Meeting Regional Climate Change Goals through Transportation Planning and TDM Strategies

Presentation to MWAQ TAC
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What is the TPB Currently Doing?

- Developing baseline GHG projections for transportation through 2030
- Analyzing a “What Would It Take?” Scenario for GHG reduction, including fuel efficiency, alternative fuels, travel efficiency
- Seeking GHG reduction strategies that could be included in the region’s transportation plans and programs
- Using goals set in COG Climate Change Report of November 2008
  - Return to 2005 levels by 2012
  - 20% below 2005 levels by 2020
  - 80% below 2005 levels by 2050

Setting up the WWIT Scenario for Analysis

Analyze three categories of strategies to reduce mobile CO_2 emissions for effectiveness, cost-effectiveness, and implementation timeframe

Assess combinations of strategies from these three categories:

Fuel Efficiency	Fuel Carbon Intensity	Travel Efficiency
Beyond CAFE standards [currently 35 mpg by 2020]	Alternative fuels (biofuels, hydrogen, electricity) Vehicle technology (hybrid engine technology)	Reduce VMT through changes in land use, travel behavior, prices Reduce congestion Improve operational efficiency

Where are Transportation Emissions Coming From?

2010 Travel and CO_2 Emissions

8-Hour Ozone Non-Attainment Area

	VMT (billions) - Annual	%	CO2 Emissions (Millions of Tons) - Annual	%
Passenger Cars	19.06	47%	6.76	24%
Light Duty Trucks	18.94	46%	15.38	56%
Heavy Duty	2.94	7%	5.46	20%
Total	40.95	100%	27.60	100%

source: 2007 CLRP

Combination #1: Assumes no change in current energy policy

To achieve 40% reduction in mobile CO2 emissions below 2005 levels by 2030

Fuel Efficiency

Beyond CAFE standards [currently 35 mpg by 2020 for LDVs]

Fuel Carbon Intensity

Alternative fuels (biofuels, hydrogen, electricity)

Travel Efficiency

Reduce VMT through changes in land use, travel behavior, prices

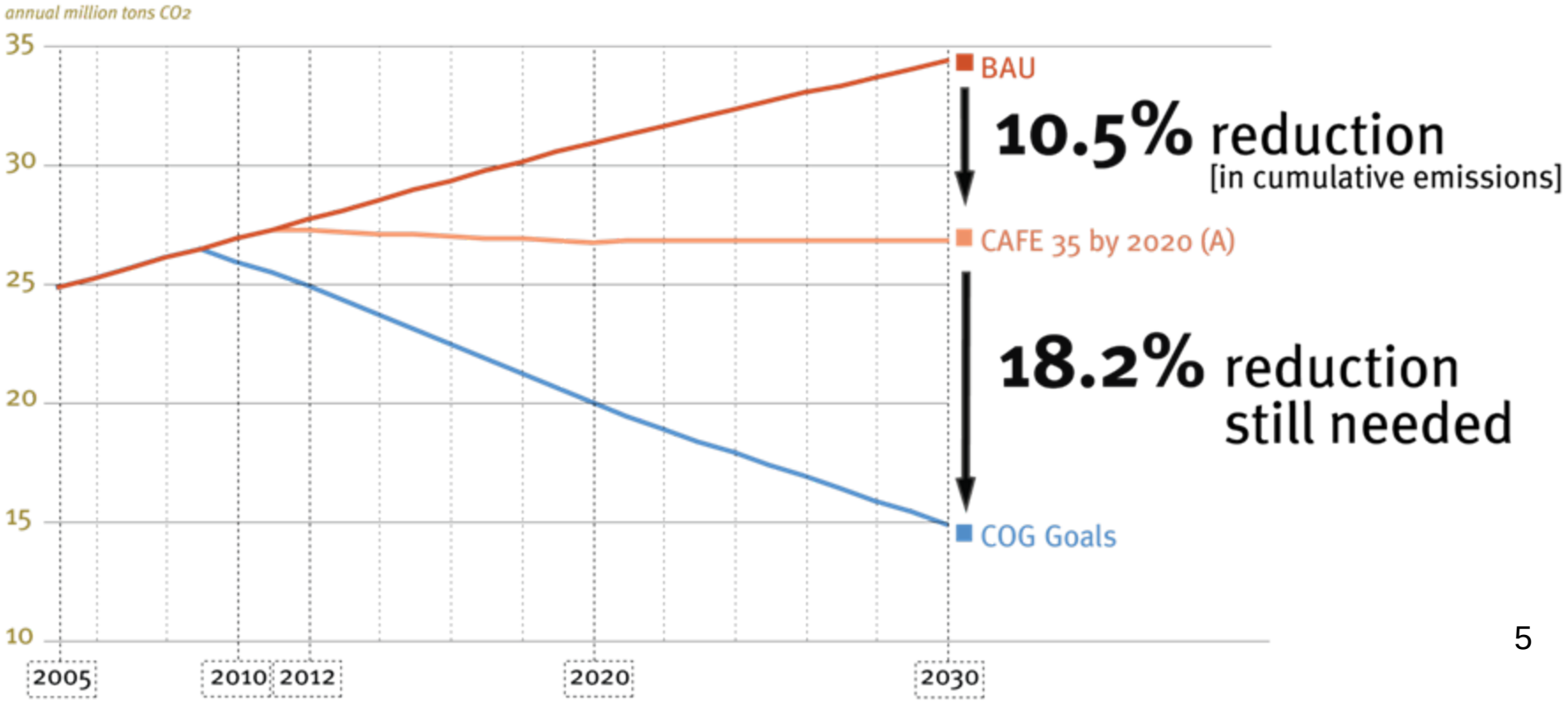
Reduce congestion

Improve operational efficiency

Fuel Efficiency

35 mpg

by 2020



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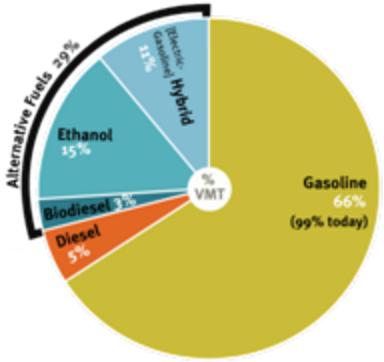
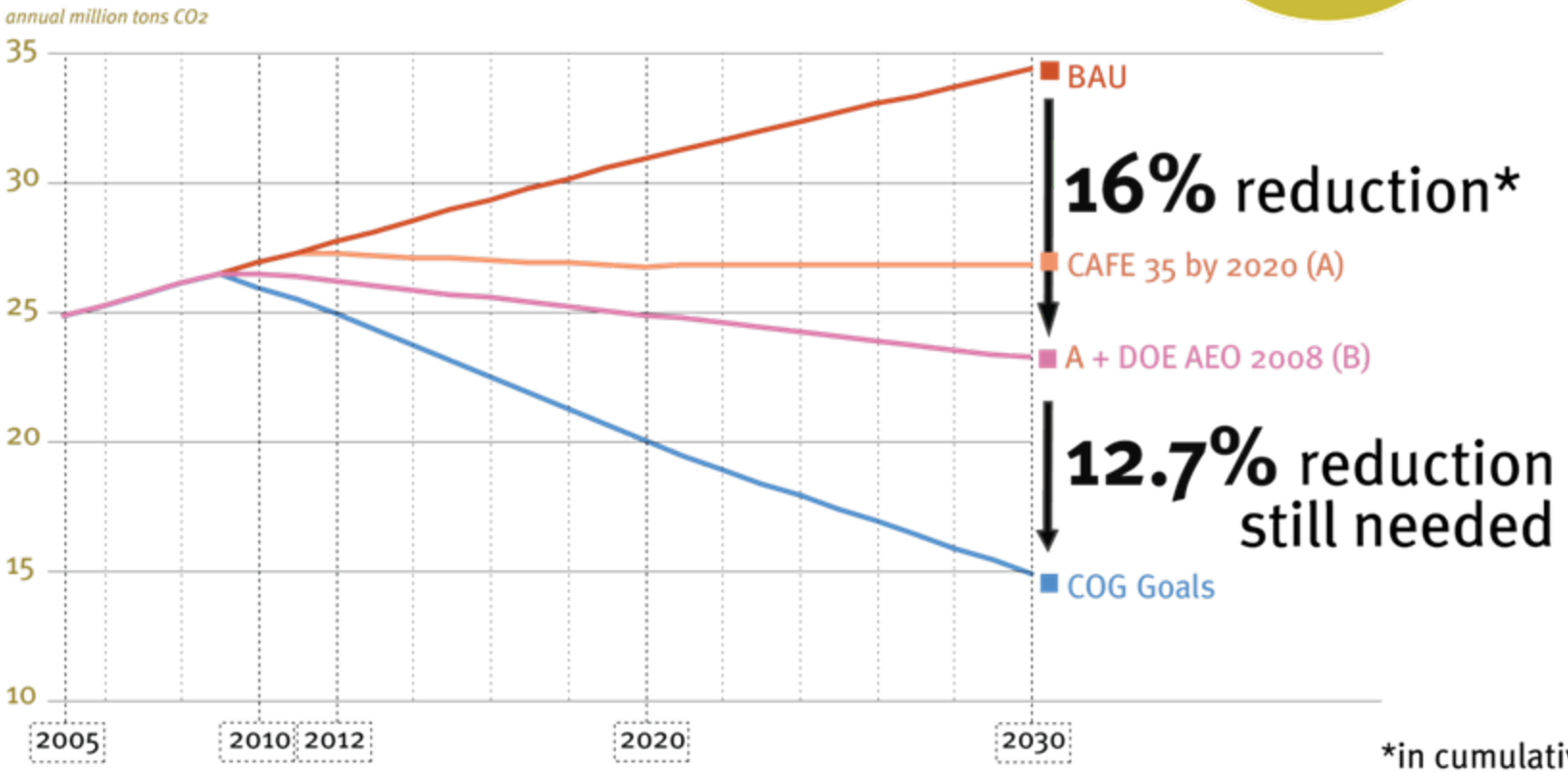
Alternative Fuels

2030

Source: US DOE, EIA, Annual Energy Outlook (AEO) 2008





*in cumulative emissions

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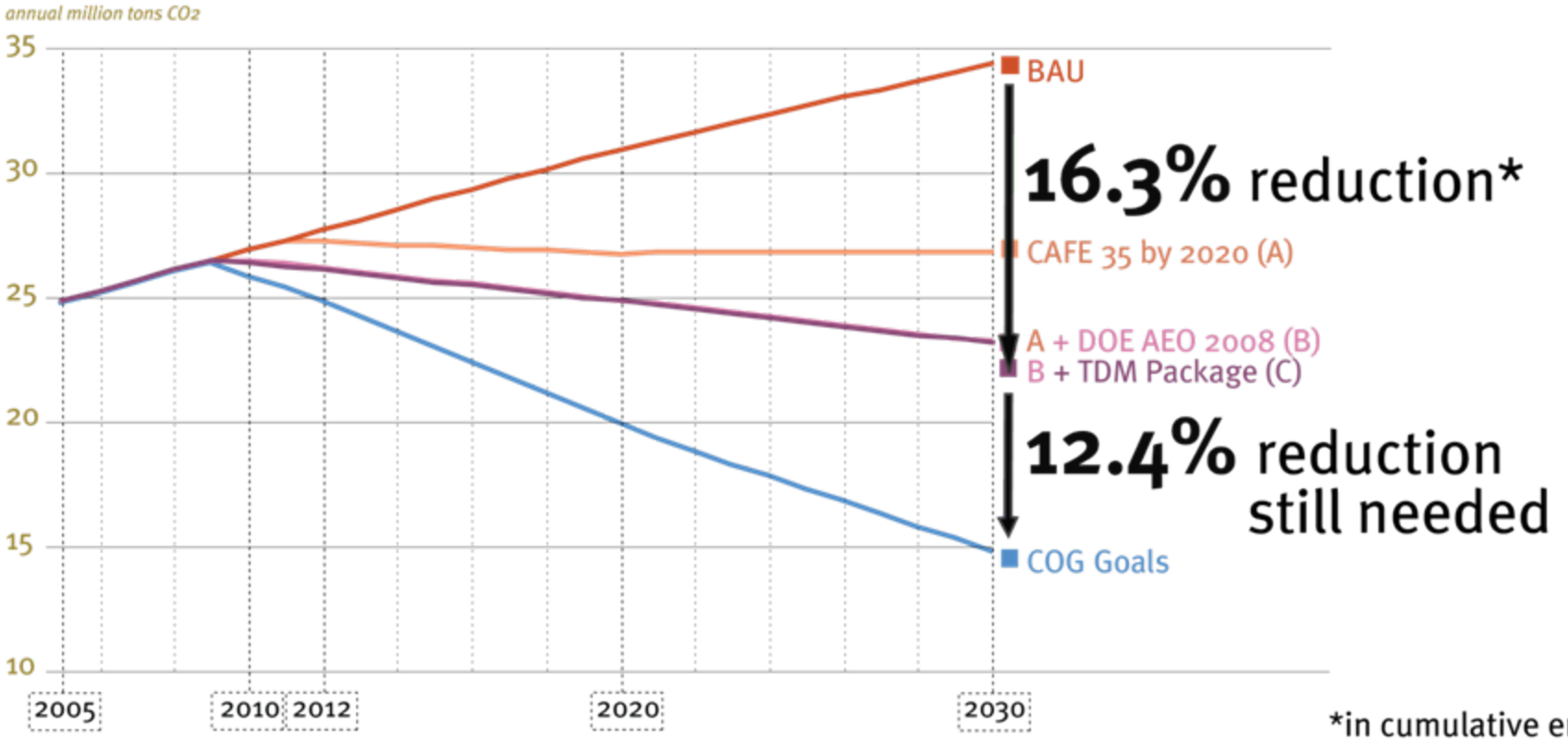
Travel Efficiency

TDM Package

1. Maryland and Virginia Telework
2. Guaranteed Ride Home
3. Employer Outreach
4. Employer Outreach - Bike
5. Ridesharing

Applies to Light Duty Vehicles only



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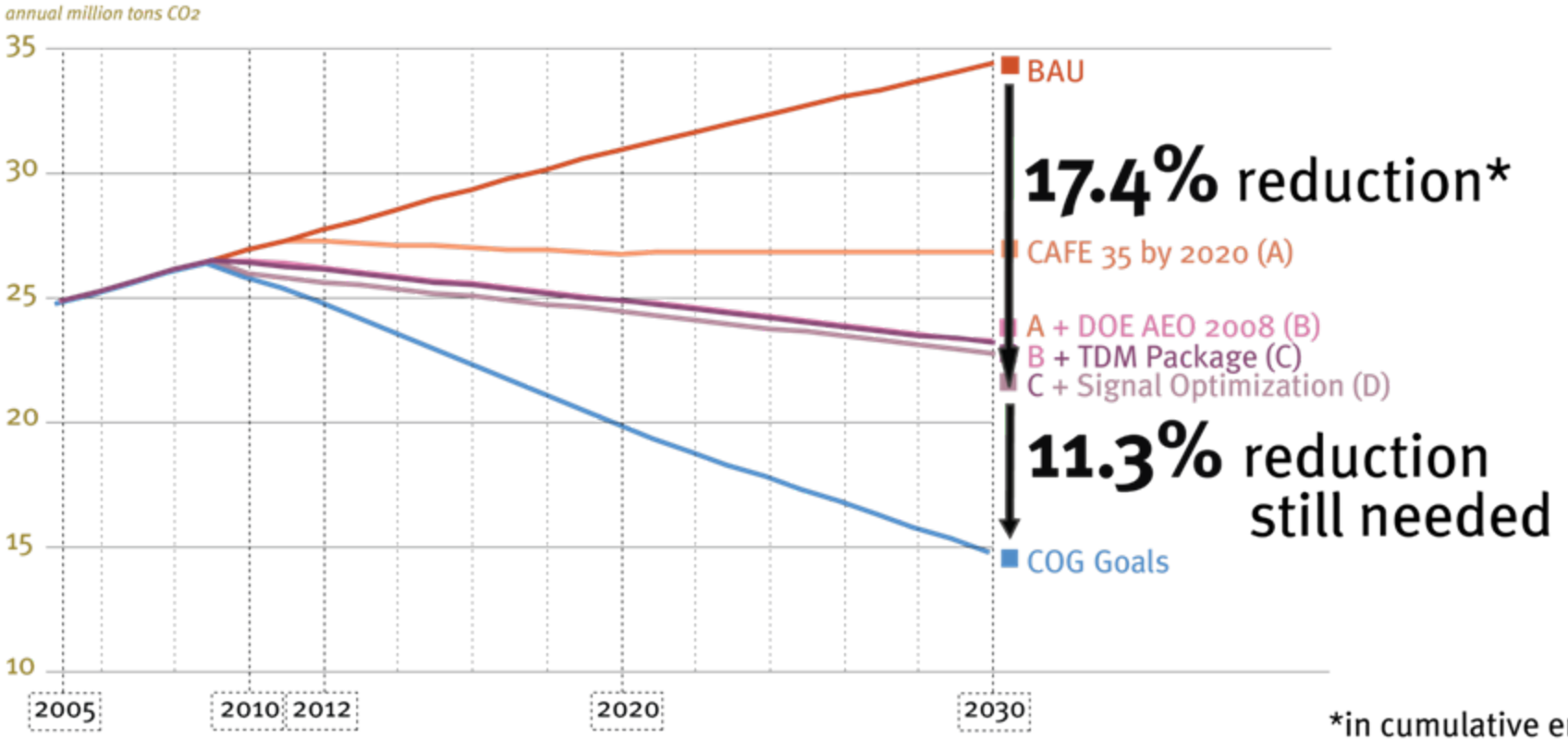
Travel Efficiency

Signal Optimization

3400 Signals regionwide

Applies to Full Fleet



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Combination #2: Assumes a Higher Federal Role

To achieve 40% reduction in mobile CO2 emissions below 2005 levels by 2030

Fuel Efficiency

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Fuel Carbon Intensity

Alternative fuels (biofuels, hydrogen, electricity)

Travel Efficiency

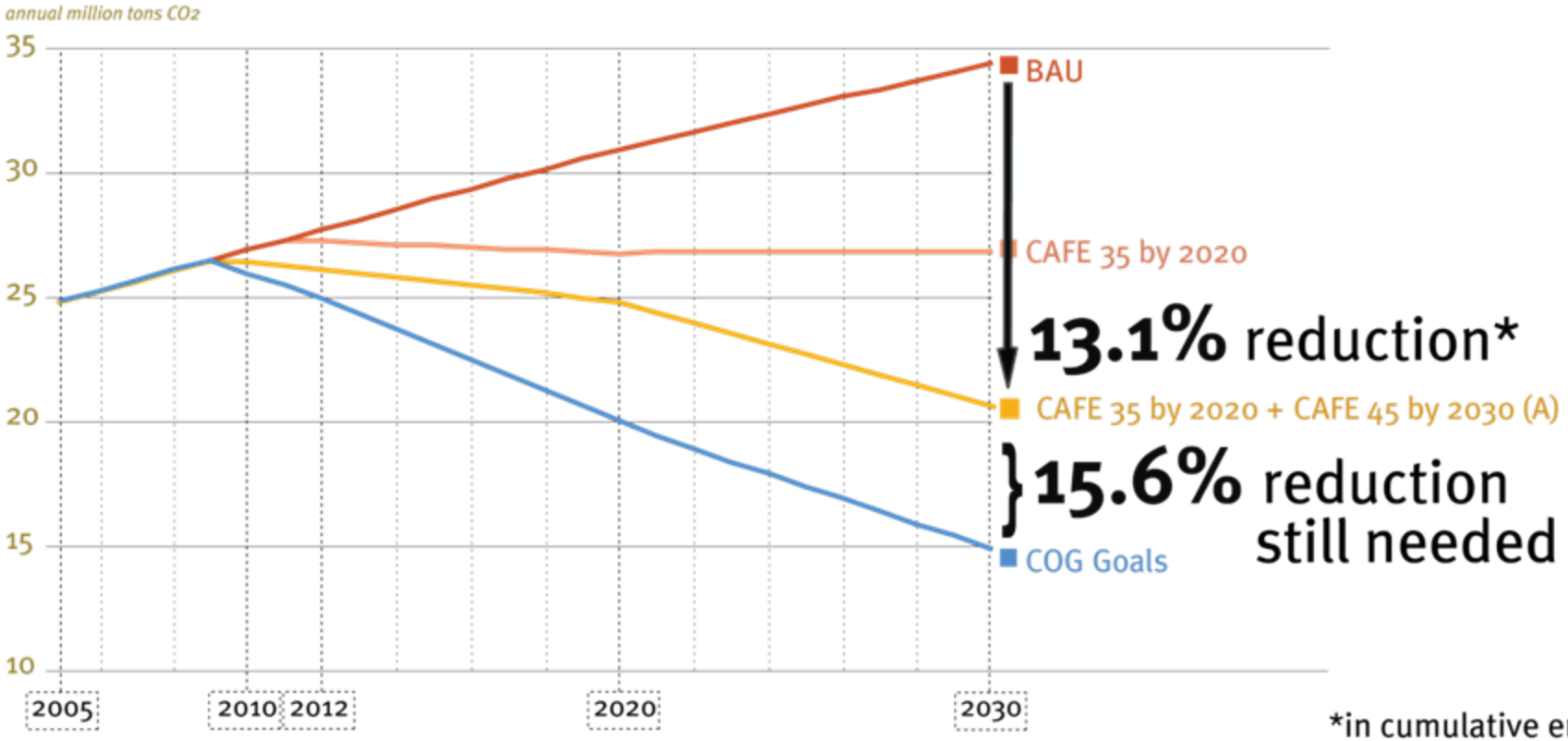
Reduce VMT through changes in land use, travel behavior, prices

Reduce congestion

Improve operational efficiency

Fuel Efficiency

35 mpg by 2020 + 45 mpg by 2030



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Alternative Fuels

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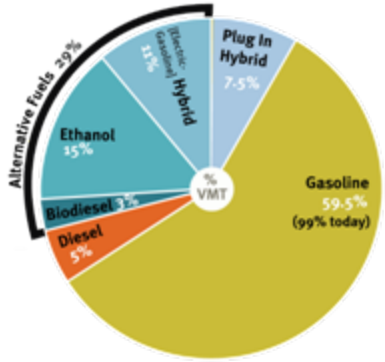

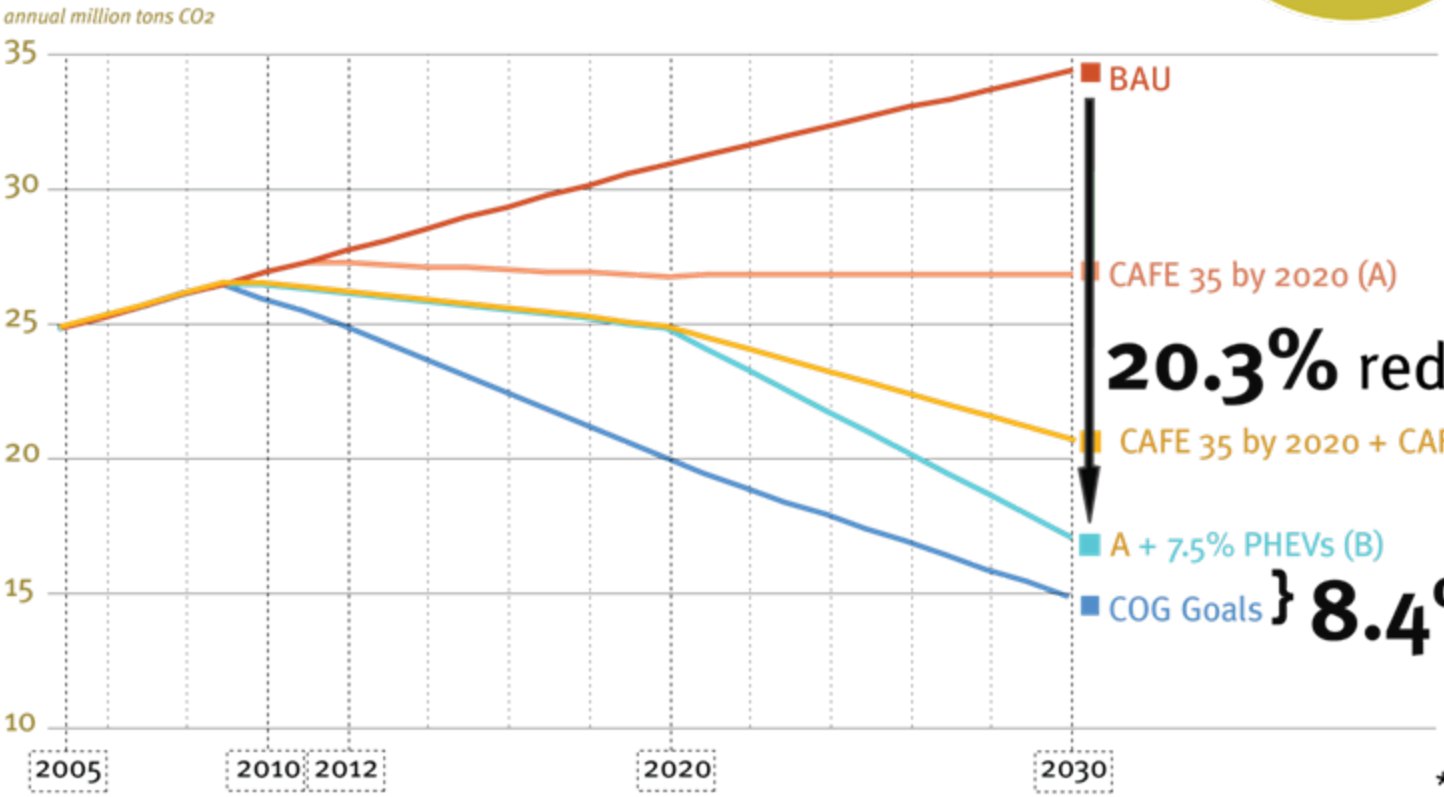

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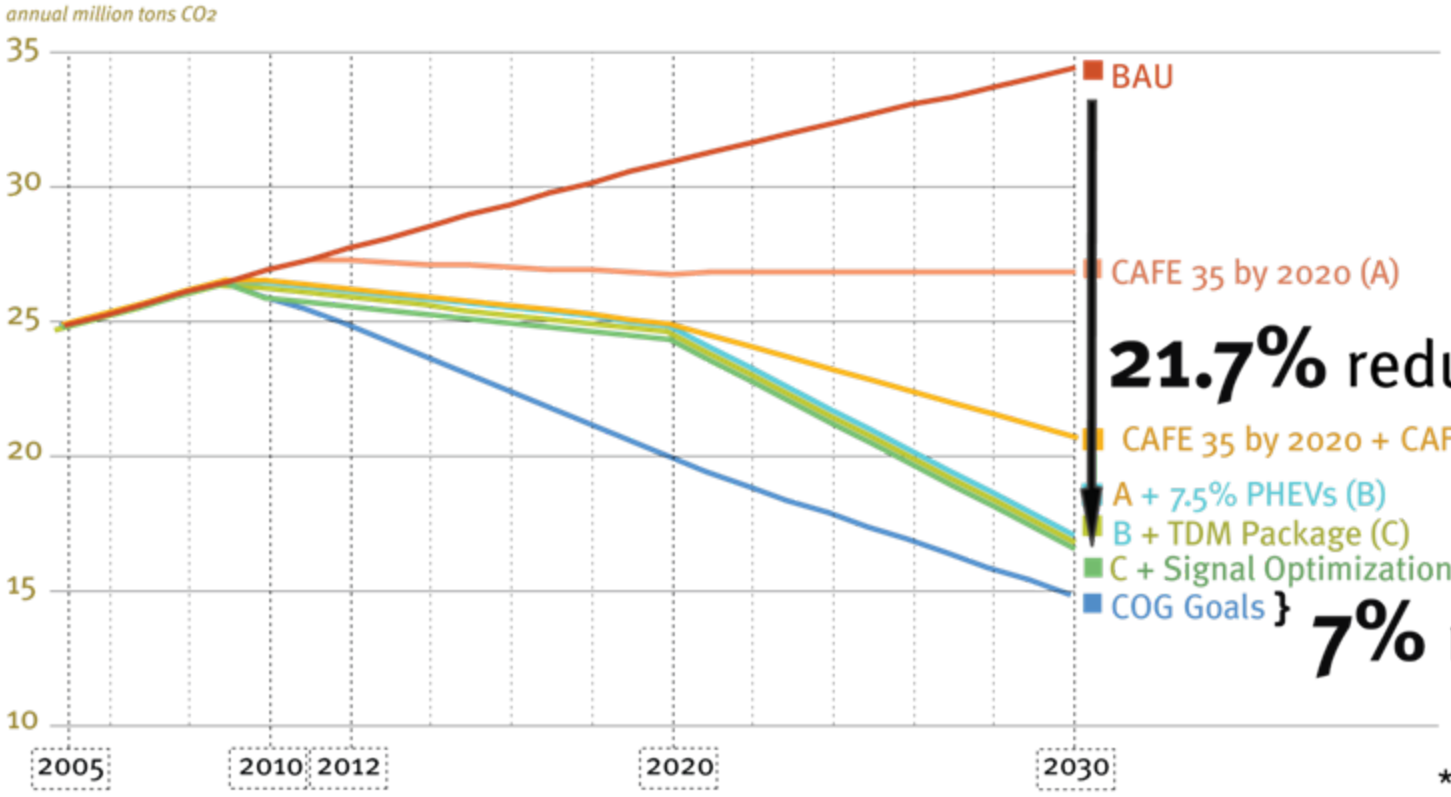

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How can we change travel efficiency?

Land Use

Analyze possible aggressive land use shifts
CLRP Aspirations Land Use Component

} **VMT Reductions**

Increase Transit Capacity

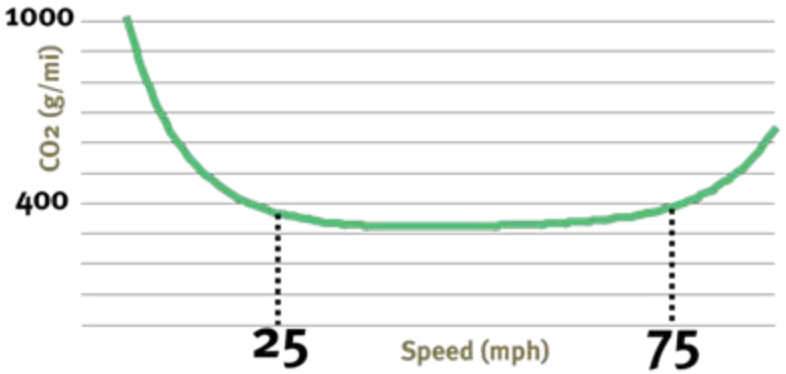
CLRP Aspirations Transportation Component

VMT Reductions/Mode Shift

Reducing Congestion

Traffic and Roadway Improvements

CO_2 Emissions Rates by Speed



Pricing Policies

Parking	Study effect of increased parking costs	**VMT Reductions**
Congestion	TPB Value Pricing Study	**Increase very low speeds**
Gas/VMT tax	Study effect of increased fuel prices	**VMT Reductions**

Cost-effectiveness

How can we prioritize strategies; effectiveness, scale, and cost-effectiveness?

Cost-effectiveness of Example Transportation Emissions Reduction Measures ($ per ton of CO_2 reduced)

Number	Category Description	CO_2 Cost Effectiveness Range *
1	Telecommute Programs	$10 to $40
2	Signal Optimization	$30 to $50
3	Park & Ride Lots (Transit and HOV)	$100 to $500
4	Transit Service improvements	$100 to $800

*TPB staff estimates based on existing program commitments