CO_2 Emissions from Cars, Trucks & Buses in the Metropolitan Washington Region

Presentation to the
COG Climate Change
Steering Committee

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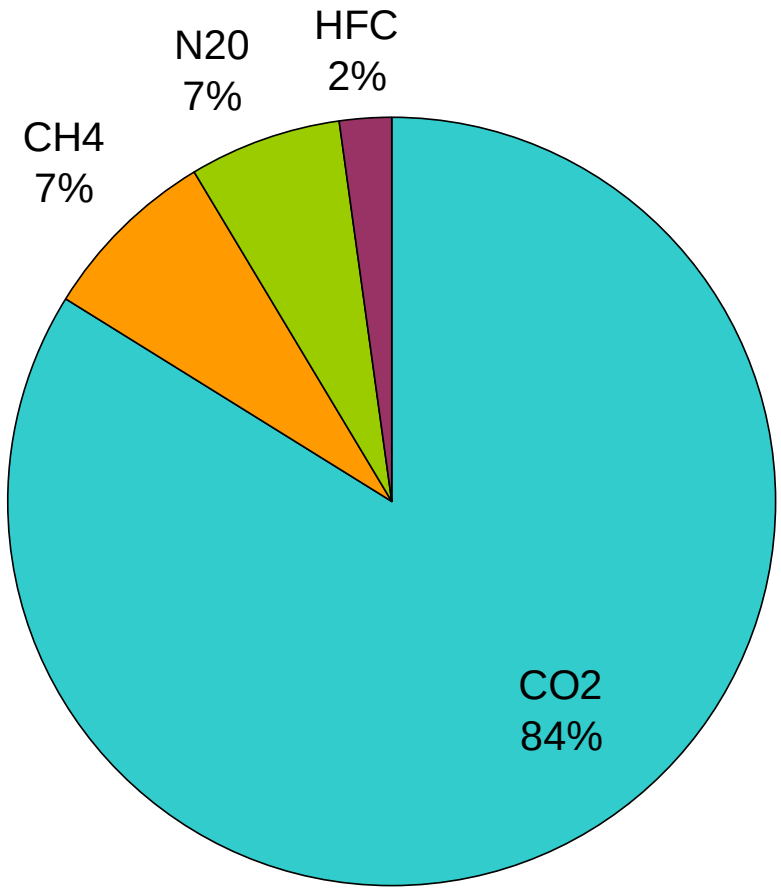
Greenhouse Gases

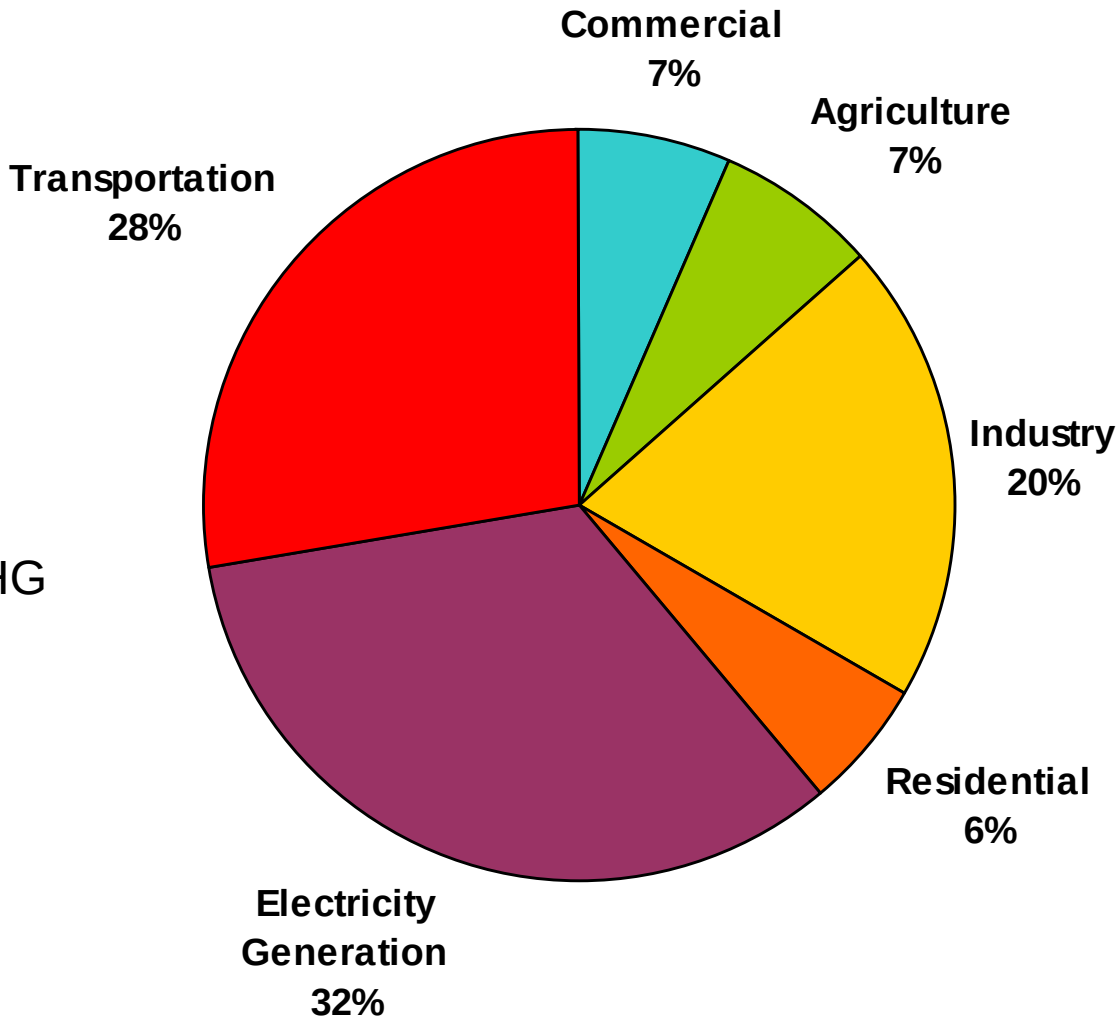
- Carbon Dioxide (CO_2)
- Methane (CH_4)
- Nitrous Oxide (N_2O)
- Hydrofluorocarbons (HFCs)
- Perfluorocarbons (PFCs)
- Sulfur Hexafluoride (SF_6)



Emission Sources

- Electricity
- On-road Motor Vehicles
- Solid Waste
- Wastewater
- Natural Gas/Home Heating Oil
- Aviation, Rail, Construction, Agriculture
- Substitutes to Ozone Depleting Substances
- Land Use, Land Use Change, and Forestry

US Greenhouse Gas Emissions by Sector



Source:

EPA 2004

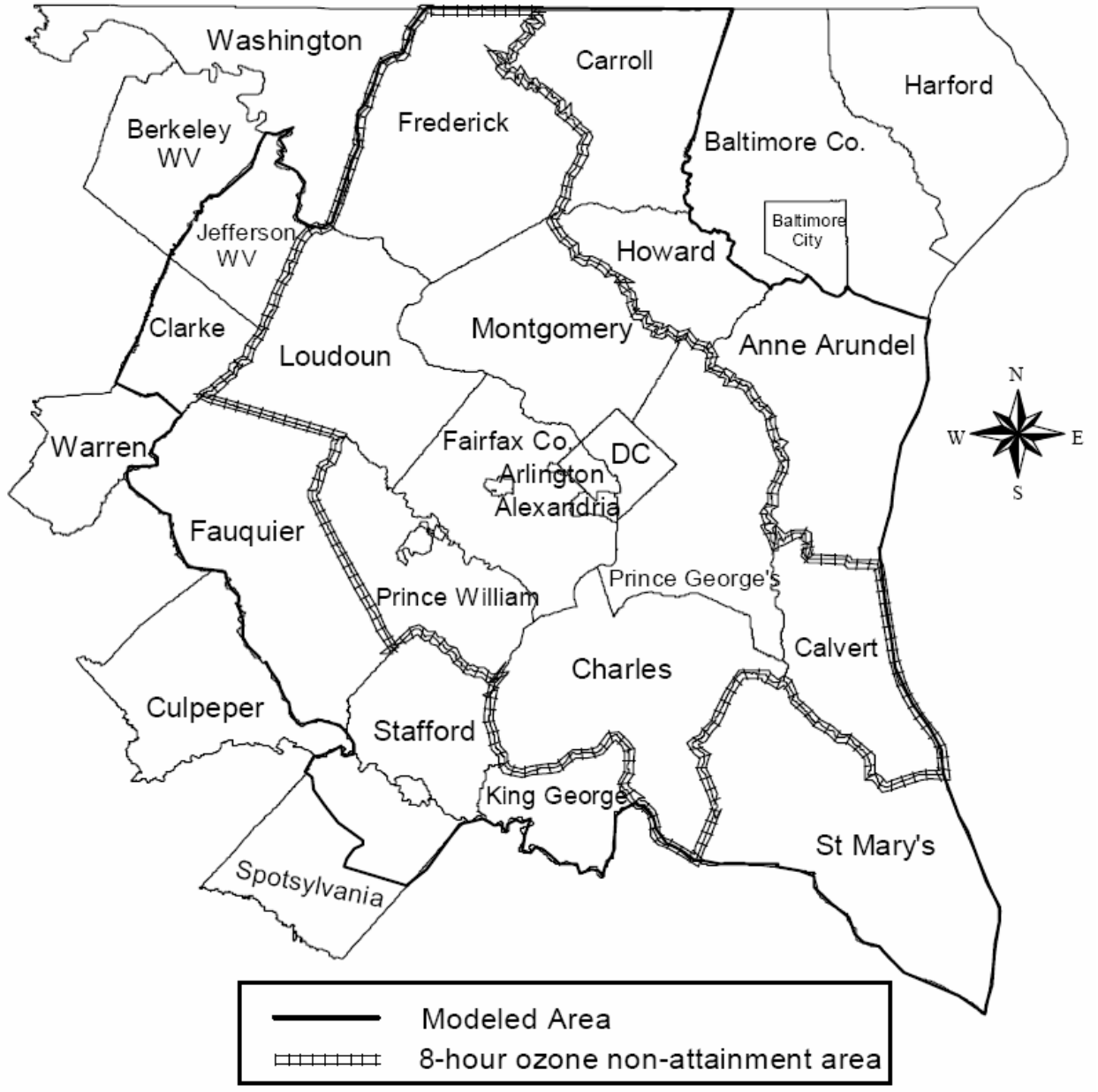
National GHG

Inventory

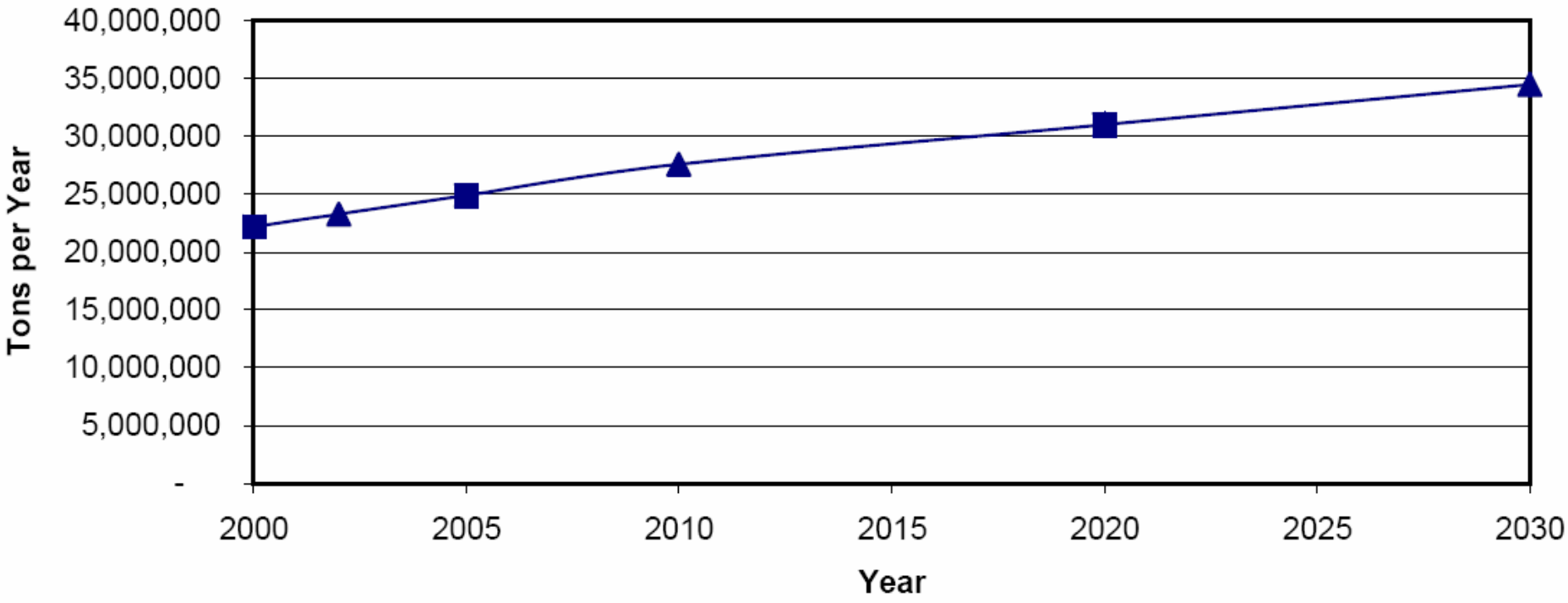
Estimates of CO_2 Emissions from Mobile Sources (Cars, Trucks & Buses) in the Metropolitan Washington Region

- 8-hour Ozone Non-Attainment Area (map on next slide)
- 2006 CLRP, Round 7.0a Cooperative Forecasts
- 2005 Regional Fleet Inventory (New Inventory scheduled for 2008)
- EPA Mobile 6.2 Emissions Model

8-Hour Ozone Non-Attainment Area



Annual Mobile CO_2 Emissions (Tons) for 8-Hour Ozone Non-Attainment Area



Note: Years 2000, 2005 and 2020 were interpolated using 2002, 2010 and 2030 emissions estimates from the October 18, 2006 conformity determination.

2002-2030 Changes in Households, Employment, VMT, NOx, VOC and CO_2 for the 8-Hour Ozone Non-Attainment Area

	2002	2030	% Change
Households	2,893,646	4,162,621	44%
Employment	1,742,117	2,463,893	41%
Annual VMT (000,000's)	39,212	53,726	37%
NOx (tons/day)	259.232	34.899	-87%
VOC (tons/day)	101.117	39.41	-61%
CO2 (tons/year)	23,273,168	34,450,922	48%

Regional Average Rates for CO_2
(Grams per Vehicle Mile)

	2002	2010	2030
Major Road Network	506	527	546
Local Roads	454	476	490
School Bus	1,634	1,642	1,647
Transit Bus	2,402	2,350	2,334

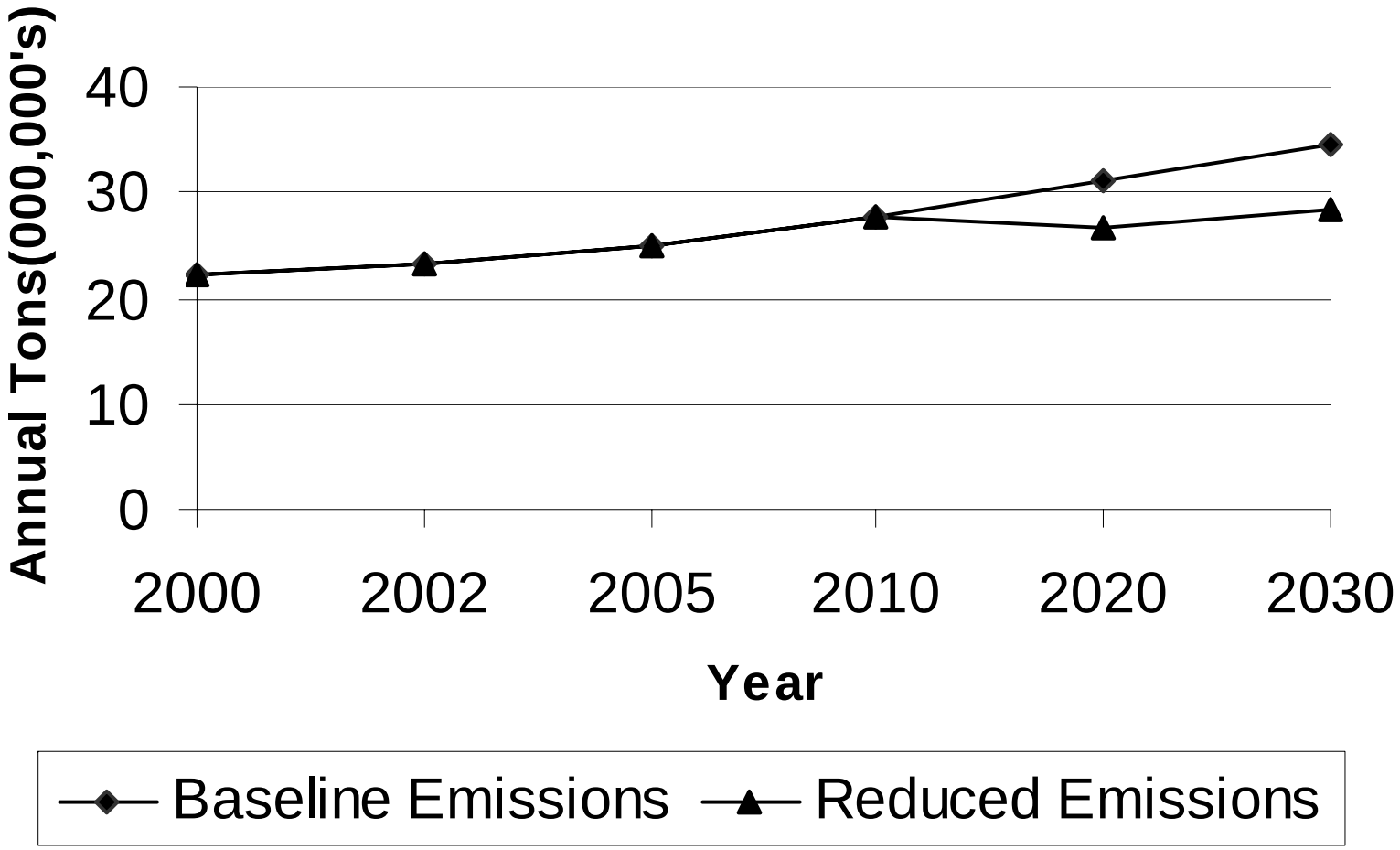
Vehicle Fleet and Demographic Data for the Washington Region by State

	DC	MD	VA	Washington Metro Area	National
Passenger Vehicles	178,665	935,998	889,426	2,004,089	105,955,155
Light Duty Trucks	63,193	568,131	549,240	1,180,563	97,974,626
Heavy Duty Trucks	8,936	85,160	69,829	163,925	15,389,261
Total Vehicles	250,794	1,589,289	1,508,495	3,348,578	219,328,042
Population	577,500	2,236,600	2,057,700	4,871,800	296,410,400
Vehicles per Person	0.43	0.71	0. 73	0.69	0.74
Households	252,000	811,500	771,500	1,835,000	122,671,734
Vehicles per Household	1.00	1.96	1.96	1.82	1.79
Hybrid Vehicles	923	2,640	8,280	11,843	405,911
Hybrid Vehicles per 1,000 People	1.60	1.18	4.02	2.43	1.37
Hybrid Vehicles per 1,000 Households	3.66	3.25	10.73	6.45	3.31
Hybrid Percent of Passenger Vehicles	0.52	0.28	0.93	0.59	0.38
Hybrid Percent of Total Vehicles	0.37	0.17	0.55	0.35	0.19

California Low Emission Vehicles II (CAL LEV II)

- More stringent emissions standards for greenhouse gases (CO_2, methane, nitrous oxide) and other pollutants
- Applies to automobiles and light trucks starting with the 2009 model year
- California requested EPA waiver in December 2005; EPA not planning to act until Fall 2008
- Eleven other states including Maryland plan to adopt CAL LEV II, and another six states are considering these standards

Reductions in Annual CO_2 Emissions with Regionwide CAL LEV II Vehicles



Reductions in Annual CO_2 Emissions (Millions of Tons) with Regionwide CAL LEV II Vehicles

	2002	2020	2030	% Change 2002 - 2030
Baseline	23.273	31.018	34.451	48%
CAL LEV II Reductions	0	4.386	5.993	-
Percent Reductions	0	14.1	17.4	-
Reduced Emissions	23.273	26.632	28.458	22%

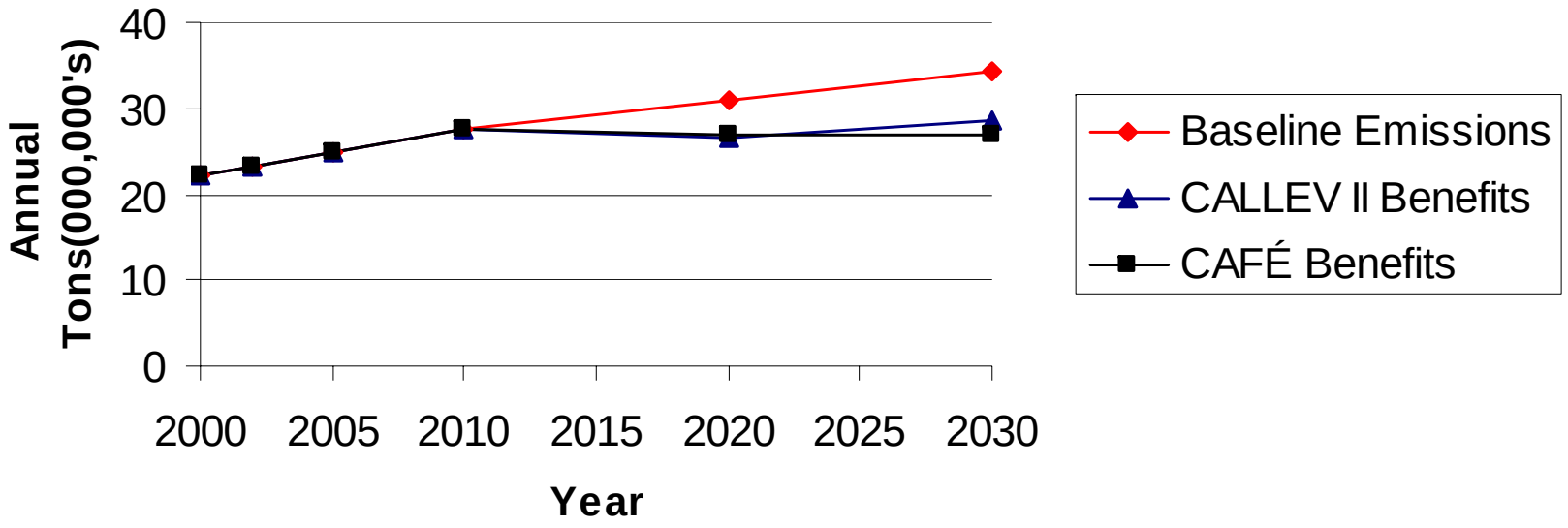
“35 mpg by 2020” Federal CAFE Standards

- Corporate average fuel economy (CAFE) standards would be raised to 35 mpg by 2020 for all cars, trucks, and sport utillity vehicles
- First substantial change in federal CAFE standards since 1975
- Included in Senate energy bill passed on Thursday, June 21, 2007
- House bill expected in July

Reductions in Annual CO_2 Emissions (Millions of Tons) with "35 mpg by 2020" Federal CAFE Standards

	2002	2020	2030	% Change 2002 - 2030
Baseline	23.273	31.018	34.451	48%
CAFE Reductions	0	4.185	7.512	-
Percent Reductions	0	13.5	21.8	-
Reduced Emissions	23.273	26.833	26.939	16%

Annual CO_2 Emissions Reductions for CAL LEV II and "35 mpg by 2020" CAFE Standards

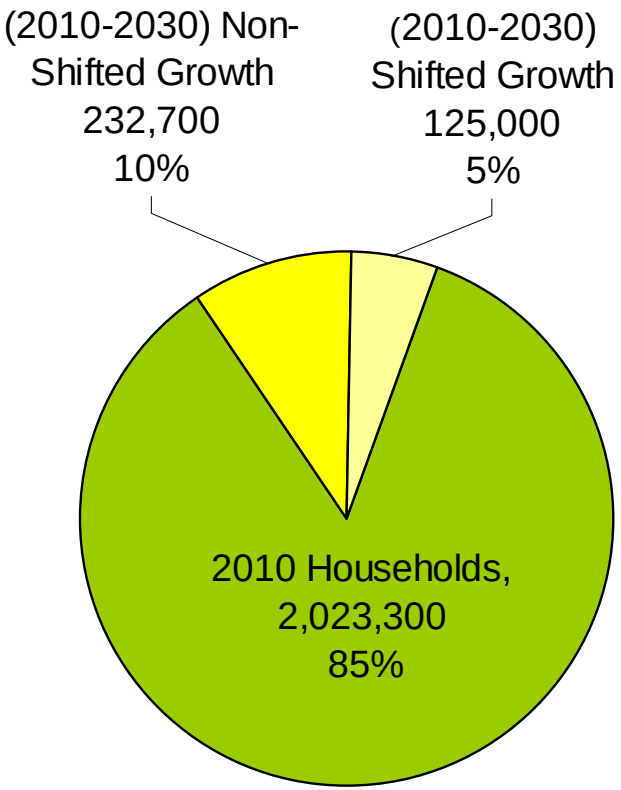


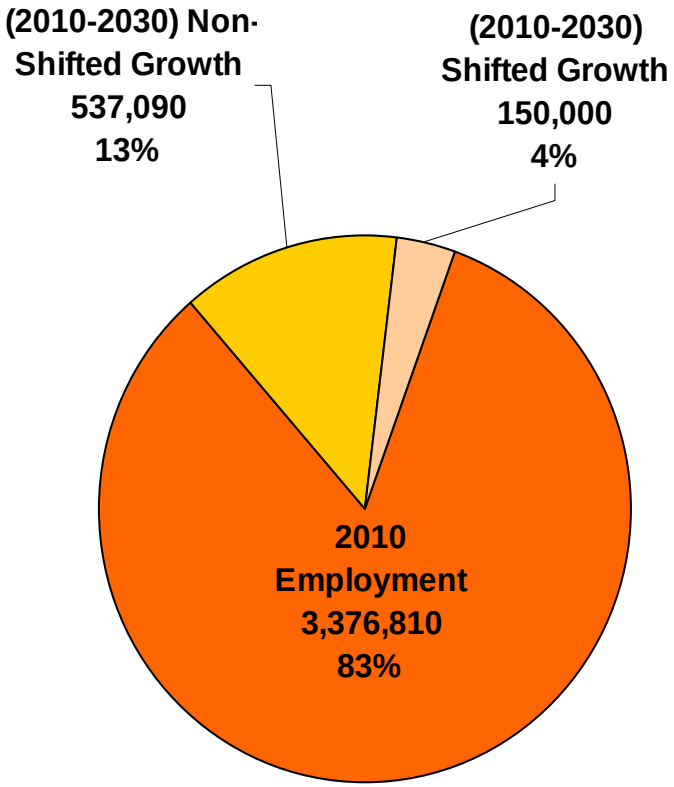
Additional CO2 Reductions Could be Achieved through Reductions in Vehicle Miles of Travel (VMT)

- Travel Demand Reduction Strategies such as Telecommuting, increased transit and ridesharing
- Land Use/Transportation strategies such as the TPB Scenarios
- Current programs/scenarios reduce 2030 VMT by one to two percent

2030 Household and Employment Growth:

TPB Transit Oriented Development Scenario





Conclusions

- VOC and NOx mobile emissions are declining significantly even though overall vehicle travel is growing, due primarily to cleaner vehicles and fuels
- CO_2 mobile emissions are growing steadily. To achieve CO_2 reductions we need to:
  - Reduce CO_2 emissions per vehicle mile (e.g. California LEV II standards, Federal CAFE Standards)
  - Reduce vehicle miles of travel (Demand management, land use/transportation strategies)