The Center for Climate Strategies

Helping States and the Nation Tackle Climate Change

TRB Climate Change Joint Sub-Committee

State Climate Change and Energy Action Plans – Nationwide Options and Results

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Principal Consultant

January 13, 2010

Economics
Public Policy
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Jack Faucett Associates
Since 1963

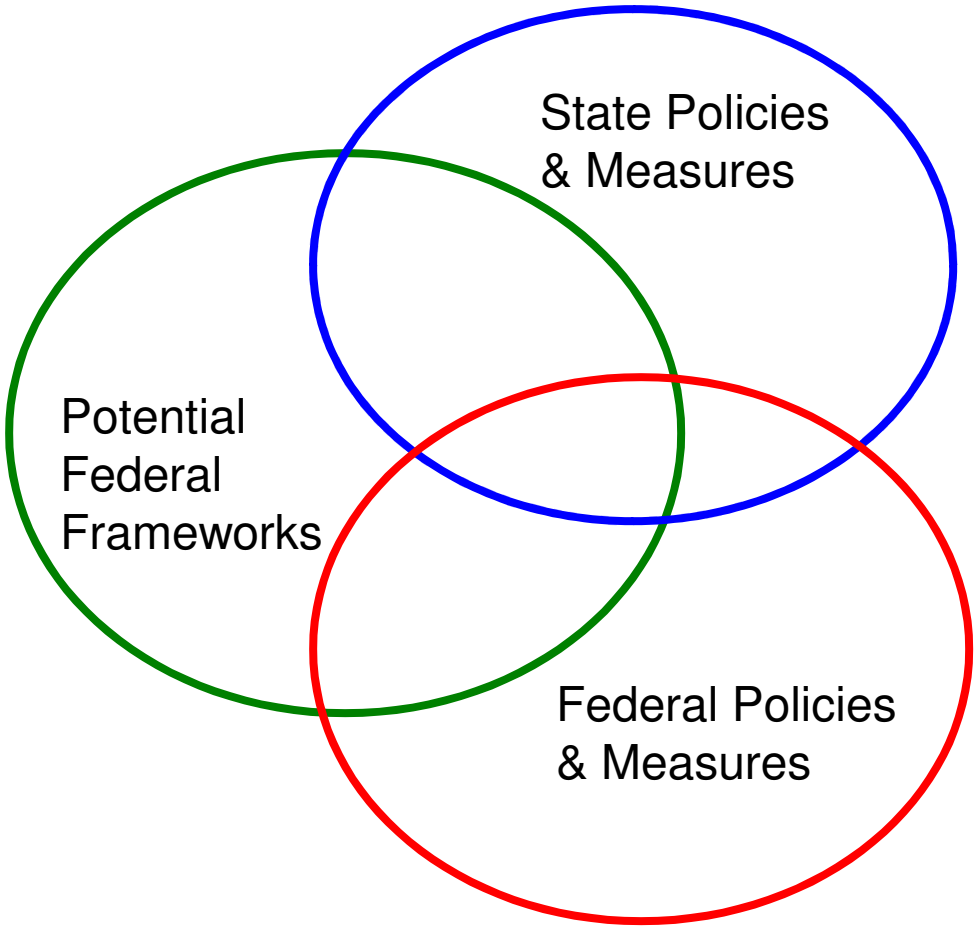
- www.climatestrategies.us

- http://www.jfaucett.com/
- http://www.jfaucett.com/Climate%20Change.html

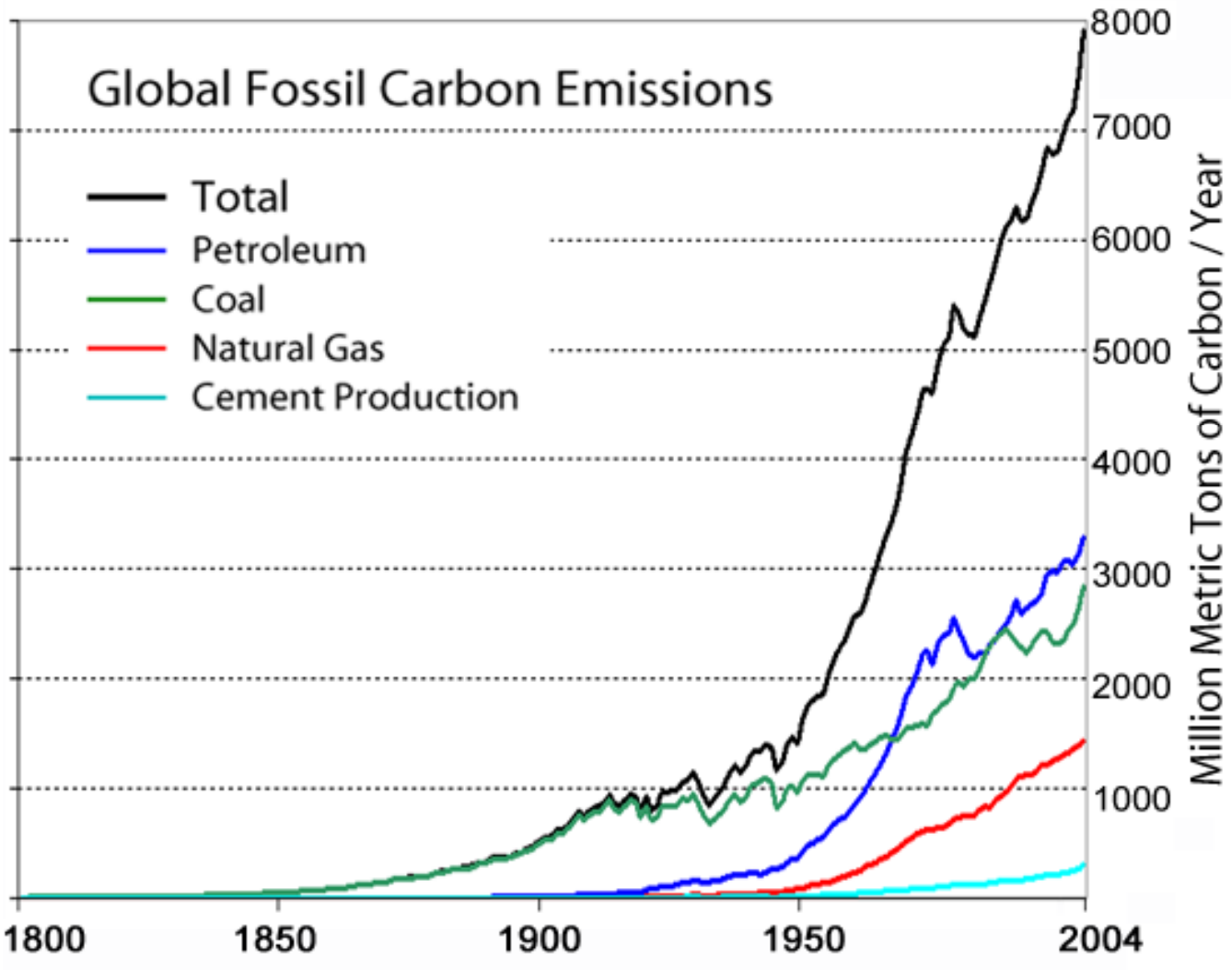
Climate Action Strategies and Data for 50 States

- Jack Faucett Associates (JFA) and the Center for Climate Strategies (CCS) are completing 50 states worth of data and policy work on transportation sector ghg mitigation reduction potential, costs, and economic impacts.
- Recently completed data analysis was prepared for the Southern Governor's Association (SGA) and for the Midwest Transportation Air Quality Summit“
- The work completed for these two regions of the United States completes development of data and major policy opportunities analysis for the United States.
- The 50 states data is organized into a national database that may be used to inform potential local, regional, and state actions, congressional discussions of federal legislation, and international discussions of the potential for the United States to reach the ghg reduction target levels.

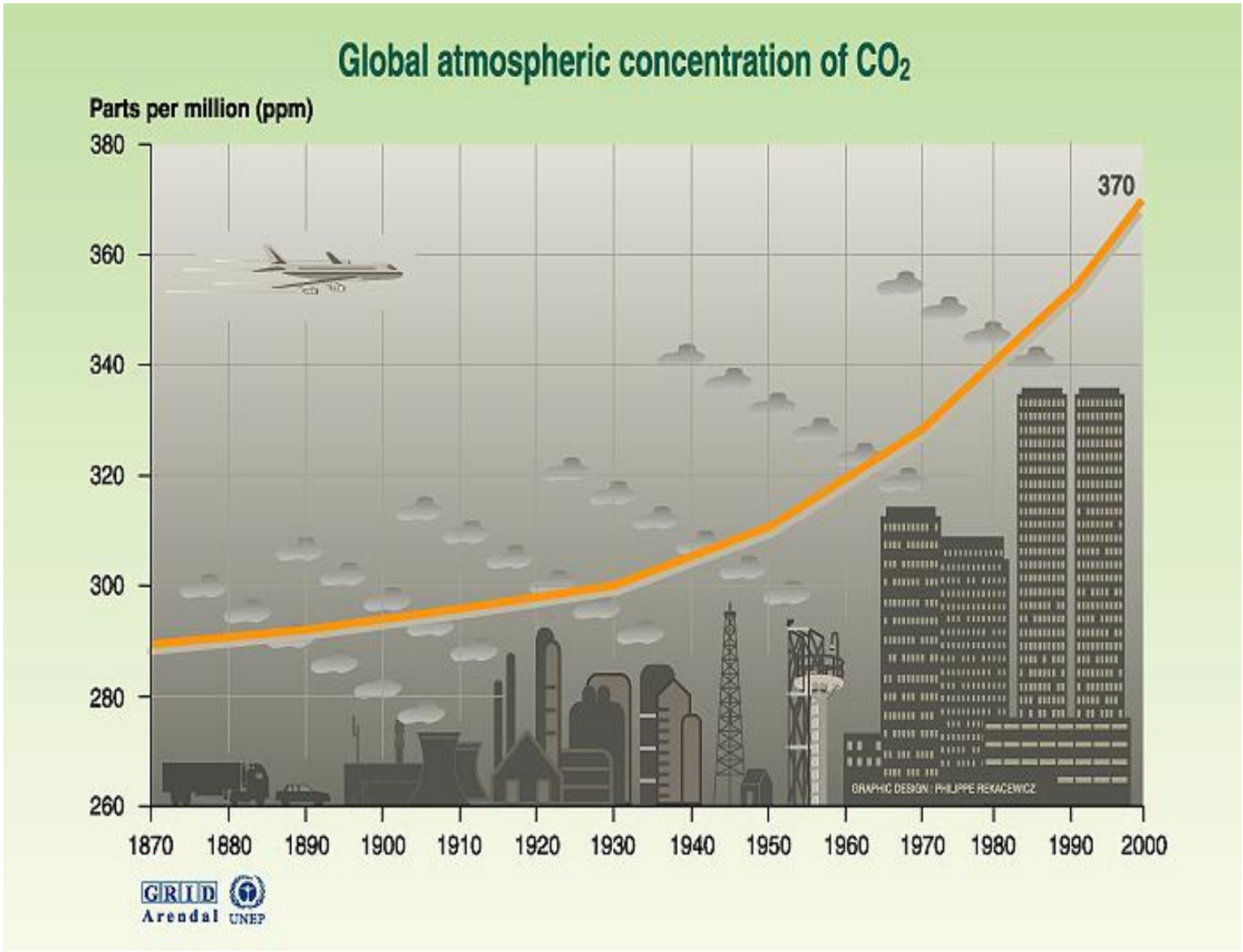
State and Federal Policy Integration



Greenhouse Gas Emissions

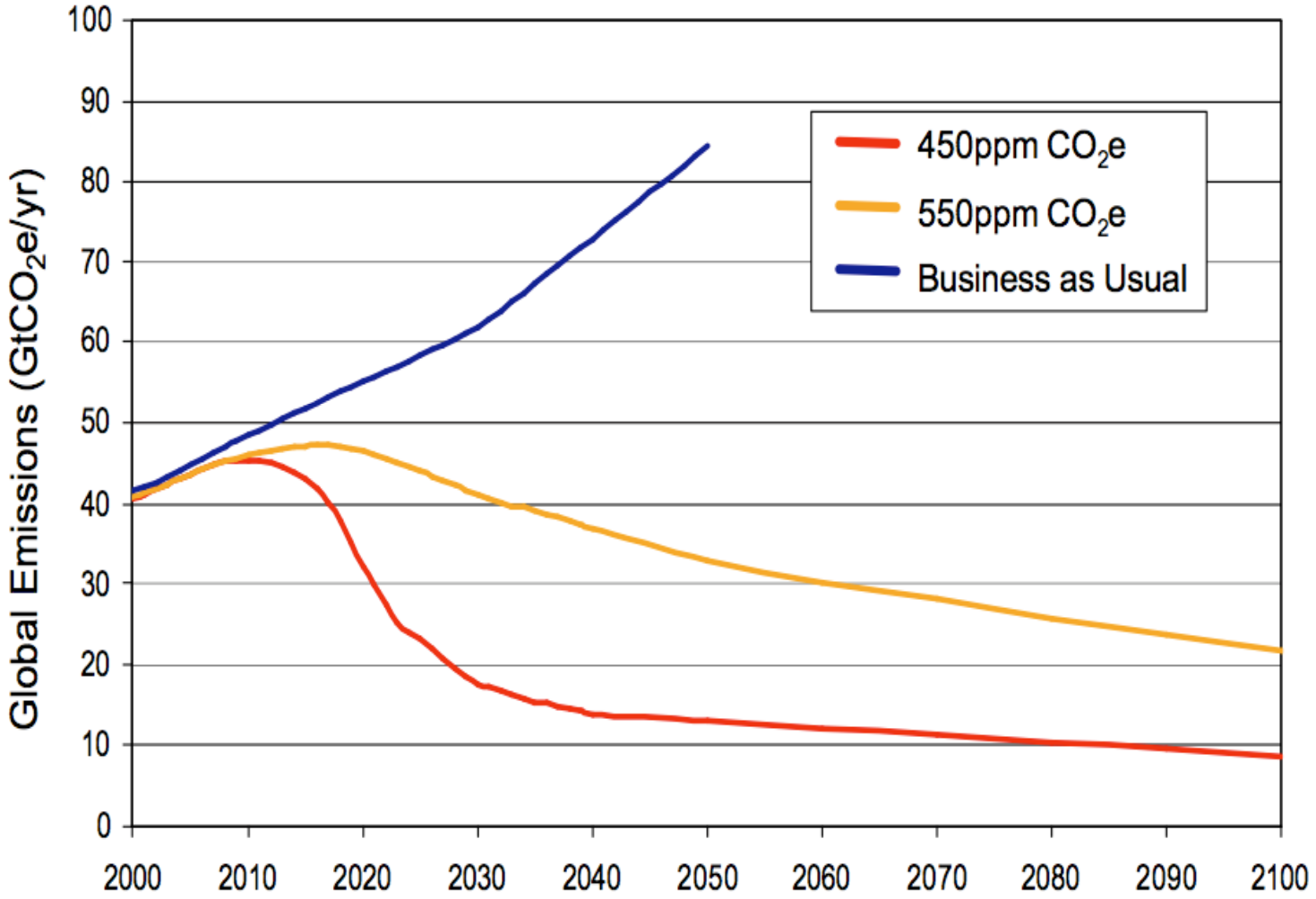


U.S. Department of Energy, Maryland, G., T.A. Boden, and R.J. Andres, 2007.



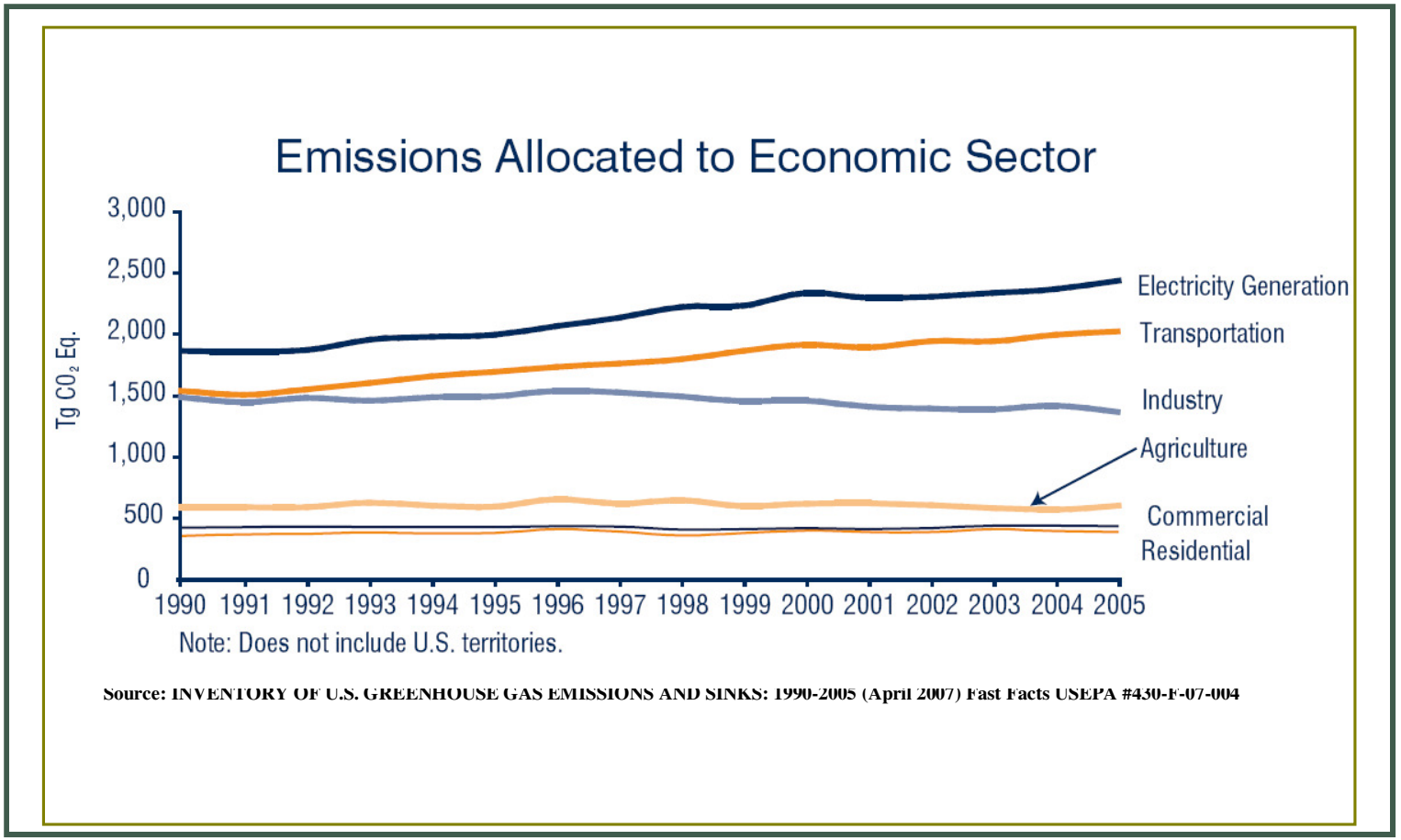
Sources: TP Whorf Scripps, Mauna Loa Observatory, Hawaii, institution of oceanography (SIO), university of California La Jolla, California, United States, 1999

Emissions Paths to Stabilisation

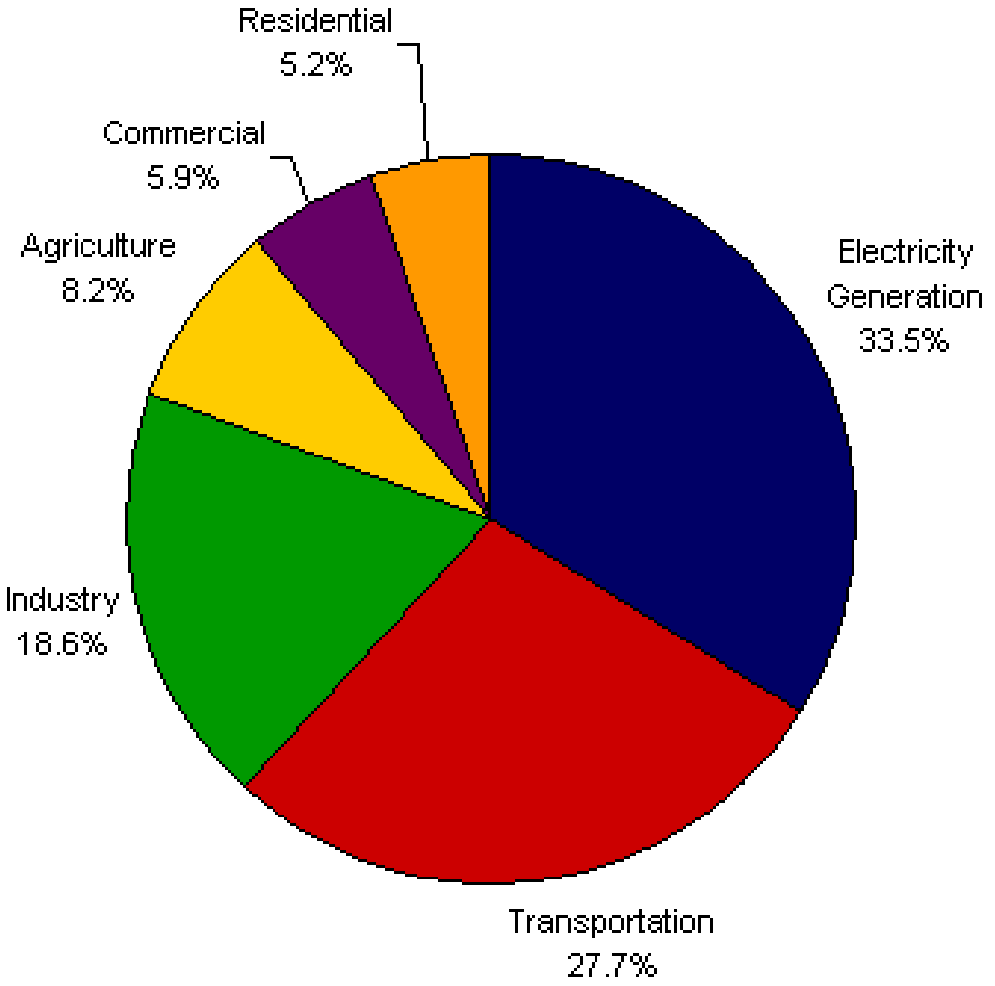


Source: Stern Review -

Inventories Show Transportation as Sector accounting for the Second Largest Amount of GHG Emissions

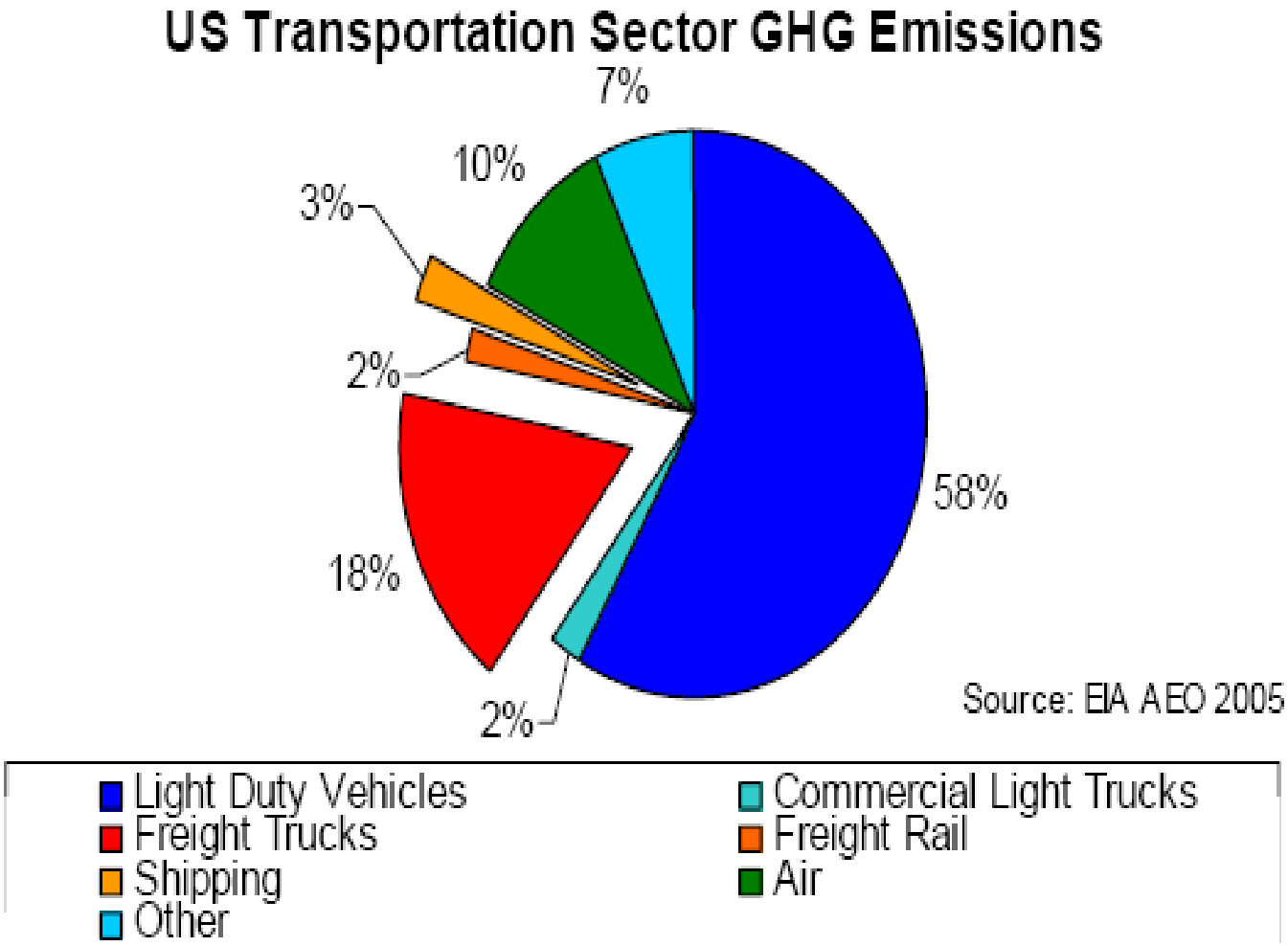


The Contribution of the Transportation Sector to Greenhouse Gas Emissions in the United States

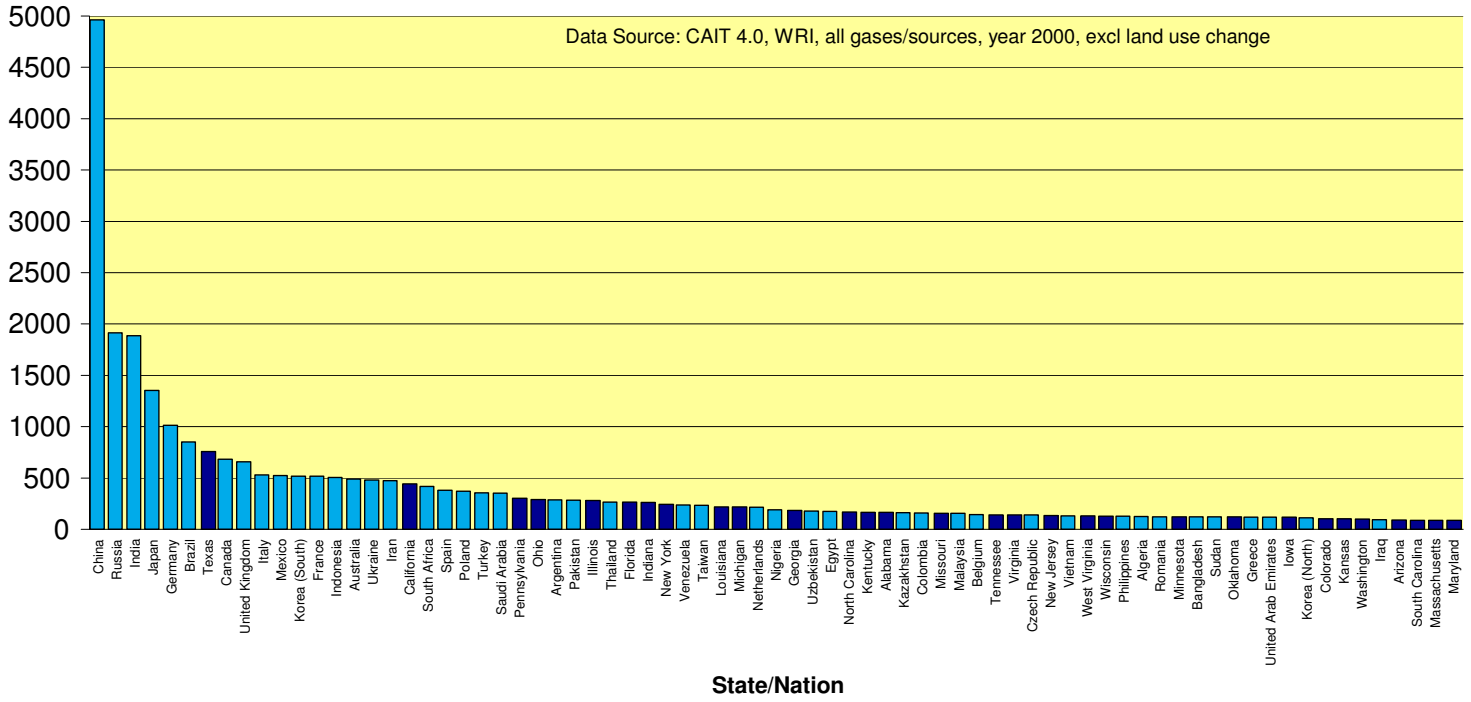


- The transportation sector (red) produces 28% of GHG emissions in the United States

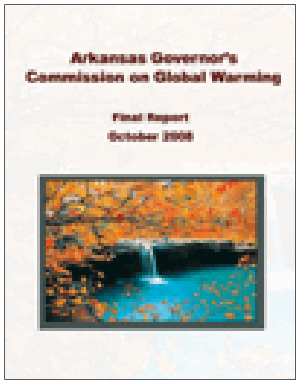
Distribution of Transportation Sector GHG Emissions by Mode of Travel



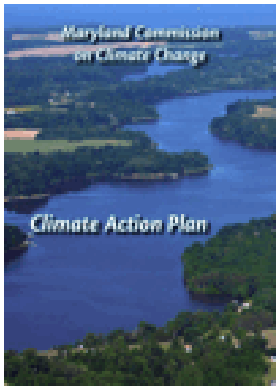
US States:
30 of Top 75 GHG Emitters



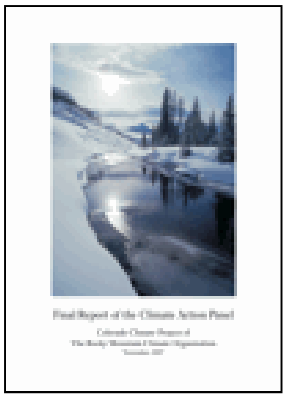
Many States are Undertaking and Completing Climate and Energy Action Plans



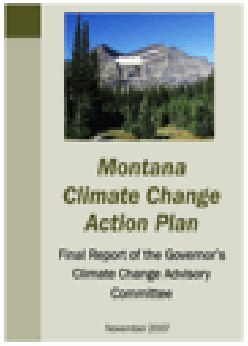
Arkansas Commission on Global Warming



Maryland Commission on Climate Change

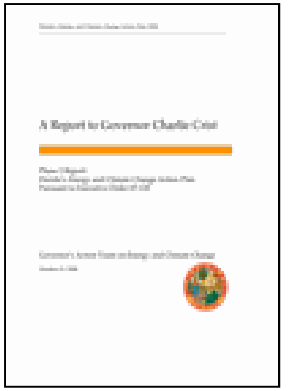


Colorado Climate Action Plan



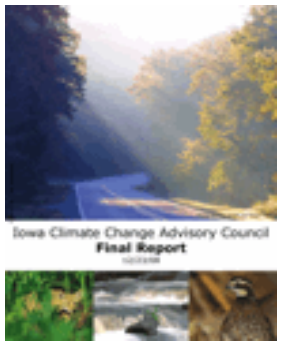
Montana Climate Change Committee

Virginia Commission on Climate Change

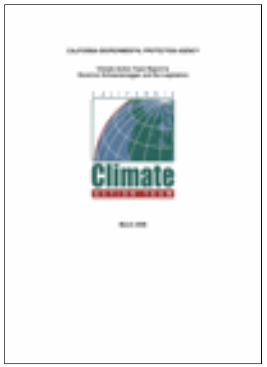


Florida Climate Change Action Team

Many States are Undertaking and Completing Climate and Energy Action Plans



Iowa Climate Change Advisory Council



California Climate Action Team

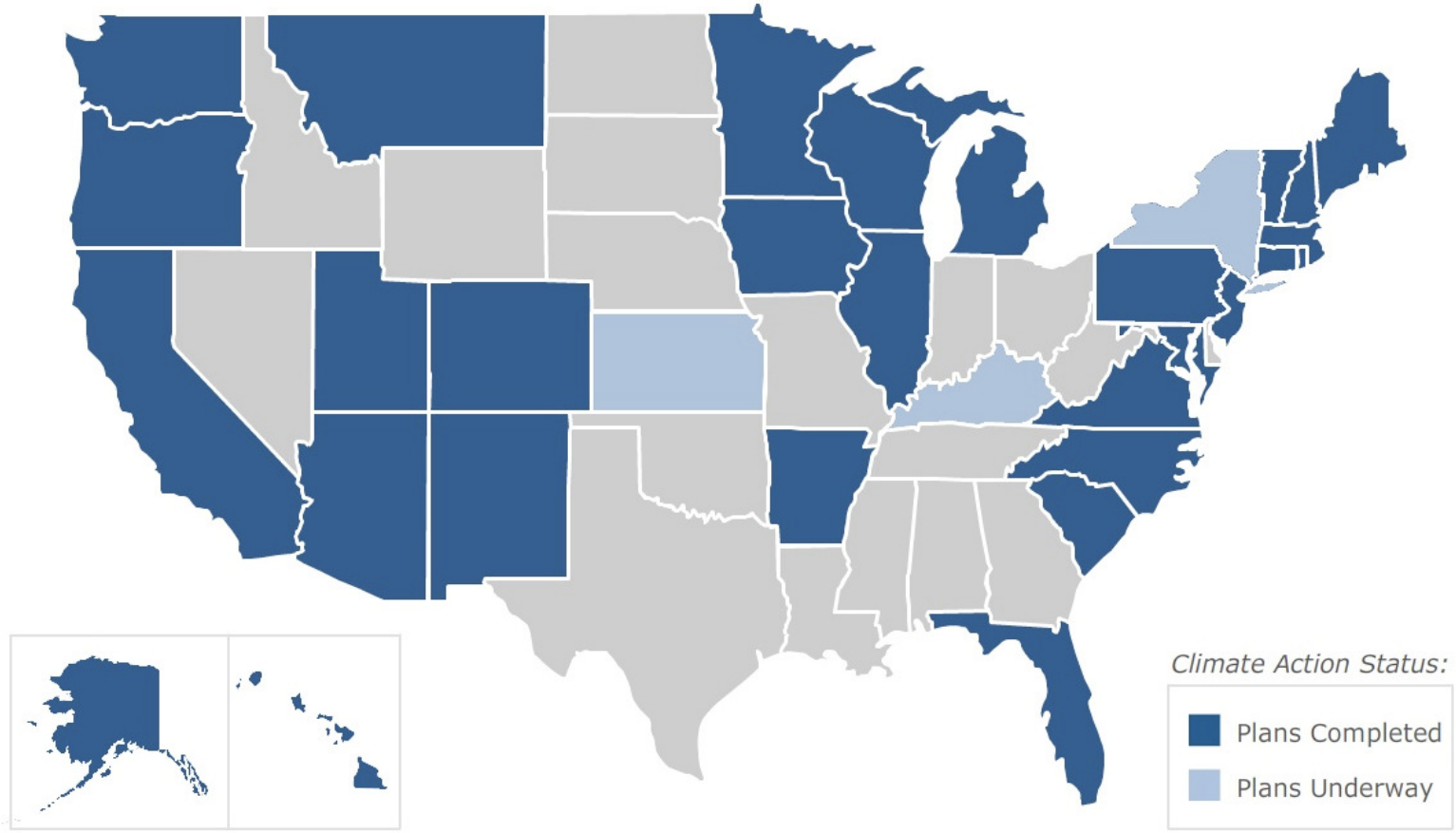
New Mexico Climate Change Advisory Group

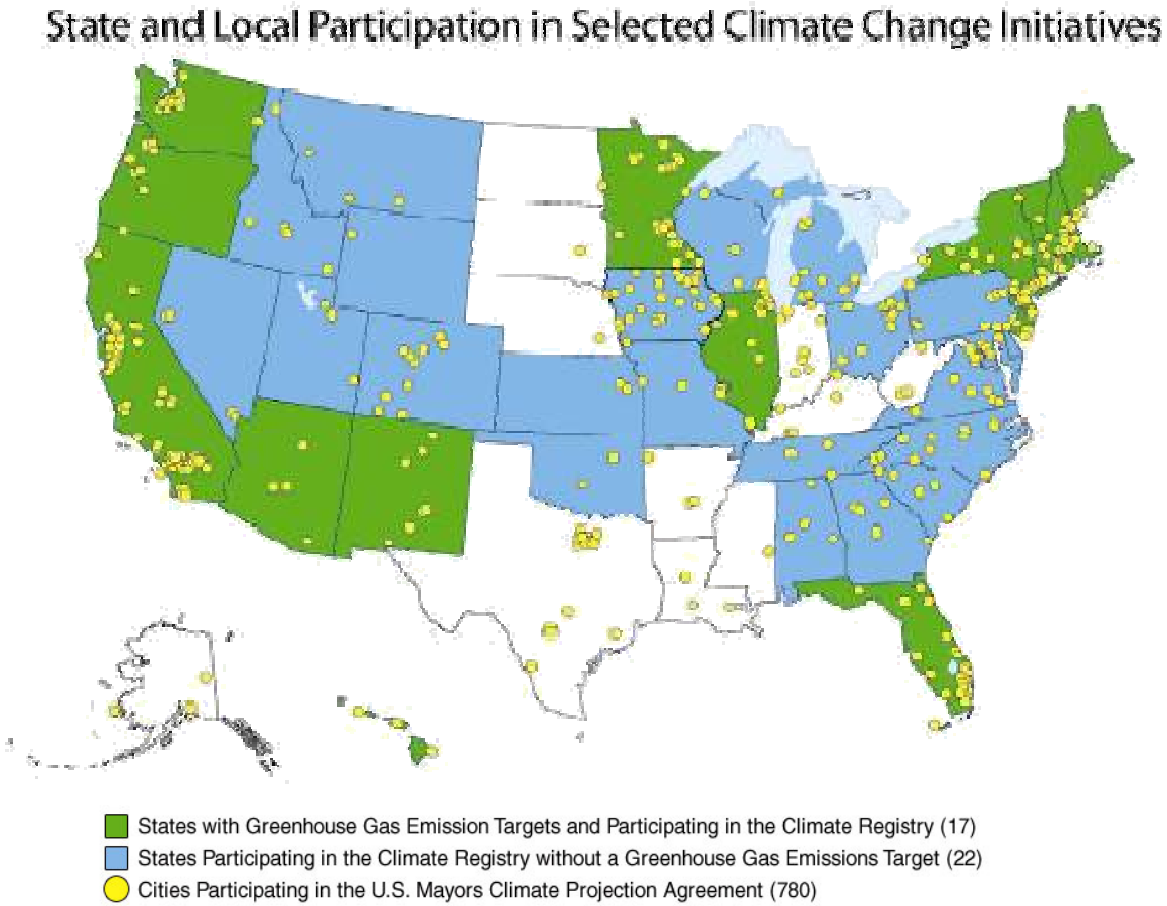
North Carolina Climate Action Plan

Washington Climate Action Team

Arizona Climate Change Advisory Group

States with Climate Action Plans Completed or Underway




State and Local Participation in Selected Climate Change Initiatives
States with Greenhouse Gas Emission Targets and Participating in the Climate Registry (17)
States Participating in the Climate Registry without a Greenhouse Gas Emissions Target (22)
Cities Participating in the U.S. Mayors Climate Projection Agreement (780)
Prepared by the Committee on Energy and Commerce staff – February 2008

Recent Papers on State Plans

Wheeler, Stephen M.,

State and Municipal Climate Change Plans: The First Generation,

Journal of the American Planning Association, (JAPA) (Autumn 2008)

Lutsey, Nicholas and Daniel Sperling,

America's bottom-up climate change mitigation policy

Energy Policy 36 (2008)

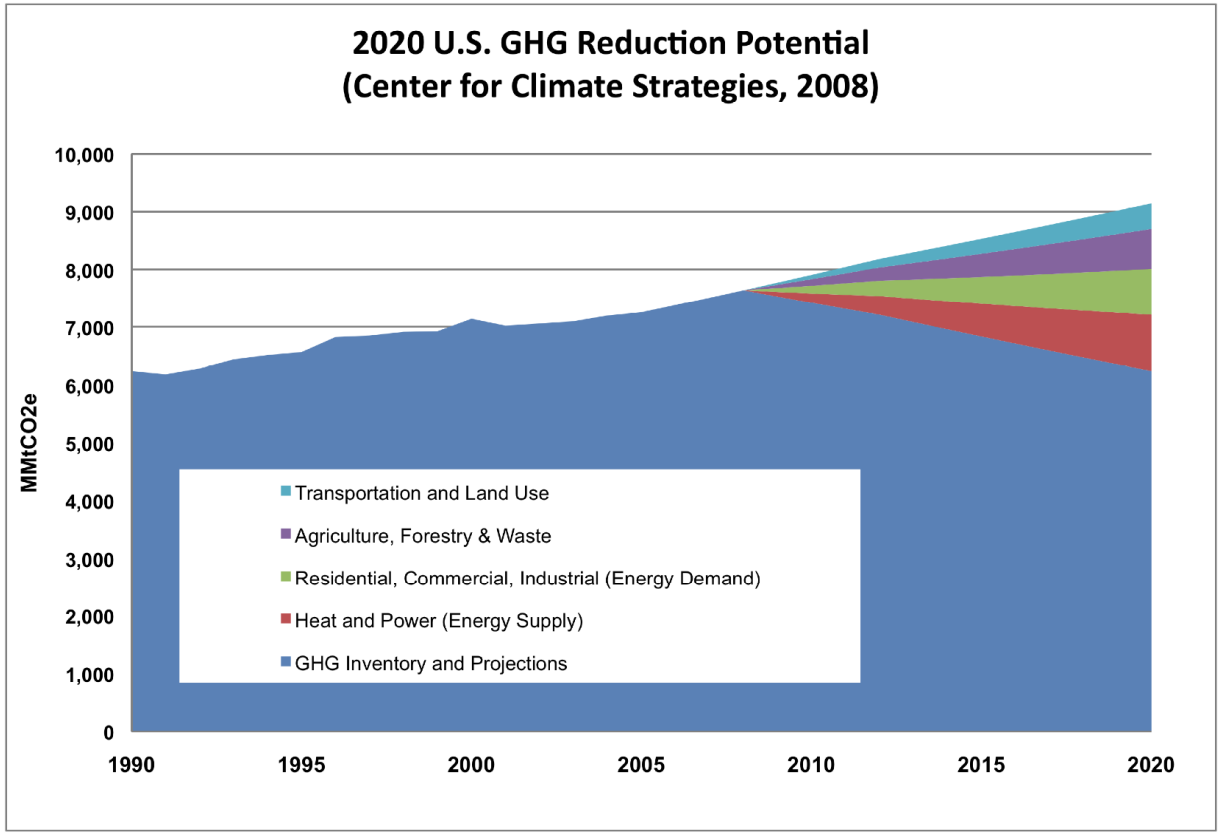
Batac, Tiffany and Lewison Lem,

Transportation Strategies to Mitigate Climate Change,

Leadership and Management in Engineering,

American Society for Civil Engineering (ASCE) (July 2008)

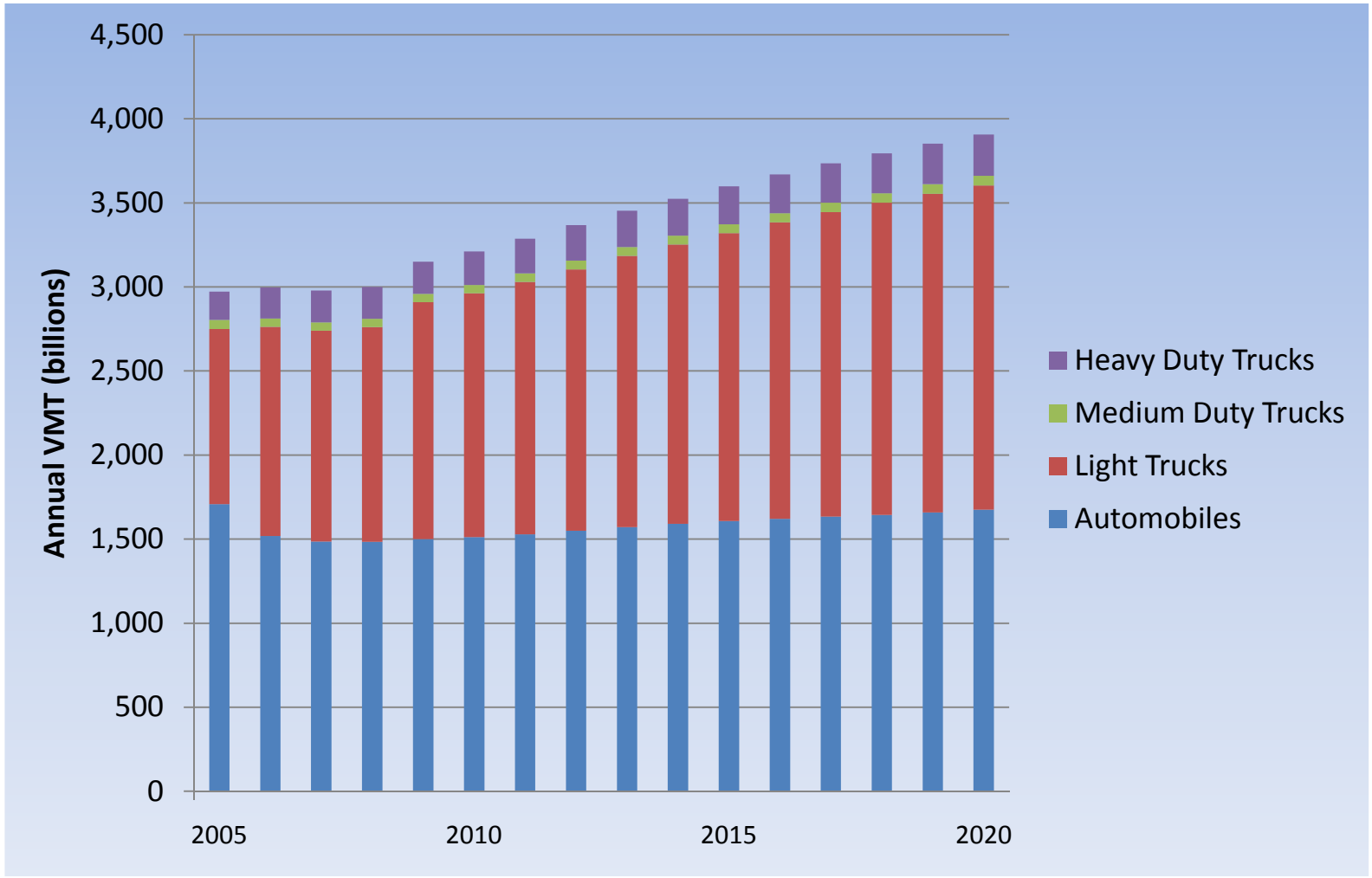
National Scale Up of State Climate Plan Results



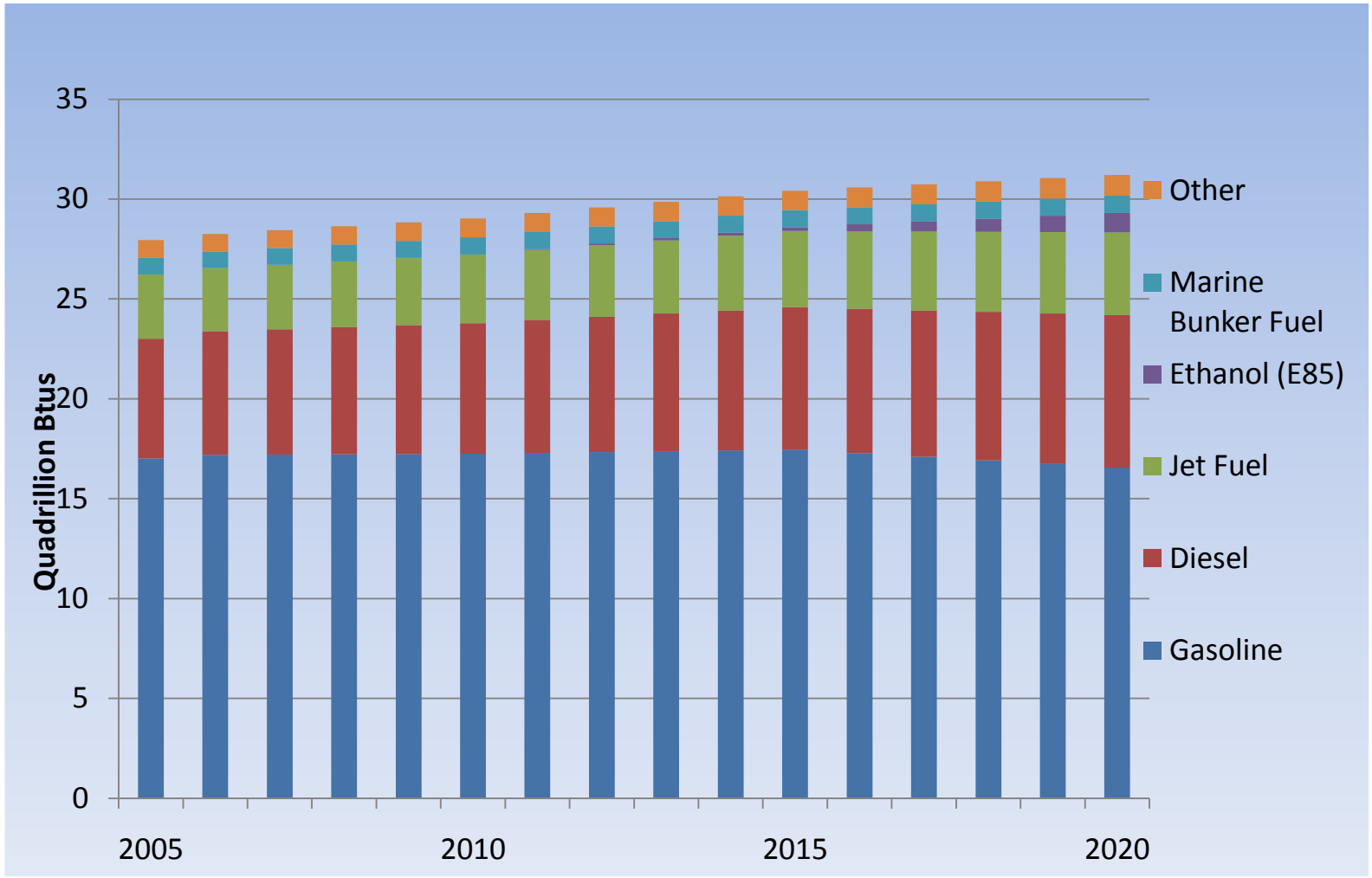
CCS National Scale up Approach

- National scale-up of GHG mitigation policy reduction potential is built upon work done for Southern Governors' Association (SGA)
- CCS used results from 16 state planning processes to project GHG reduction potential and costs or savings for 50 states and 2 territories
- State plans used are AK, AR, AZ, CO, FL, IA, MD, MI, MN, MT, NC, NM, PA, SC, VT, WA

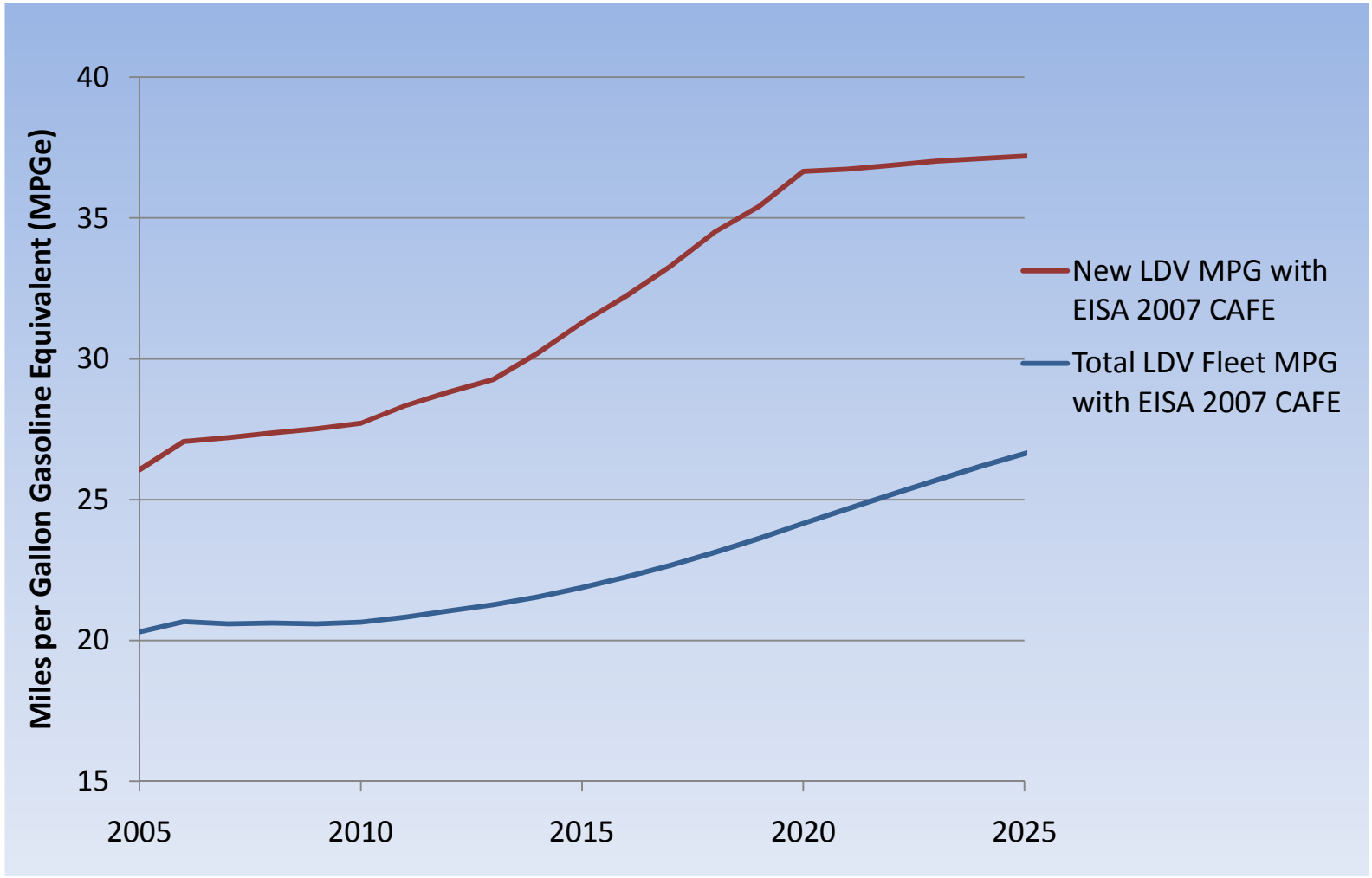
United States (DOE/AEO) Baseline Forecast of Total Vehicle Miles Traveled through 2020



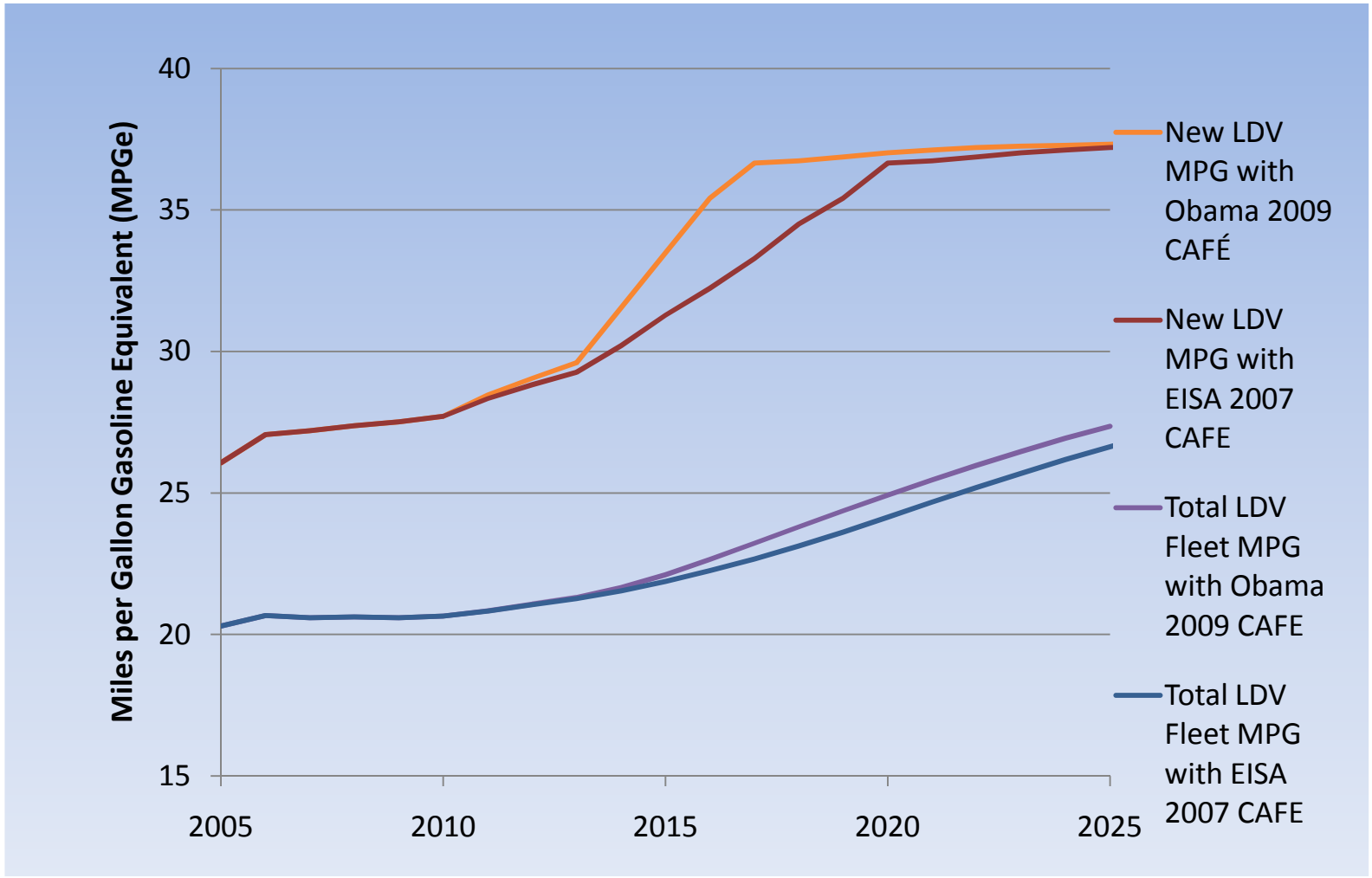
United States (DOE/AEO) National Transportation Fuel Consumption Baseline Forecast through 2020



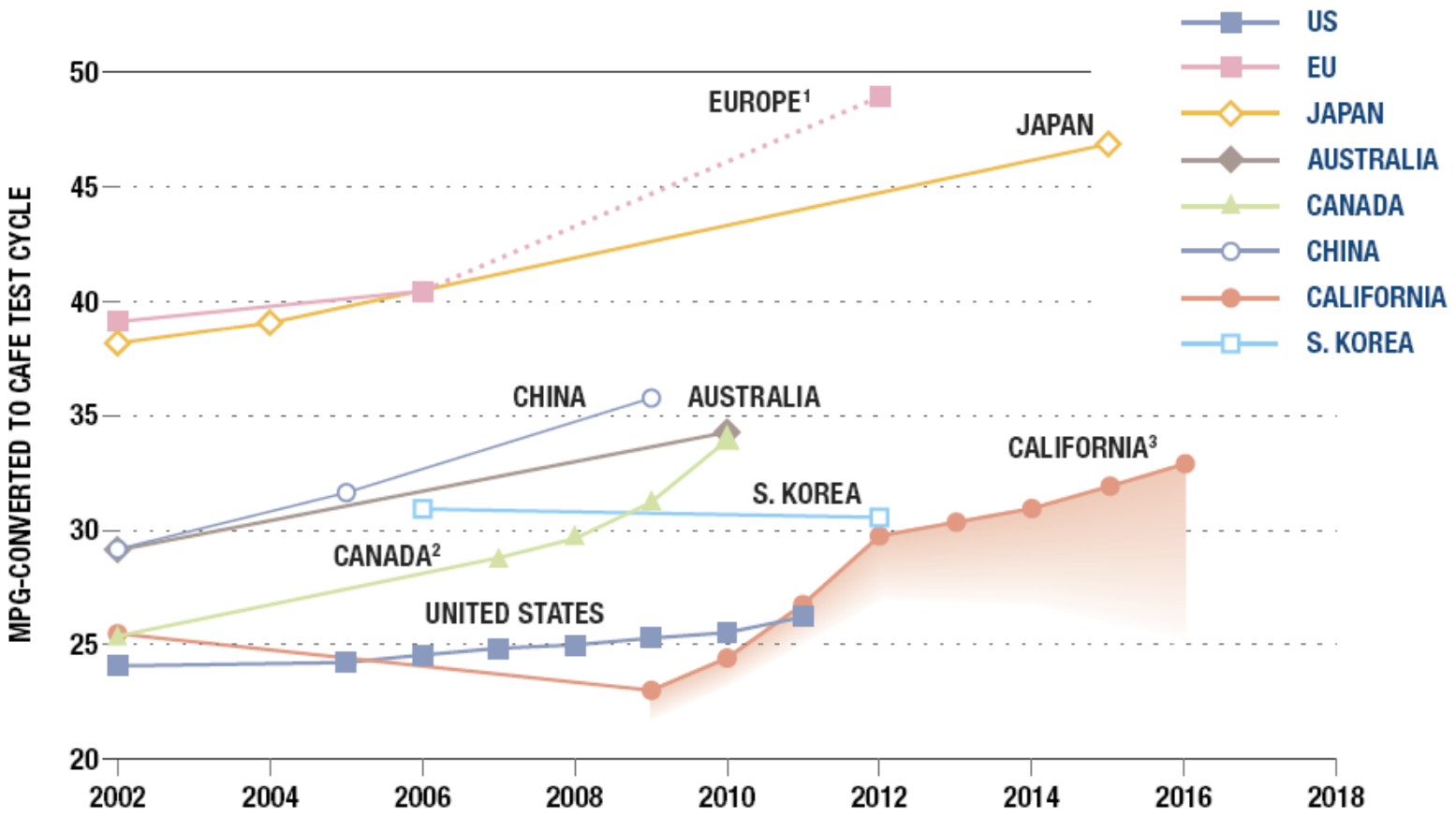
US Forecast of New LDV and Total LDV Fleet Fuel Efficiency with EISA 2007 CAFE



US Forecast New LDV and Total LDV Fleet Fuel Efficiency with Obama 2009 CAFE



Comparison of Global Vehicle GHG Emissions and Fuel Economy Standards



(http://www.theicct.org/documents/ICCT_GlobalStandards_2007.pdf)

Analysis of Six "SuperOptions" for the Transportation and Land Use Sector

Estimates of the emissions reduction potential effectiveness and the cost analysis for six (6) super-option policies for the Transportation and Land Use (TLU) sector:

1. Vehicle Purchase Incentives
2. Renewable Fuel Standard (RFS)
3. Truck Anti-Idling
4. Truck to Rail Freight Mode Shift
5. Transit
6. Smart Growth/Land Use

The first policy option scenario assumes a set of vehicle purchase incentives that encourages the purchase of more new fuel-efficient light-duty vehicles on a nationwide basis.

The second policy option scenario increases the portion of the nation's on-road transportation fuel supply that consists of biofuels in a manner consistent with a national Renewable Fuel Standard (RFS) of "20 by 20" (20% biofuels by the year 2020).

The third policy option scenario reduces idling by heavy-duty vehicles through national truck-stop electrification (TSE) and through electrification of truck refrigeration units (TRUs) at refrigerated freight loading and unloading points.

The fourth policy option scenario shows the effects of significantly shifting the nation's goods movement from on-road truck carriers to railroad carriers.

The fifth policy option scenario simulates the effects of doubling the amount of public transportation ridership on a national basis.

The sixth policy option scenario models the effect of nationwide adoption of a set of strategies that are commonly referred to as 'smart growth' policies, which affect the development and use of land in urban areas.

Scenario Analysis using VISION tool

- United States Department of Energy's (USDOE) VISION spreadsheet tool.
- Developed by the Argonne National Laboratory
- VISION is an Excel-based model that forecasts the potential energy use, oil use, and carbon emission impacts of advanced LDV and HDV technologies and alternative fuels.

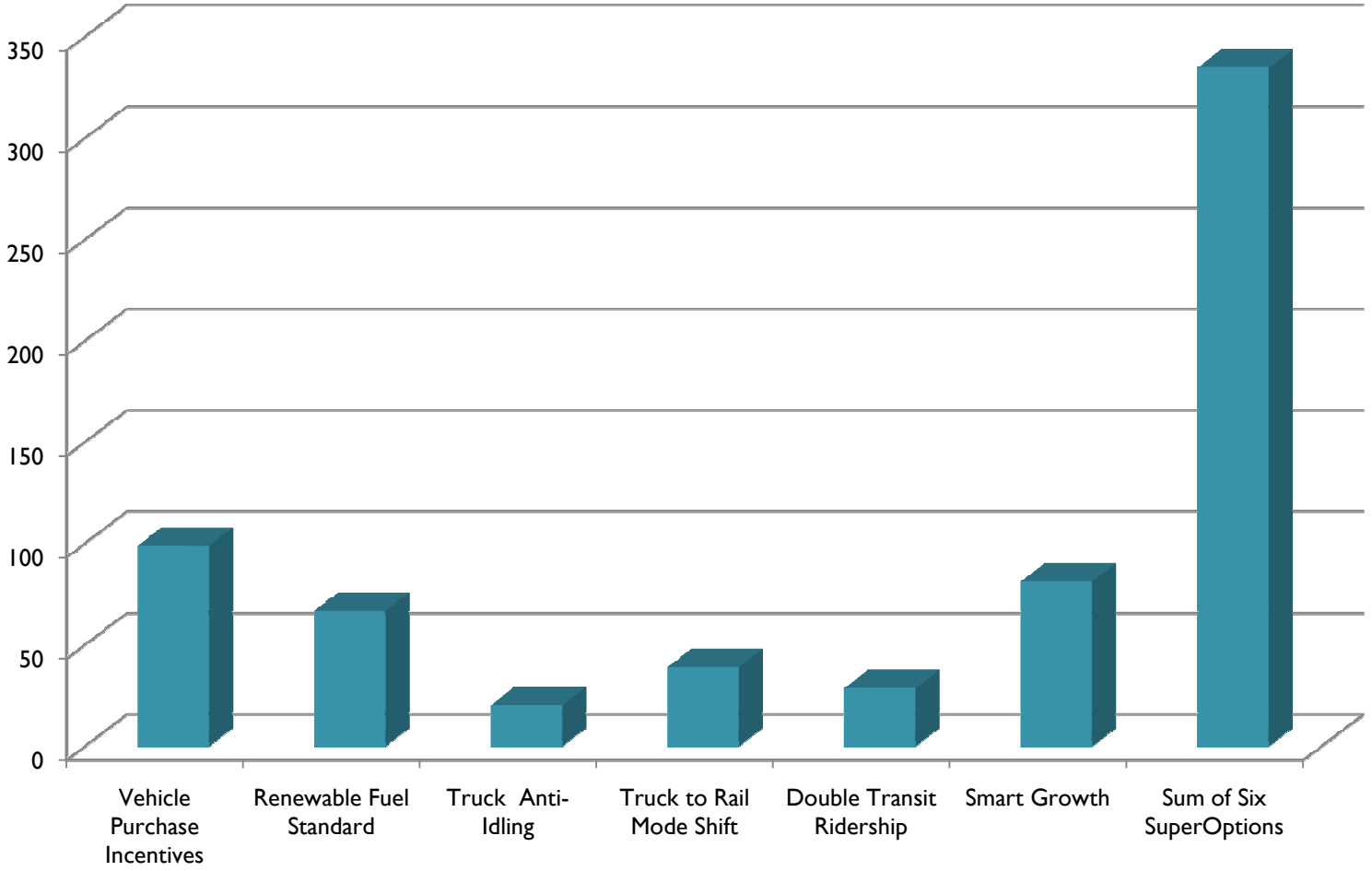
Scenario Analysis using VISION tool

- VISION recommended in a study conducted for the American Association of State Highway and Transportation Officials (AASHTO) and the Transportation Research Board (TRB) in 2006.
- The report for the National Cooperative Highway Research Program recommended adaptation and use of the national-level VISION tool.
- The report describes VISION as "a spreadsheet tool designed for quick analyses of the impacts of changes in vehicle technology shares, fuel prices, and VMT growth on carbon emissions at the national level."

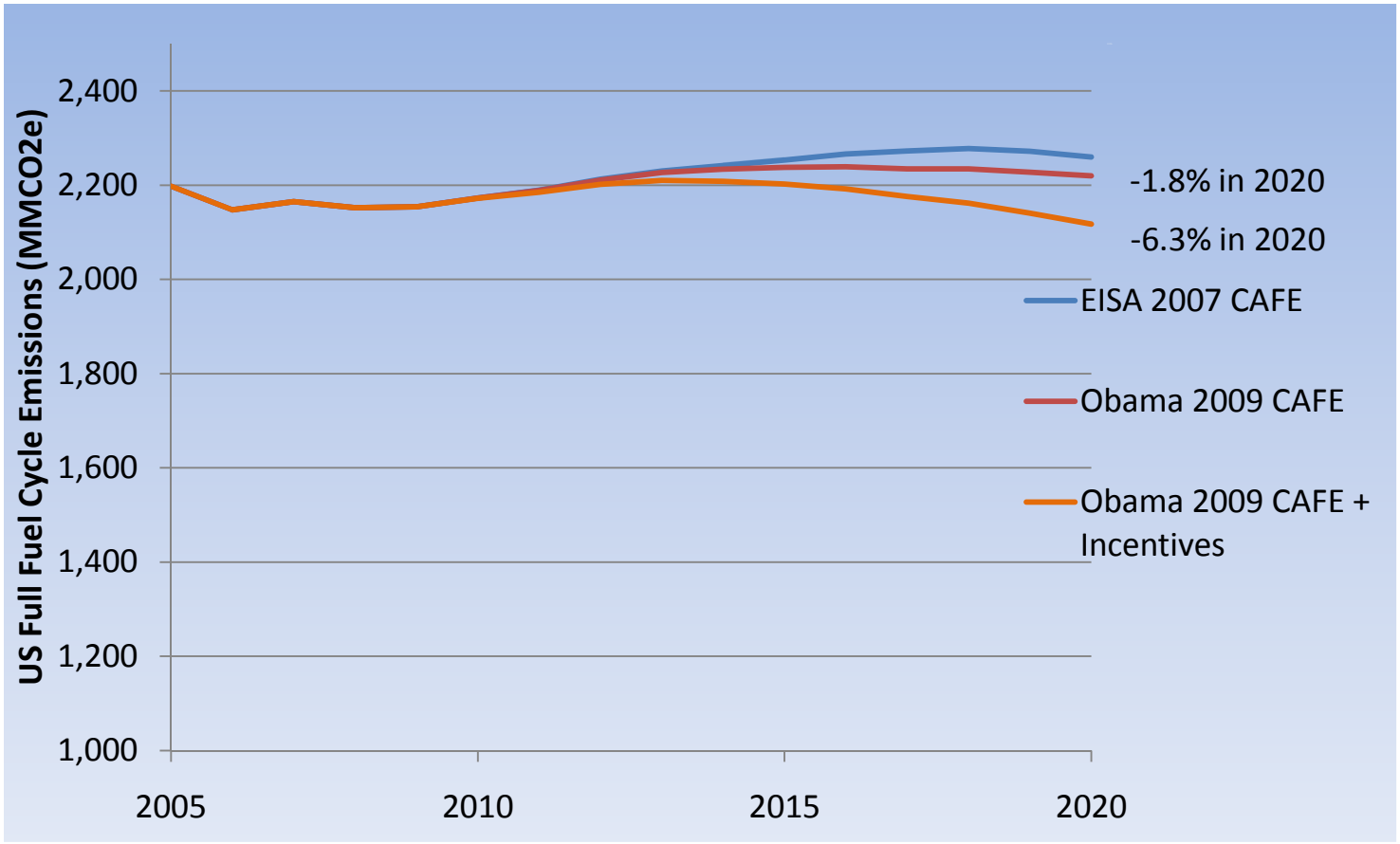
Year 2020 Scenario Results

Super Option	2020 MMtCO2e Est.
Vehicle Purchase Incentives	98.8
Renewable Fuel Standard	66.8
Truck Anti-Idling	20.3
Truck to Rail Mode Shift	39.1
Double Transit Ridership	28.6
Smart Growth	81.2

United States Estimates of GHG Reduction Potential (MMtCO2e) 2020



(1) US Potential for GHG Emissions Reductions from Vehicle Purchase Incentives



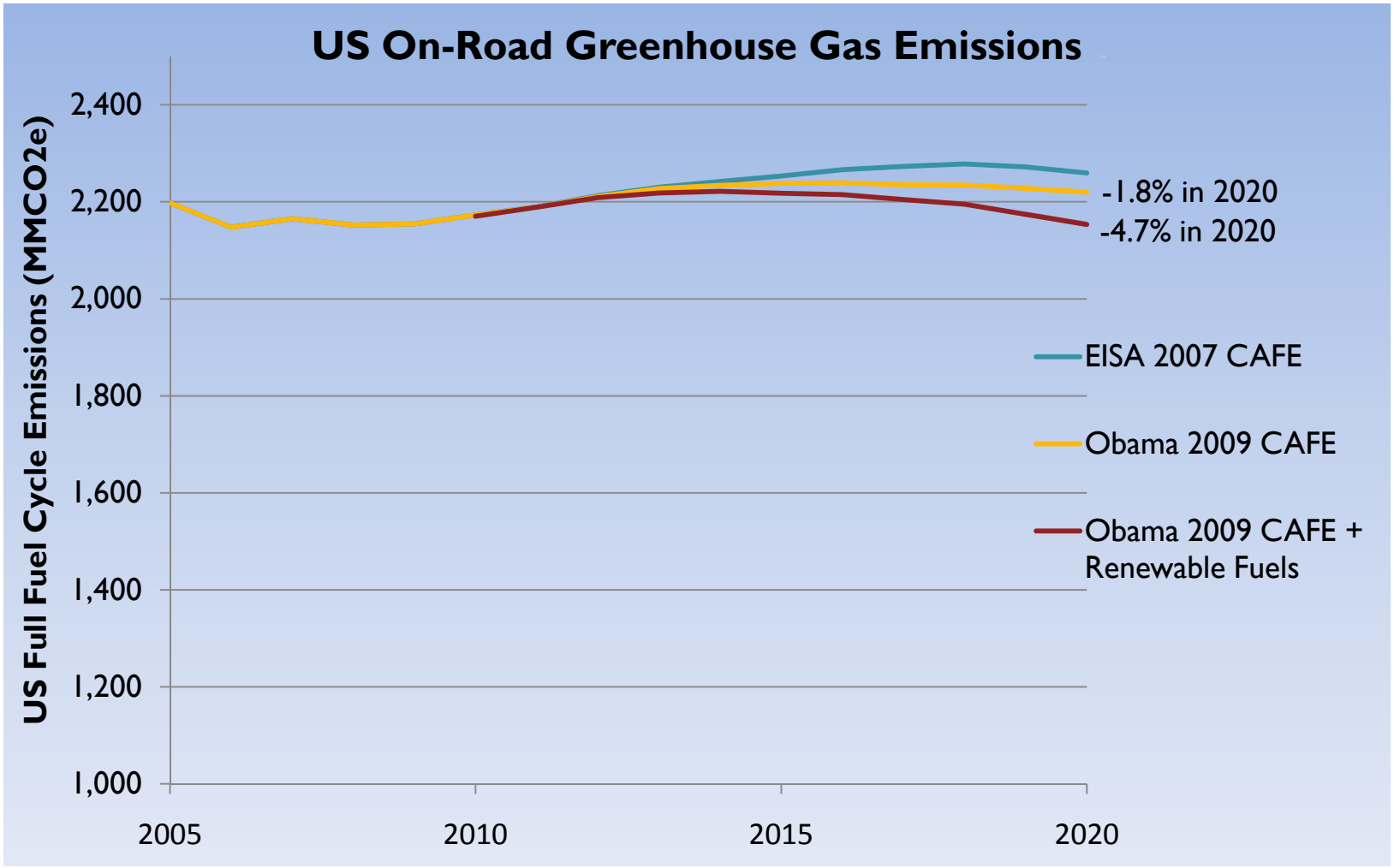
(1) Vehicle Purchase Incentives: Year 2020 Estimates

- 7.3 Billion Gallons in Gasoline and Diesel Savings
- 98.8 MMtCO2e Reduction in GHG Emissions

- $12.5 B Increase in Vehicle Costs
- $30.9 B Decrease in Fuel Costs
- $18.4 B Decrease in Net Costs
- $78.9 in net savings $/ton Cost-Effectiveness

(Year 2007 dollars)

(2) US Potential for GHG Emissions Reductions from Advanced Biofuels



(2) Advanced Biofuels: Year 2020 Estimates

- 7.2 B Gallons in Gasoline Savings
- 10.7 B Gallons increase Ethanol Use
- 5.1 B Gallons biodiesel replacing diesel

- 66.8 MMtCO2e Reduction in GHG Emissions

(3) Truck Anti-Idling: Year 2020 Estimates

- 1.7 Billion Gallons in Diesel Fuel Savings
- 20.3 MMtCO2e Reduction in GHG Emissions

- $2.2 B Increase in Vehicle & Equipment Costs
- $3.2 B Decrease in Diesel Fuel Costs
- $1.0 B Decrease in Net Costs
- $49.8 in net savings $/ton Cost-Effectiveness

(Year 2007 dollars)

(4) Freight Truck to Rail Mode Shift: Year 2020 Estimates

- 3.0 Billion Gallons in Diesel Fuel Savings
- 39.1 MMtCO2e Reduction in GHG Emissions

- $2.9 B Increase in Vehicle & Infrastructure Costs
- $10.5 B Decrease in Diesel Fuel Costs
- $7.6 B Decrease in Net Costs
- $195.7 in net savings $/ton Cost-Effectiveness

(Year 2007 dollars)

(5) "Double" Transit Ridership: Year 2020 Estimates

- 2.4 Billion Gallons in Auto Gasoline Savings
- 28.6 MMtCO2e Reduction in GHG Emissions

- Capital and O&M Costs not yet estimated
- $6 B Decrease in Auto Gasoline Fuel Costs

(Year 2007 dollars)

(6) Smart Growth: Year 2020 Estimates

- 6.9 Billion Gallons in Auto Gasoline Savings
- 81.2 MMtCO2e Reduction in GHG Emissions

- Capital and O&M Costs not yet estimated
- $17.4 B Decrease in Auto Gasoline Fuel Costs

(Year 2007 dollars)

Global Comparisons Show Gradient of Per Capita Transportation Energy Use in Urban Areas

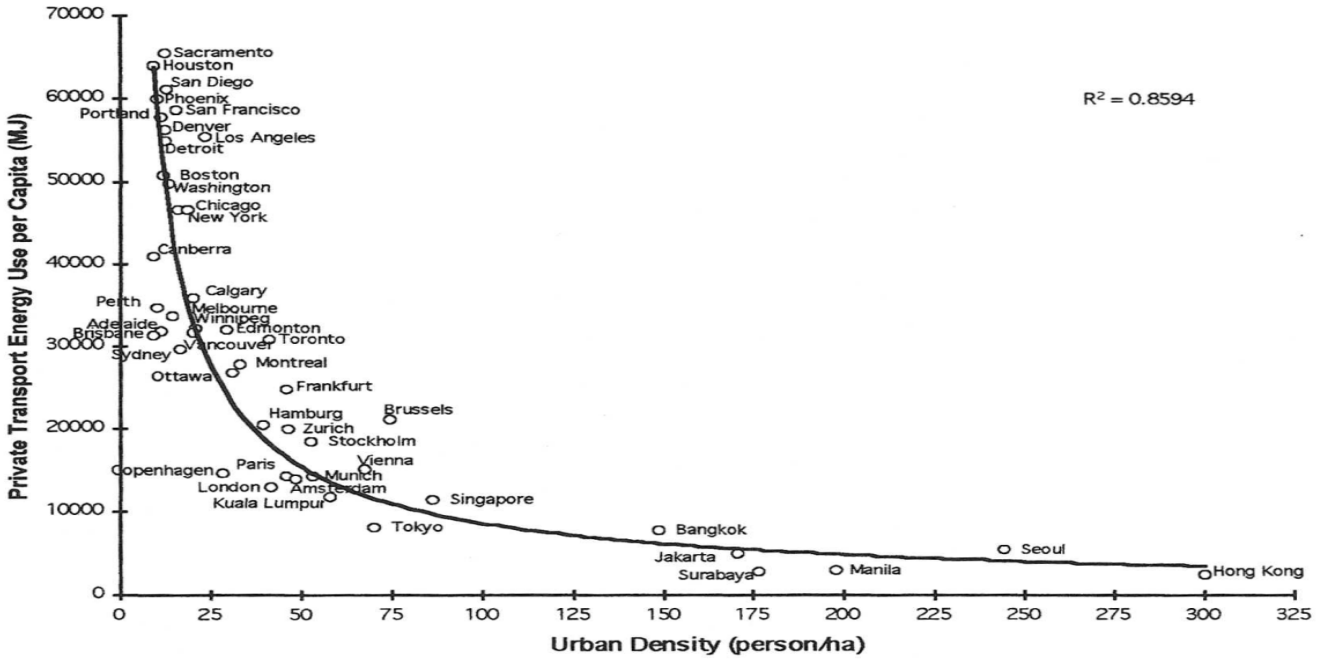


Figure 3.2. Energy use per capita in private passenger travel versus urban density in global cities, 1990.

For Further Information:

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