

Status Report on Greenhouse Gas (GHG) Emissions Analysis

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TPB Technical Committee

April 3, 2009

Overview

A. GHG Reduction Goals from Climate Change Steering Committee (CCSC) Report

- By 2012: Reduce to 2005 levels
- By 2020: Reduce by 20% below 2005 levels
- By 2050: Reduce by 80% below 2005 levels

B. Baseline Conditions

- Update GHG emissions inventories with 2008 CLRP: Round 7.1 Cooperative Forecasts and Version 2.2 travel demand model
- Reflect existing federal, state and local regulations/commitments
- Baseline = Mobile 6 emissions-CAFE35-alternative fuel/technology vehicles-TERM Commitments

C. Control Strategy Analysis

- Approach

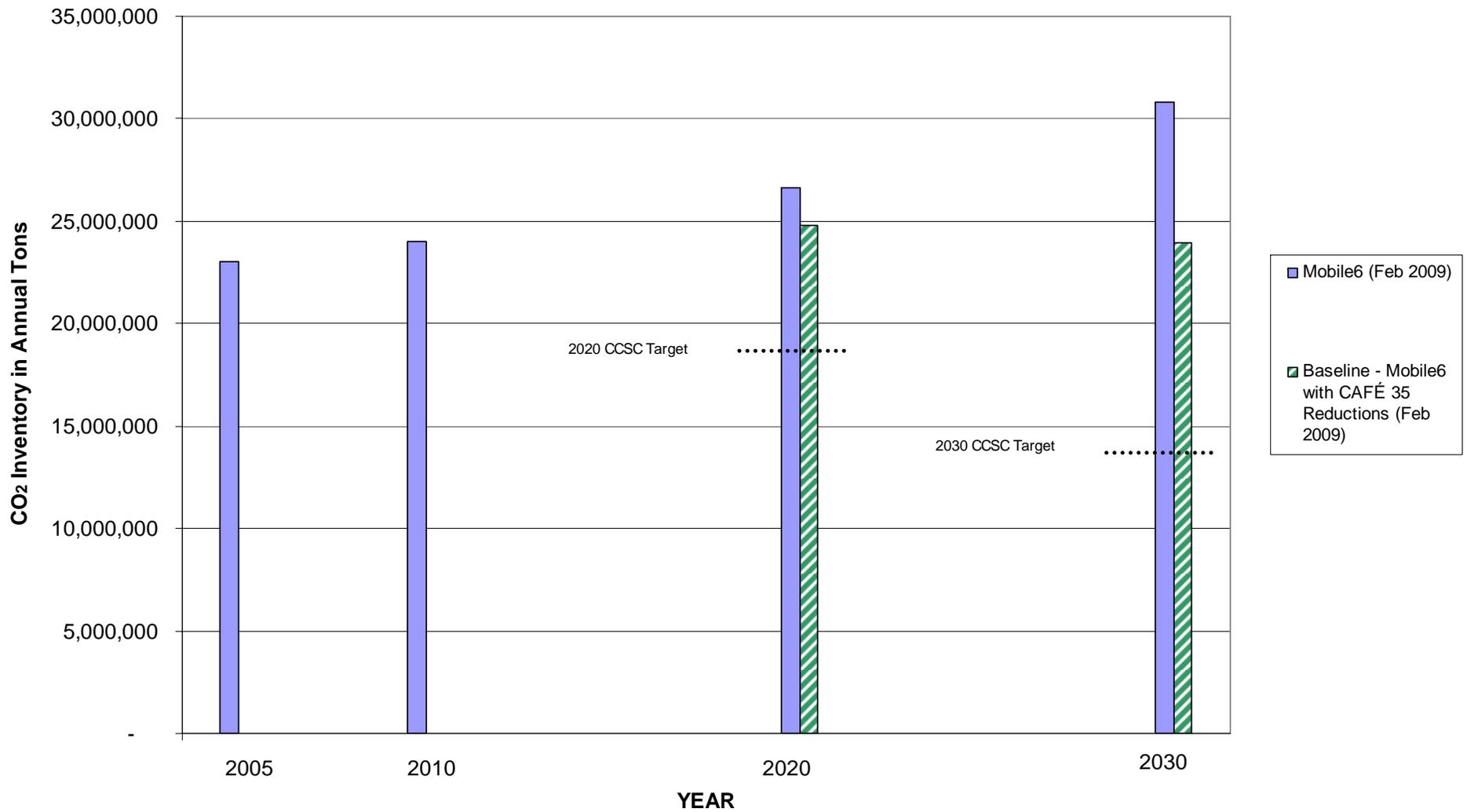
- a. Fuel efficiency
- b. Fuel carbon intensity
- c. Travel efficiency

- Initiatives

- a. What Would It Take?
- b. CCSC Recommendations
- c. TERM Proposals (Travel Management Subcommittee/Technical Committee)

CO₂ Emissions Inventories - Baseline

Adjustment of Mobile 6 Inventories to Reflect Impacts of CAFE 35 by 2020



Baseline Inventory Development

DOE Alternative Fuel and Advanced Technology Light Duty Vehicle Projections

Vehicle Type	Percentage of VMT			Vehicle Included in CAFE?
	2010	2020	2030	
Gasoline ICE Vehicles	93.22%	78.71%	65.75%	Y
TDI Diesel ICE	2.01%	2.85%	5.46%	Y
TDI Diesel ICE (Biodiesel) (assuming B20)		0.32%	0.62%	Y
TDI Diesel ICE (BTL) (assuming B20)		1.14%	2.19%	
Methanol-Flex Fuel ICE				
*Ethanol-Flex Fuel ICE (E10) (Corn)	2.06%	4.34%	5.71%	Y
*Ethanol-Flex Fuel ICE (E10) (Cellulosic)		2.00%	2.63%	Y
Ethanol-Flex Fuel ICE (E85) (Corn)	1.62%	3.40%	4.47%	
Ethanol-Flex Fuel ICE (E85) (Cellulosic)		1.56%	2.06%	
Ethanol ICE (Neat)				
Compressed Natural Gas ICE	0.02%	0.02%	0.02%	Y
Compressed Natural Gas Bi-fuel	0.05%	0.04%	0.04%	Y
Liquefied Petroleum Gases ICE				Y
Liquefied Petroleum Gases Bi-fuel	0.03%	0.01%	0.00%	Y
Electric Vehicle	0.01%	0.00%	0.00%	
Plug-in Gasoline Hybrid		0.00%	0.01%	Y
Electric-Diesel Hybrid (compared to diesel)		0.01%	0.01%	Y
Electric-Gasoline Hybrid	0.98%	5.57%	11.00%	Y
Fuel Cell Gasoline				
Fuel Cell Methanol				
Fuel Cell Hydrogen		0.01%	0.03%	
Total	100%	100%	100%	

* E-10 replaced MTBE as oxygenate

**Biodiesel, BTL, and Electric Diesel Hybrid are GHG reductions compared to diesel, not gas

ICE: Internal Combustion Engine

TDI: Turbo Direct Injection

BTL: Biomass-to-Liquids

Source: Energy Information Administration *Annual Energy Outlook 2008* (www.eia.doe.gov)

Baseline Inventory Development TERMs from Tracking Sheet

TERMs prior to 2000 (TS # 9 - 143)	# of TERMS	Comments
Commuter TERMS	46	No VT & VMT available and credits taken
TS-Traffic Stream TERMS	6	Three measures have no credit
Heavy Duty Vehicles (Engine Technology)	1	
SP- Specific Vehicle Type	10	Credits only upto 2010
TERMs after 2000 (TS # 144 - 221)		
Commuter TERMS	47	VT & VMT available and credits taken
Traffic Stream TERMS	2	Credits taken
Heavy Duty Vehicles (Engine Technology)	1	
SP- Specific Vehicle Type	5	Credits only upto 2010
Commuter Connections TERMS	6	Credits only for 5 TERMS (Regional Rideshare Support: No Credits)
Total	124	

VMT Benefit (000,000 tons/year)			
	2010	2020	2030
TS TERMS (TS # 144 - 221)	508.3	349.1	349.1
CC TERMS	615.5	615.5	615.5
Total	1,123.8	964.6	964.6

CO2 Benefit (000 tons/year)			
	2010	2020	2030
TS TERMS (TS # 144 - 221)	259.2	138.5	121.7
CC TERMS	313.9	244.3	214.7
Total	573.2	382.8	336.4

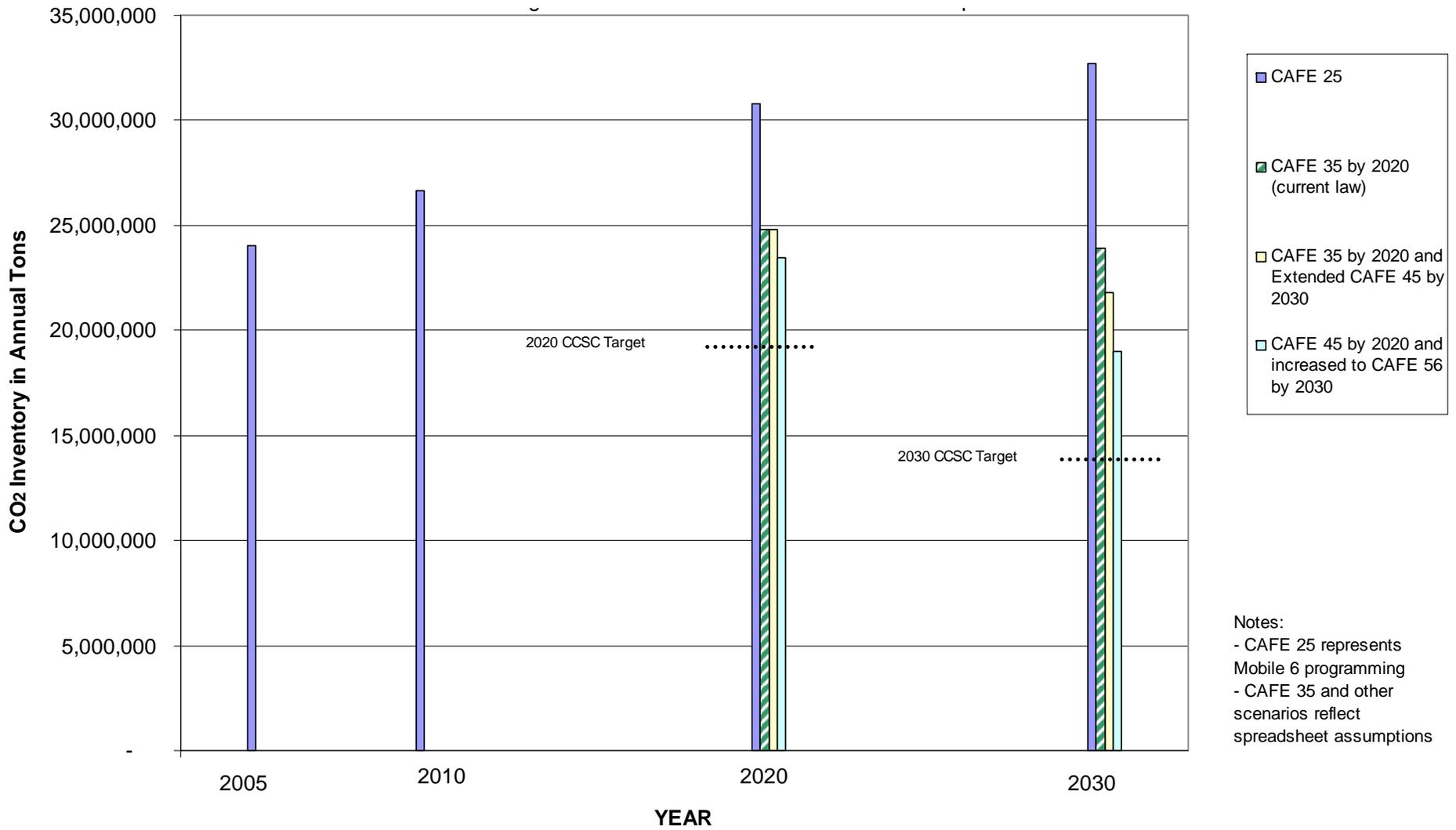
Scenario Assessments (Underway)

- New CAFE Proposals
- CCSC Recommendations
- New TERM Proposals
- What Would It Take Scenario

CO₂ Emissions Inventories - Scenario Assessment

Impact of LDV/LDT Fuel Economy Improvement

Climate Change Measure A.1.ii – Extend Federal CAFE Requirements

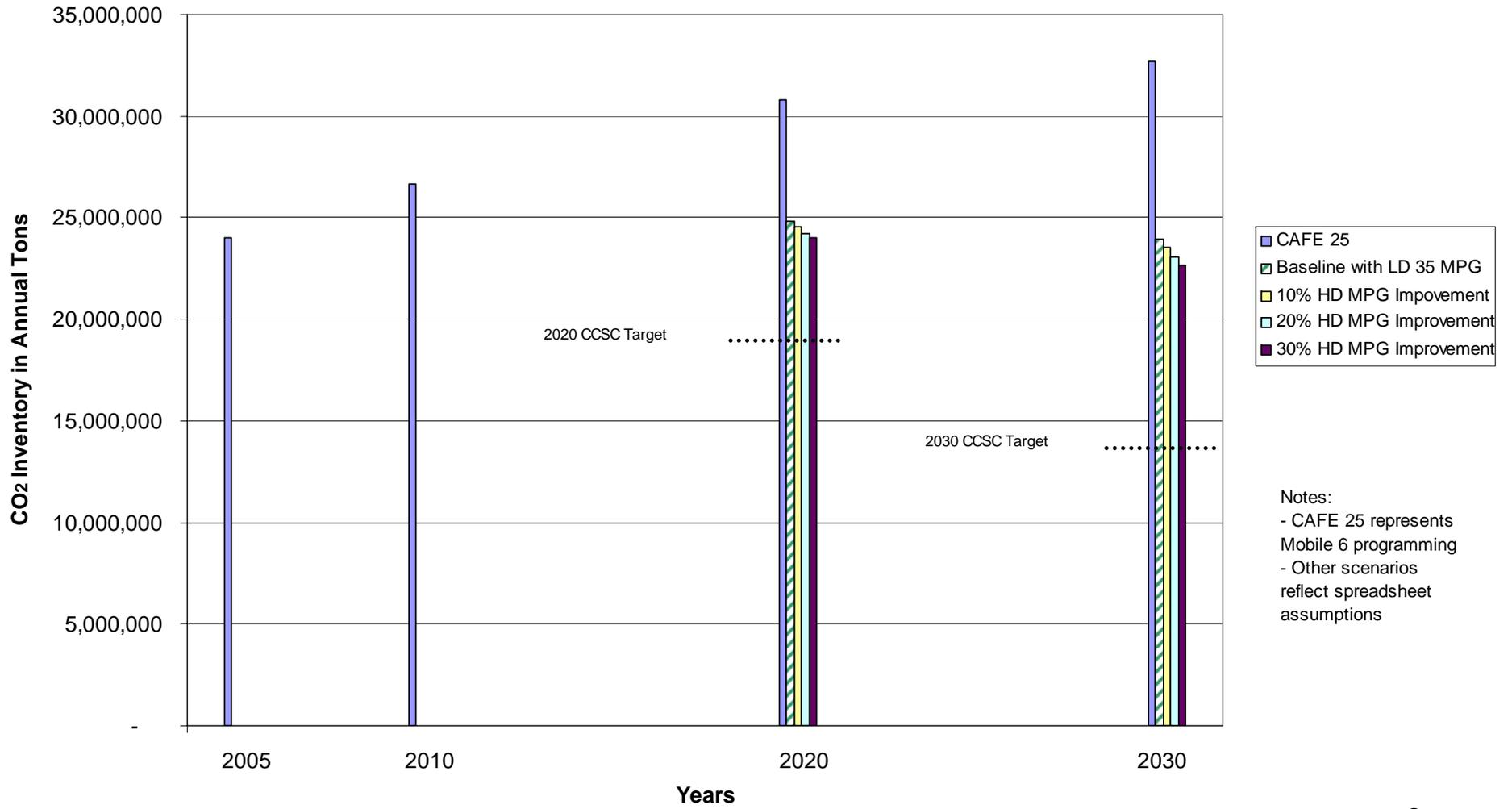


Notes:
 - CAFE 25 represents Mobile 6 programming
 - CAFE 35 and other scenarios reflect spreadsheet assumptions

CO₂ Emissions Inventories - Scenario Assessment

Impact of HD Fuel Economy Improvement

Climate Change Measure A.1.ii – Expand CAFE Requirements to Include Heavy Trucks



Examples of CCSC Recommendations Analyzed to Date

Recommendation	CO2 Reductions in 2010	CO2 Reductions in 2030	CO2 Reductions by 2030	Cost-effectiveness	VOC	NOx
	(annual tons)	(annual tons)	(cumulative tons)	(\$/ton CO2)	(tons/day)	(tons/day)
A.1.iii - Provide Incentives for Early Vehicle Retirement						
Cash for Clunkers Program	1,162	1,162	36,036			
B.1.iii - Shift Short Vehicle Trips to Non-motorized Modes						
Scenario 1: Shift 10% of Auto Person Trips < 3 mi	175,399	119,929	2,989,098			
Scenario 2: Shift 20% of Auto Person Trips < 3 mi	350,799	239,858	5,978,197			
Scenario 3: Shift 50% of Auto Person Trips < 3mi	876,940	599,644	14,945,179			
B.4.i - Expand Commuter Connections Program						
Carpool Incentive	3,684	2,519	62,781			
B.4.iii - Fully fund regional bicycle/pedestrian plan						
Scenario 1: Full completion by 2020	15,264	106,741	1,858,938			
Scenario 2: Full completion by 2030	7,632	106,741	1,235,161			
B.4.v - Address need for on-road bicycle accommodations and facilities						
Bicycle Stations	279	191	4,759			
B.4.vi - Promote SmartBike						
Promote regional bicycle sharing program	1,210	827	20,621			

Next Steps

- Finalize baseline emissions inventories
- Continue assessment of TERMS and CCSC-recommended measures
- Perform network-based analysis for WWIT scenarios
- Continue regular status reports to Travel Management Subcommittee and Technical Committee

National Capital Region Climate Change Report

- Staff has been tasked with analyzing the impact of the recommendations for reducing GHG emissions from transportation and land use (refer to attached table)
 - Increased fuel efficiency and technology
 - VMT reduction
 - Increase travel efficiency
 - Improve land use
 - Develop and regional planning process
- Recommendations were placed into one of three categories for analysis purposes: TERM, Scenario, and Policy