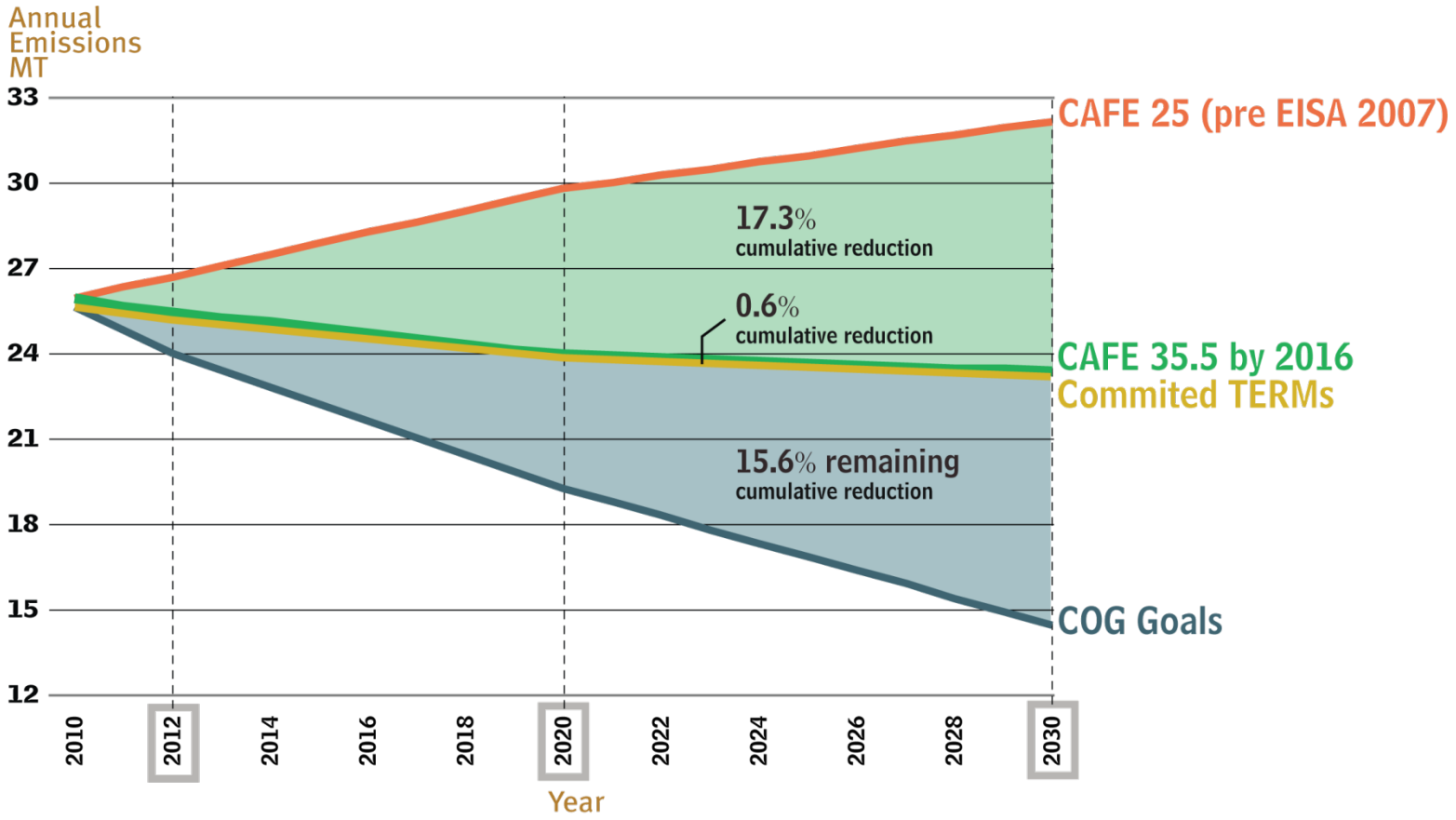
Travel Efficiency

3 Shorter-term Strategies (implementable by state/local governments <2020)

4 Longer-term Strategies (implementable by state/local governments 2020-2030)

The Baseline

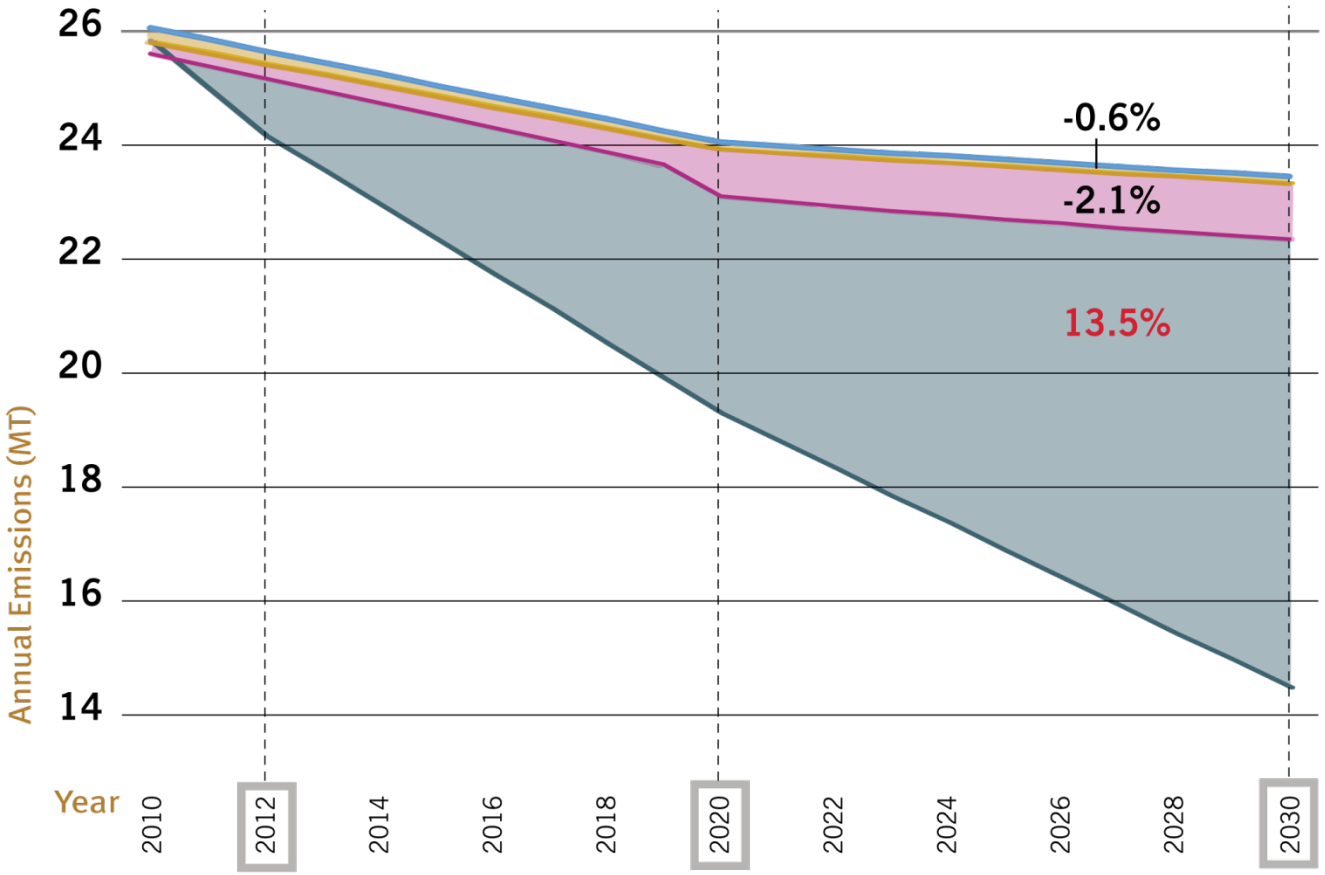
purpose | baseline | analysis | results | conclusions



No Further Federal/Local Action

purpose | baseline | analysis | results | conclusions

We still have a long way to go based on current action.



CAFE 35.5 mpg by 2016

Committed TERMS (baseline)

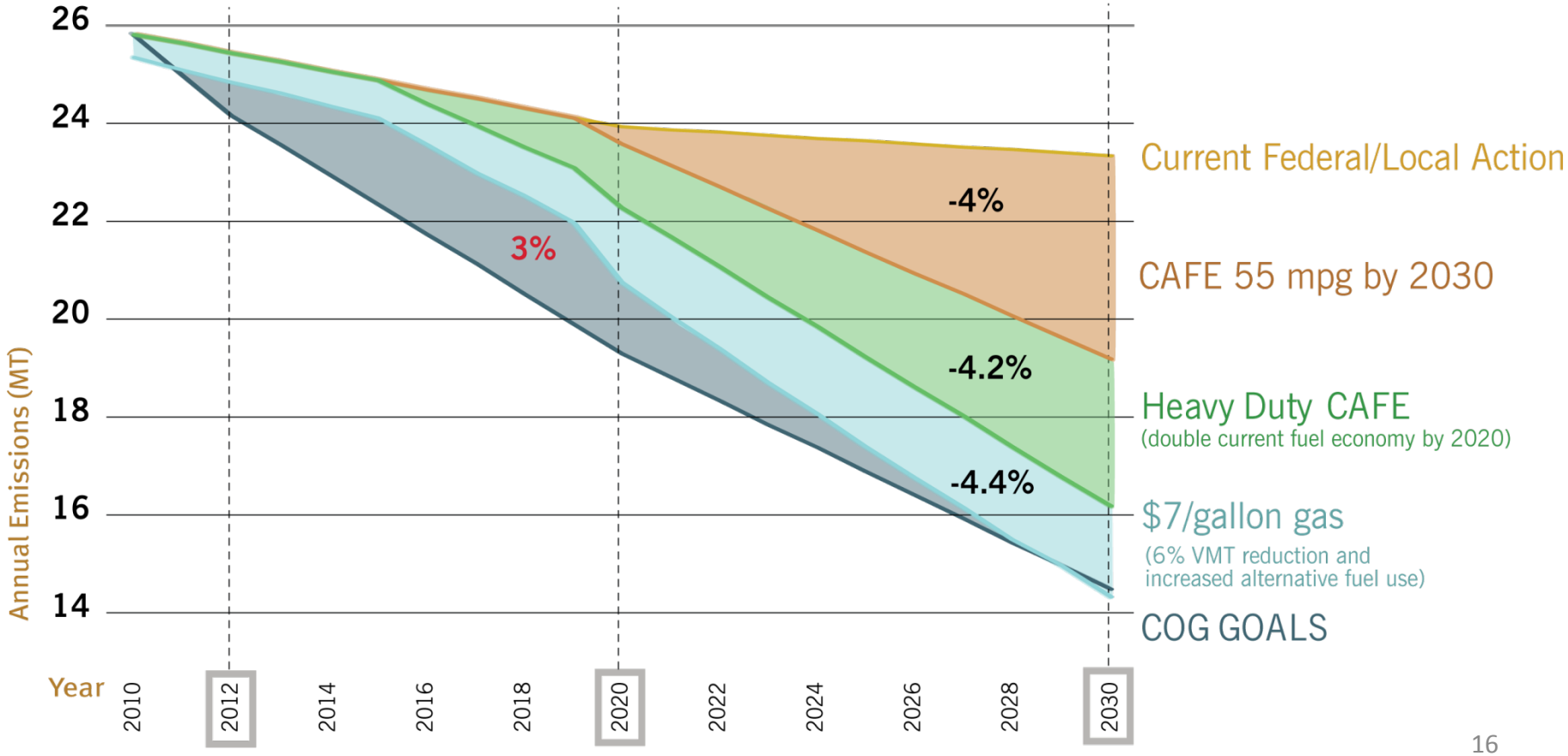
Alternative Fuel Forecast
(based on current energy policy)

COG GOALS

Higher Federal Role

purpose | baseline | analysis | results | conclusions

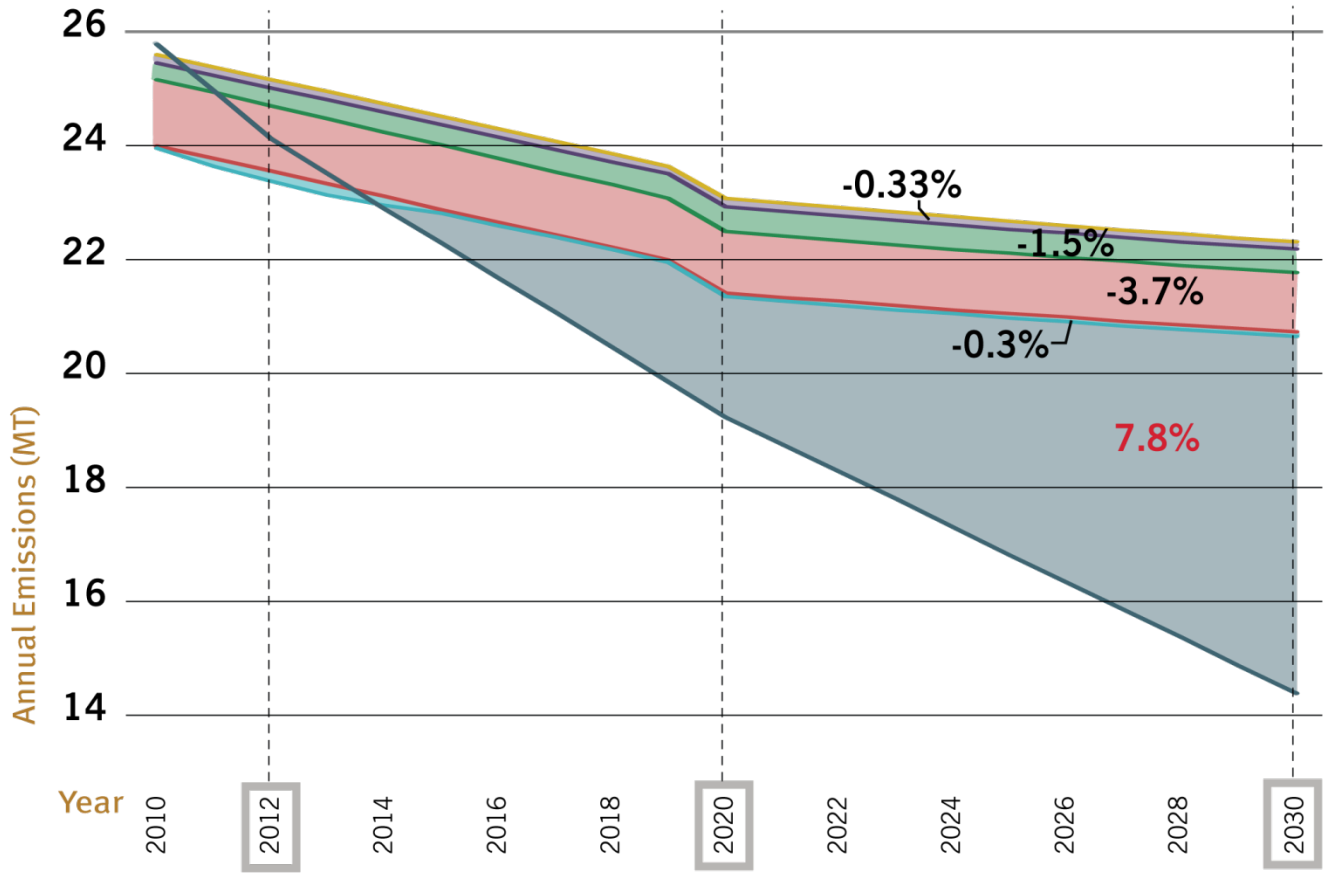
Significant measures in all 3 categories almost get us there



Shorter-term Strategies

purpose | baseline | analysis | results | conclusions

Many strategies can be done soon, meeting the 2012 goal



Current Federal/Local Action

(1) Increase non-auto mode share (16 measures)

(2) Pricing (3 measures)

(3) Improve operational efficiency (4 measures)

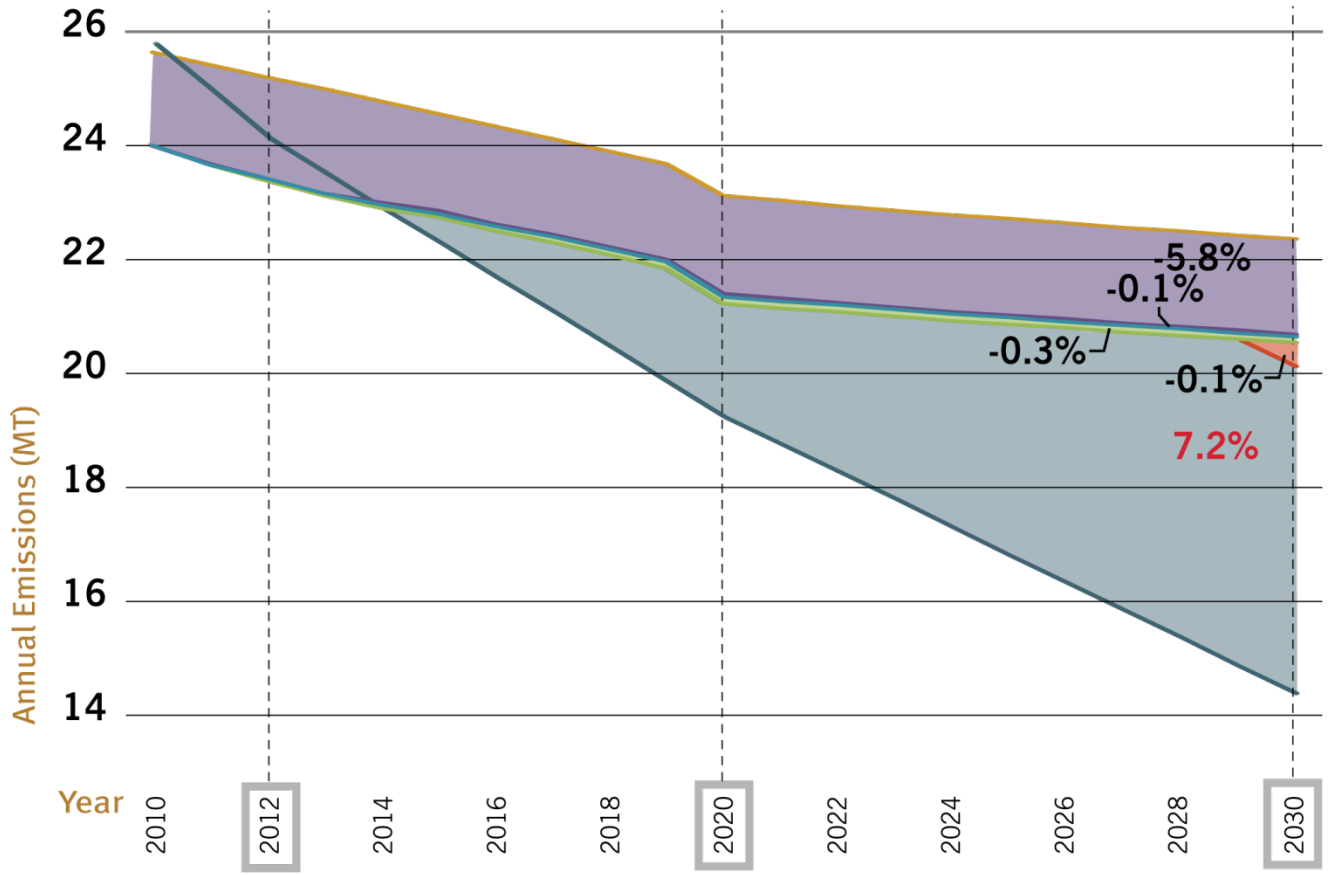
(4) Reduce travel (5 measures)

COG GOALS

Longer-term Strategies

purpose | baseline | analysis | **results** | conclusions

A longer study timeframe for long-term impacts would help.



Current Federal/Local Action

Short-term strategies

(1) Increase transit use (2 measures)

(2) Increase bike/ped mode share (1 measure)

(3) Pricing (1 measure)

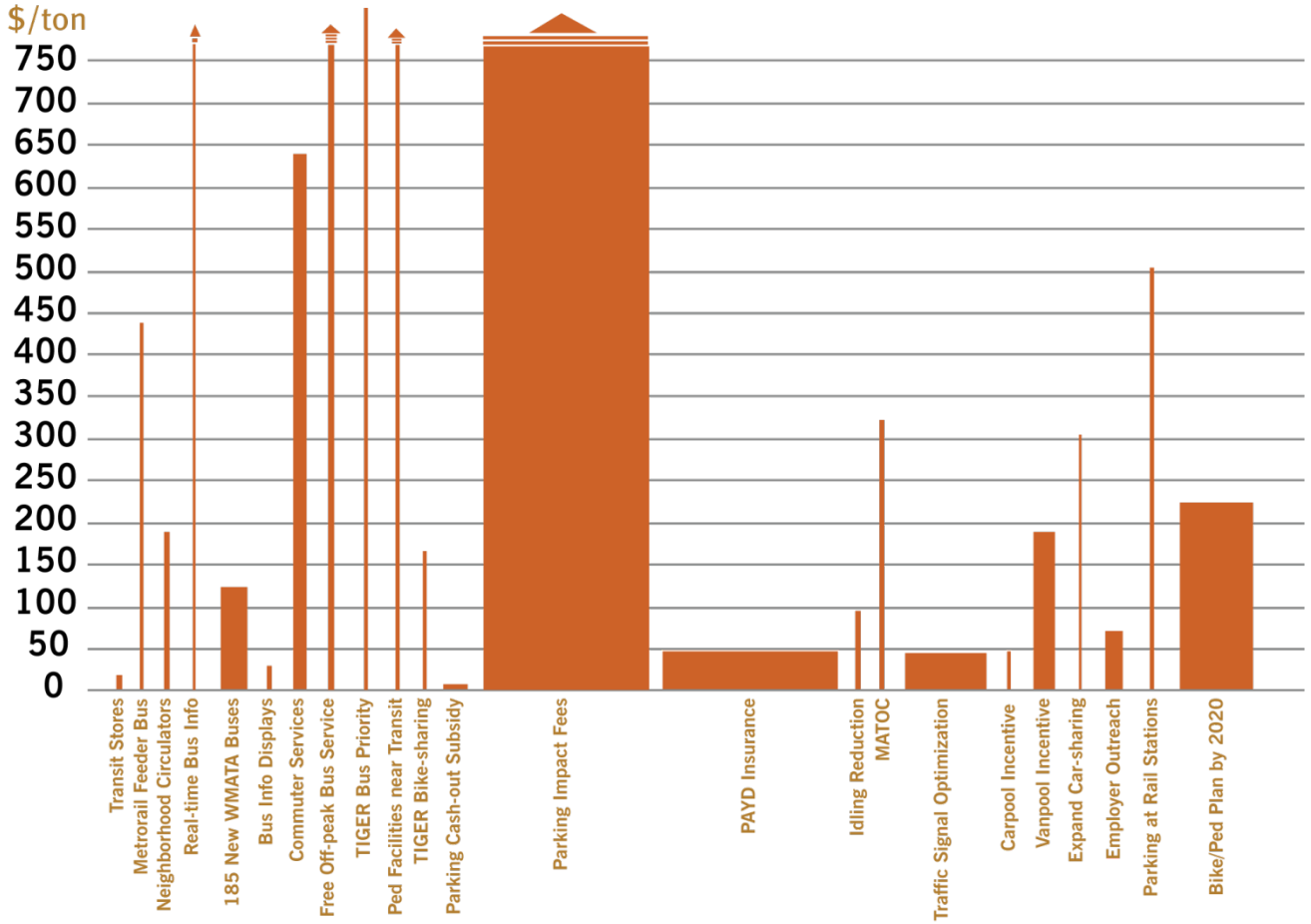
(4) Reduce travel (CLRP Aspirations, TBD)

COG GOALS

Cost-Effectiveness

purpose | baseline | analysis | results | conclusions

Several strategies are both cost-effective and highly effective.



1 million tons of cumulative reduction 2010-2030

(width of bar indicates 20 year CO_2 reduction effectiveness)

Assumes current federal/local action

What Would it Take?

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1 Goals are difficult to meet--and will require reductions in **all 3 categories**

2 While major reductions can come from federal energy policies, **local governments can make significant reductions quickly**

3 Some strategies may not have major GHG reduction potential, but have **multiple benefits worth exploring through benefit-cost analysis**

Potential Local Actions to do Now

purpose | baseline | analysis | results | **conclusions**

1. Incentivize **eco-driving** [free air at service stations, public and private driver training, public messaging, eco-driving checklist mailings]
2. Expanded **telecommuting** and compressed work week
3. Incentivize increased **carpooling** and vanpooling
4. Increase **bicycle** mode share [bike-sharing, bike racks, stations, and lanes]
5. **Incident management** and regional coordination
6. Increase **transit** use [bus priority treatments, technology, lowering fares, parking cash-out subsidies]
7. **Signal** optimization
8. Incentivize purchase of **fuel efficient** cars

Next Step: Cost Benefit Analysis

purpose | baseline | analysis | results | conclusions

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