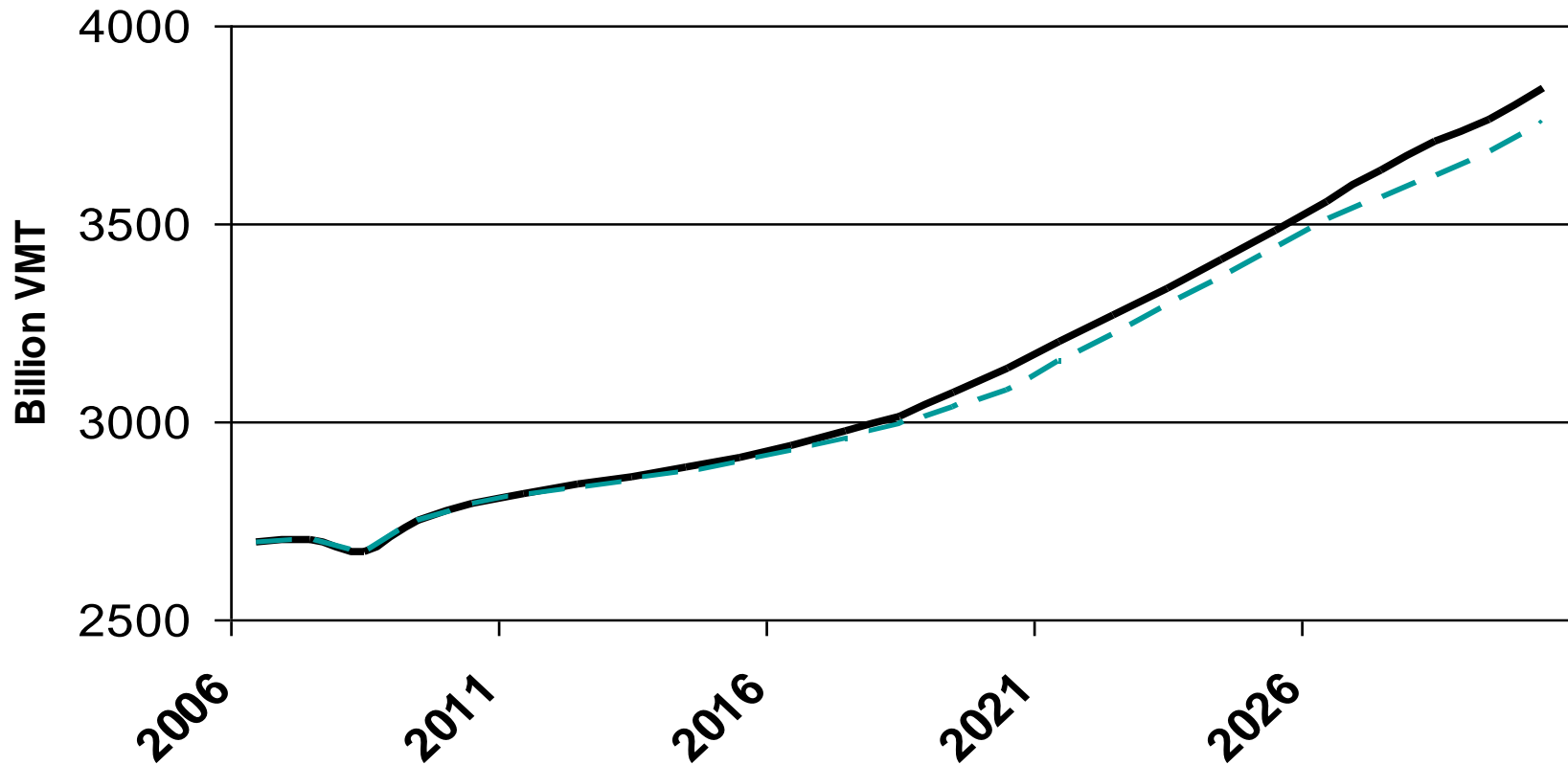


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Study Findings

Policy Gap: America's Clean Energy and Security Act

Projected U.S. Light Duty Vehicle-Miles of Travel
2006-2030

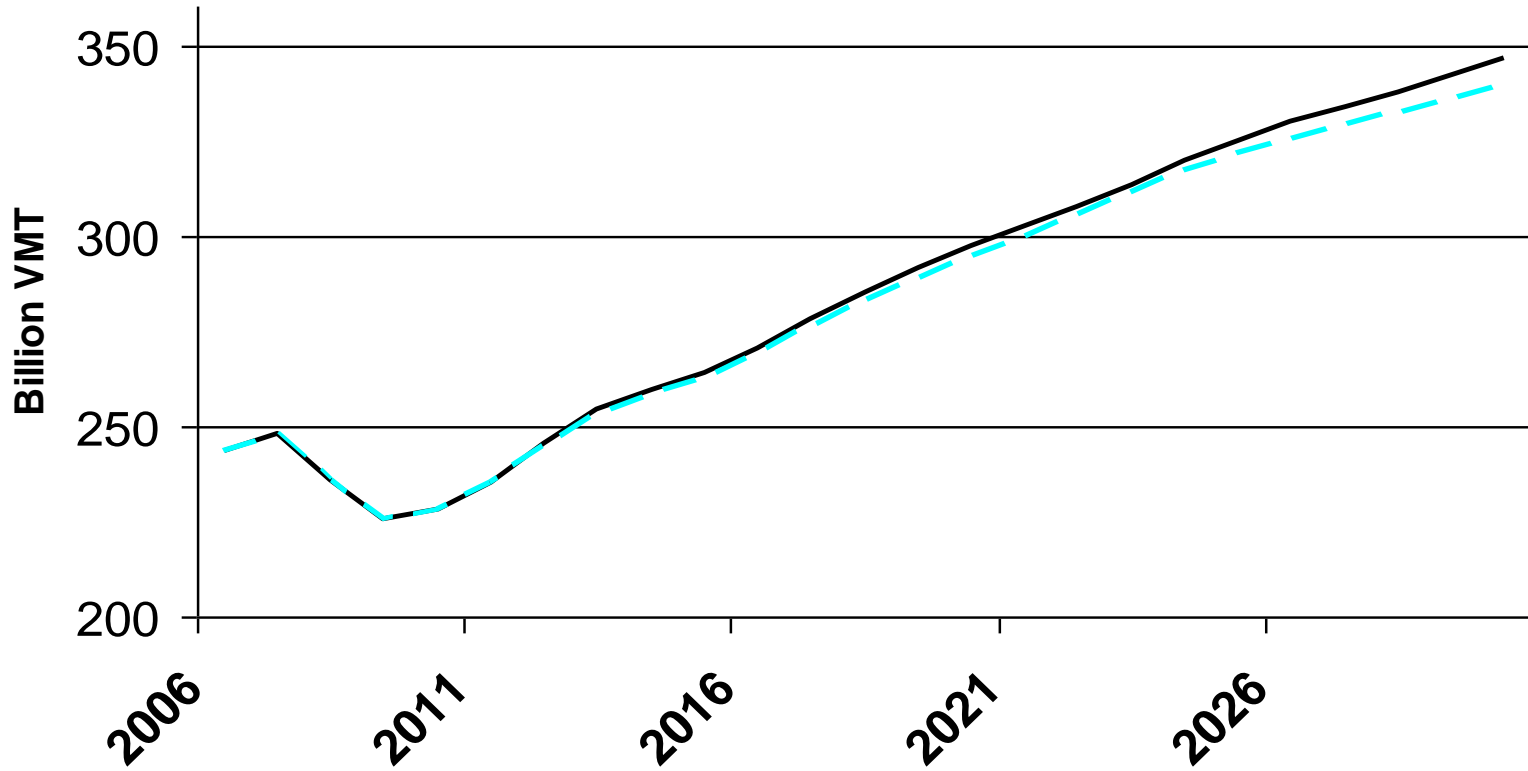


- Energy Information Agency: Annual Energy Outlook, 2009

- Without travel options, auto use does not show a significant response to nominal fuel price increases

Policy Gap: America's Clean Energy and Security Act

Projected U.S. Freight Truck Vehicle-Miles of Travel
2006-2030



- Energy Information Agency: Annual Energy Outlook, 2009

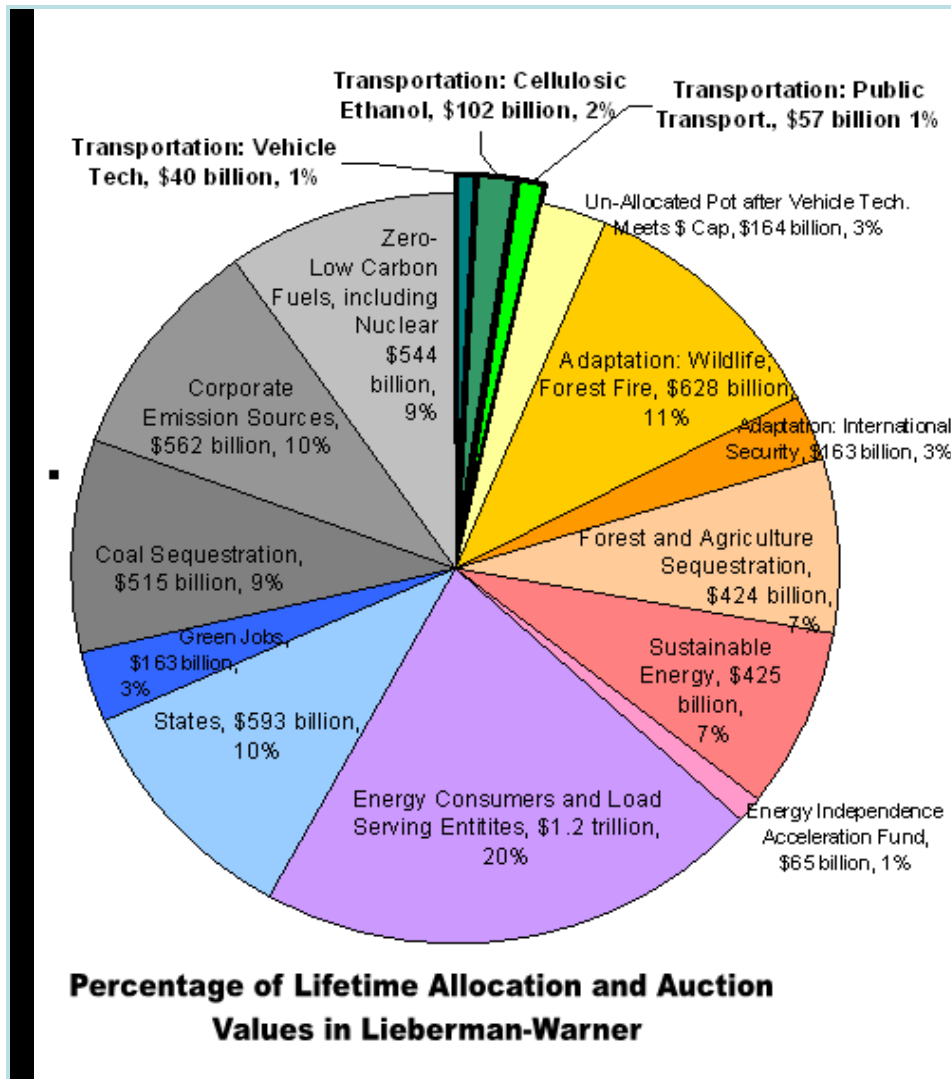
- Freight trucking shows a similarly small moderation in growth

Knowledge Gap:

Surface Transportation and Climate Policy

- **Most climate policy research hasn't examined the impacts of transportation policy on emissions**
 - **Significant climate change policy research focused on transportation has been conducted to examine vehicle efficiency and fuel technologies**
 - **Many of these studies have identified a need for additional transportation infrastructure and management strategies to meet climate protection goals**
 - **However, climate change modeling and policy has focused primarily on those transportation strategies that have been subject to research and analysis – vehicles and fuels**

Investment Gap: Small Role for Transportation in Current Policy



- **America's Climate Security Act (2007)**
- **Climate MATTERS (2008)**
- **Investing in Climate Action and Protection (2008)**
- **Dingell-Boucher Energy & Commerce Discussion Draft (2008)**
- **America's Clean Energy and Security Act (2009)**

Helping to Fill the Gap: Moving Cooler



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- **Analytic Team: Cambridge Systematics**
- **Multiple Party Steering Committee**
 - US Environmental Protection Agency
 - US Federal Highway Administration
 - US Federal Transit Administration
 - American Public Transportation Association
 - Environmental Defense Fund
 - ITS America
 - The Kresge Foundation
 - The Rockefeller Brothers Foundation
 - Urban Land Institute
 - Natural Resources Defense Council
 - Shell Oil Company
 - The Surdna Foundation
 - Rockefeller Brothers Fund

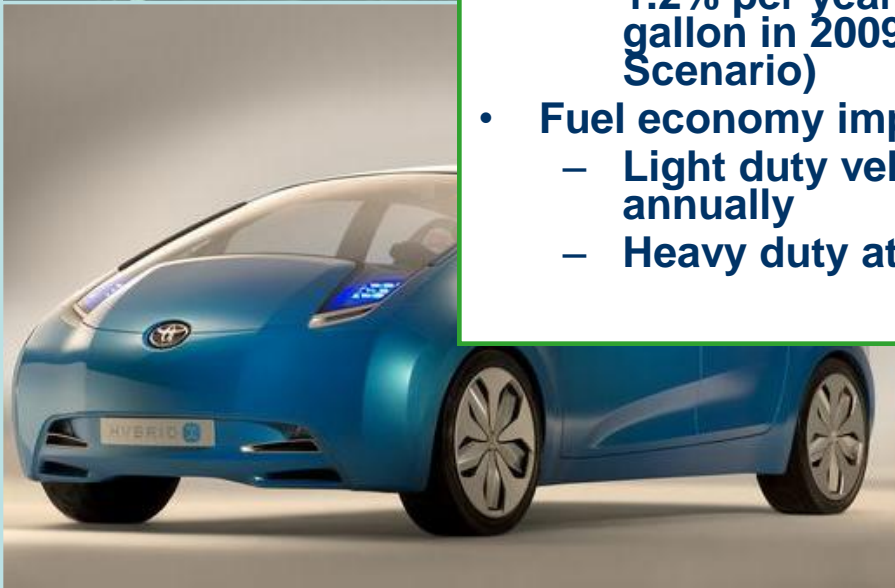
- **Examine the potential of travel efficiency strategies to reduce GHG emissions**
 - **Consistent analysis across strategy types**
 - **Stand-alone strategies and synergies**
- **Multiple parameters for analysis**
 - **Effectiveness in reducing GHG emissions**
 - **Cost of implementation**
 - **Externalities and co-benefits**
 - **Impacts on equity**

Assumptions for Baseline

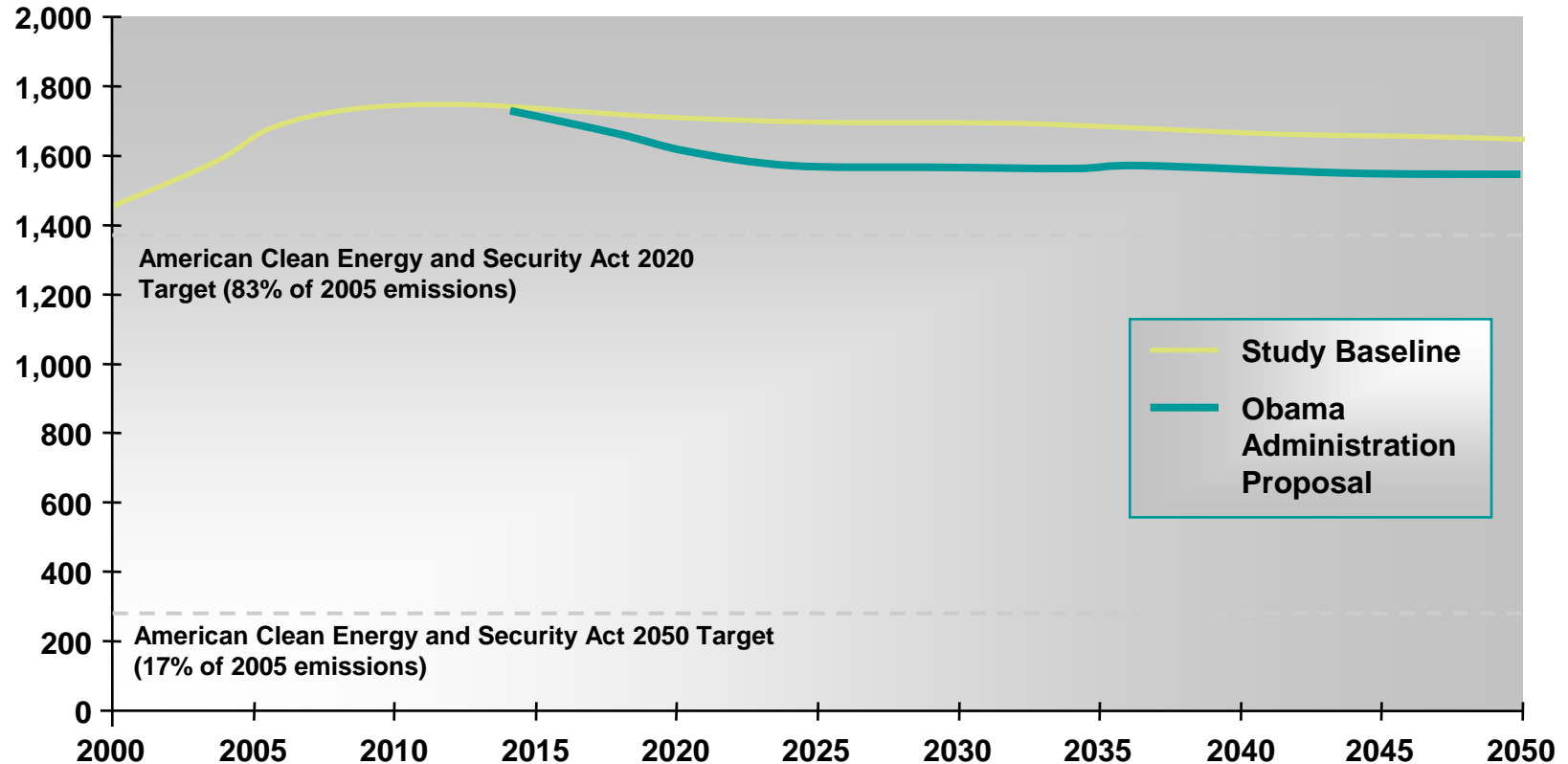
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- Travel continues to grow
 - VMT growth of 1.4% per year
 - Transit ridership growth 2.4% / year
- Fuel prices increase
 - 1.2% per year, beginning at \$3.70 / gallon in 2009 (AEO High Price Scenario)
- Fuel economy improves steadily
 - Light duty vehicles at 1.91% annually
 - Heavy duty at 0.61%



National On-Road GHG Emissions (mmt)

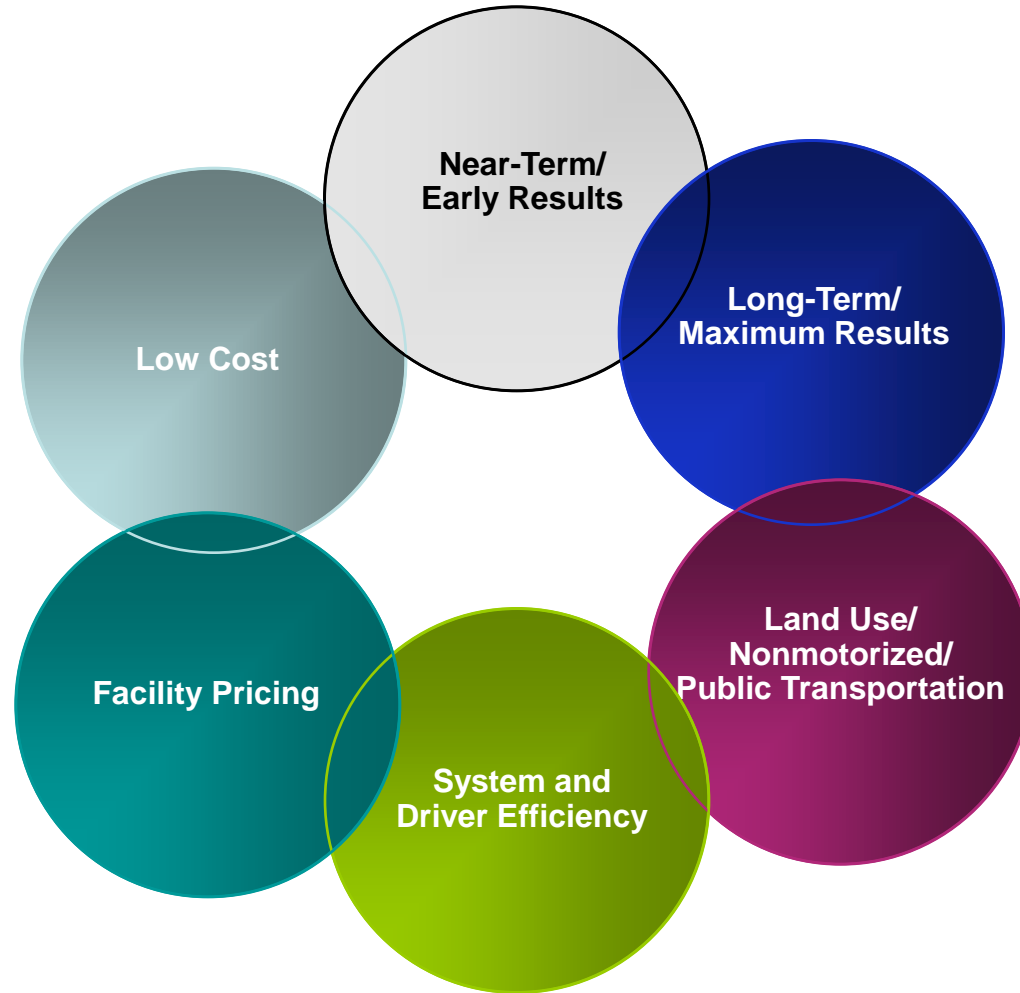


Note: This figure displays National On-Road GHG emissions as estimated in the Moving Cooler baseline, compared with GHG emission estimates based on President Obama's May 19, 2009, national fuel efficiency standard proposal of 35.5 mpg in 2016. Both emission forecasts assume an annual VMT growth rate of 1.4 percent. The American Clean Energy and Security Act (H.R. 2454) identifies GHG reduction targets in 2012, 2020, 2030, and 2050. The 2020 and 2050 targets applied to the on-road mobile transportation sector are shown here.

- **Pricing, tolls, PAYD insurance, VMT fees, carbon/fuel taxes**
- **Land use and smart growth**
- **Non-motorized / active transportation**
- **Public transportation improvements**
- **Regional ride-sharing, commute measures**
- **Regulatory measures**
- **Operational/ITS strategies**
- **Highway capacity/bottleneck relief**
- **Freight sector strategies**

Strategy Bundles Illustrative Analysis

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Geographic Variations

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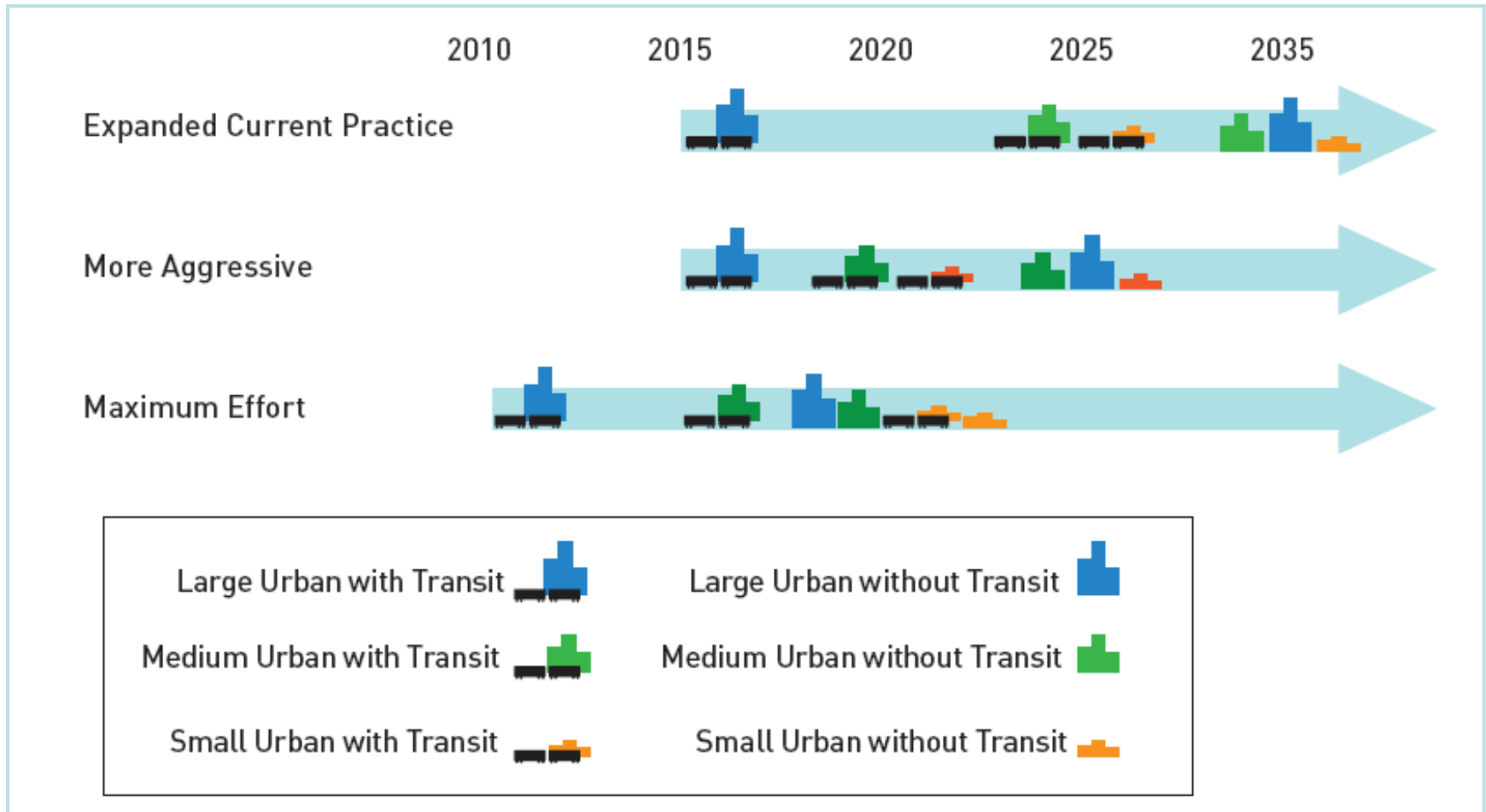
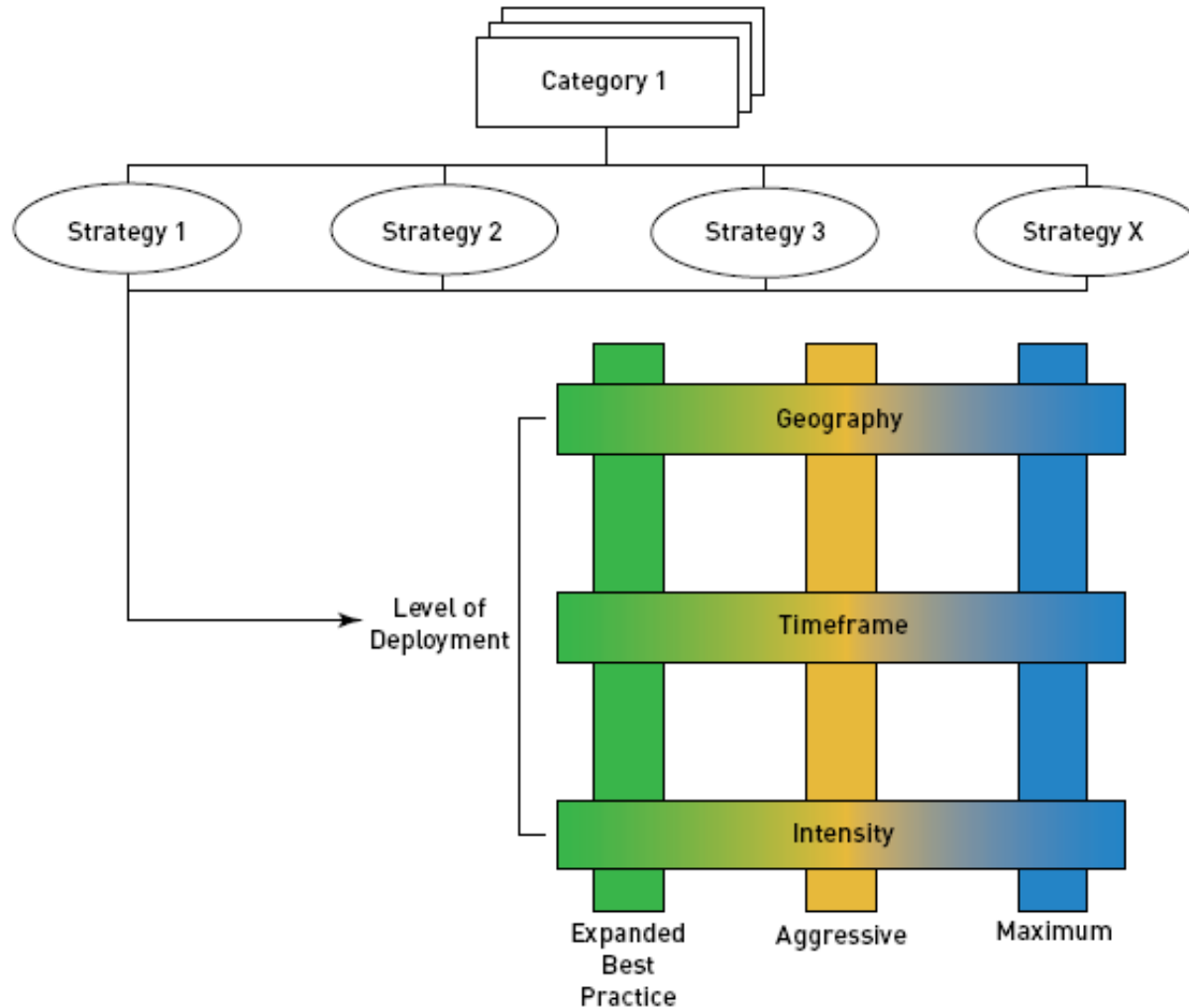


Figure 2.1 Hierarchy of Strategies and Deployment

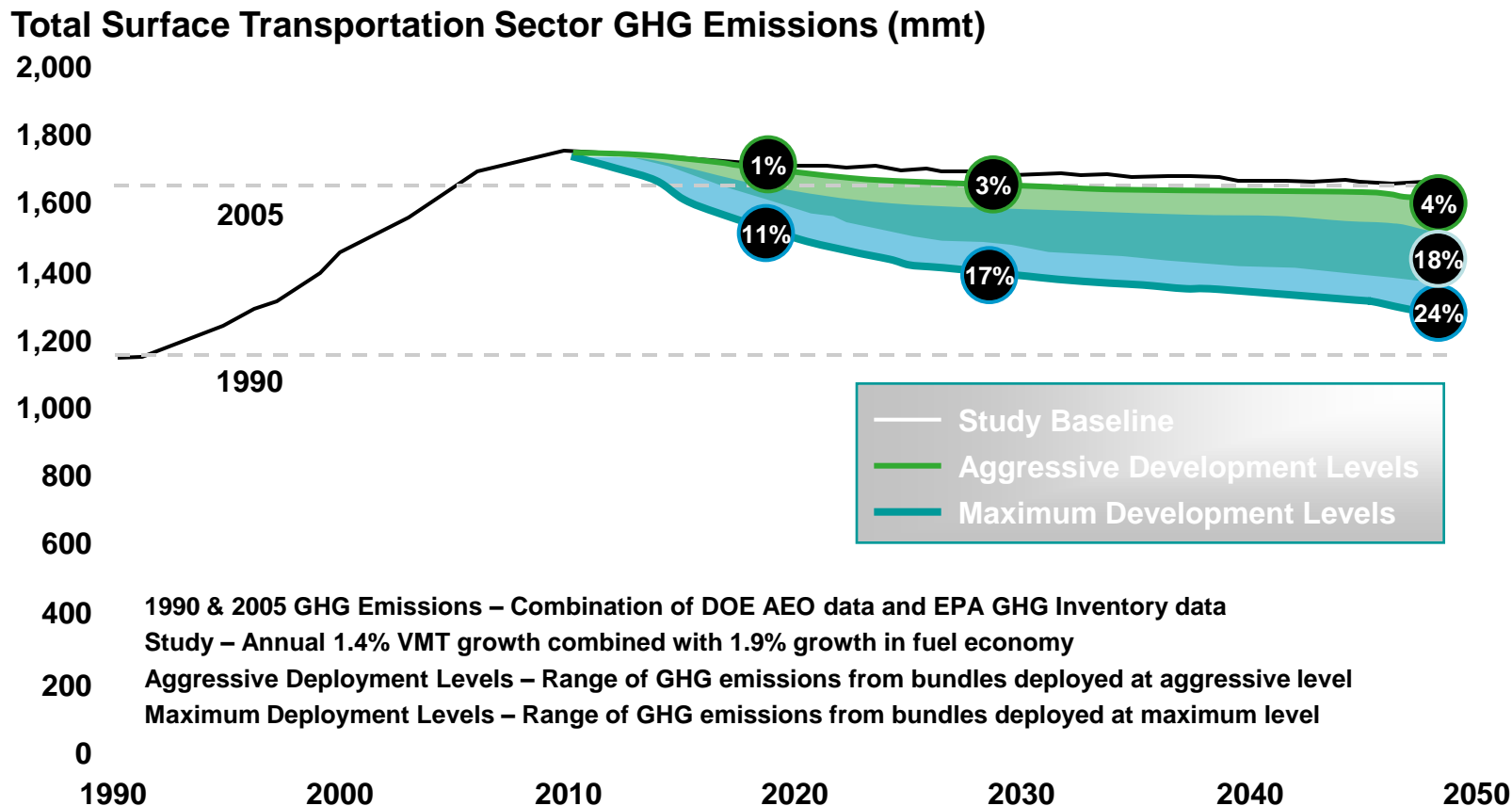


- **Estimate the GHG reduction of each individual strategy (change in fuel consumption)**
 - **Cumulative reduction through 2030 and through 2050**
 - **Annual reductions in critical target years**
 - **3 levels of intensity of implementation**
- **“Bundle” the strategies and examine the combined impacts**
 - **Effectiveness**
 - **Interactions, synergies, antagonistic effects**
 - **Implementation costs**
 - **Other societal impacts / co-benefits / externalities**
 - **Equity effects**

- **Activity, fuel price, and fuel economy developed for each year**
- **GHG reduction rate developed for each year**
- **Assigned to applicable activity per area type**
- **GHG reduction calculated for VMT change**
- **Additional congestion reduction impact on fuel economy also calculated**

- **Estimates direct implementation costs and GHG effectiveness**
- **Not a full cost-benefit analysis – therefore not a complete basis for decisions**
 - **GHG benefits only**
 - **Direct agency monetary implementation costs**
 - **Vehicle operating costs (savings): fuel, ownership, maintenance, insurance**
- **Allows comparison to McKinsey Report findings on fuels and technology**

Range of Annual GHG Reductions of Six Strategy Bundles (Aggressive and Maximum Deployment)

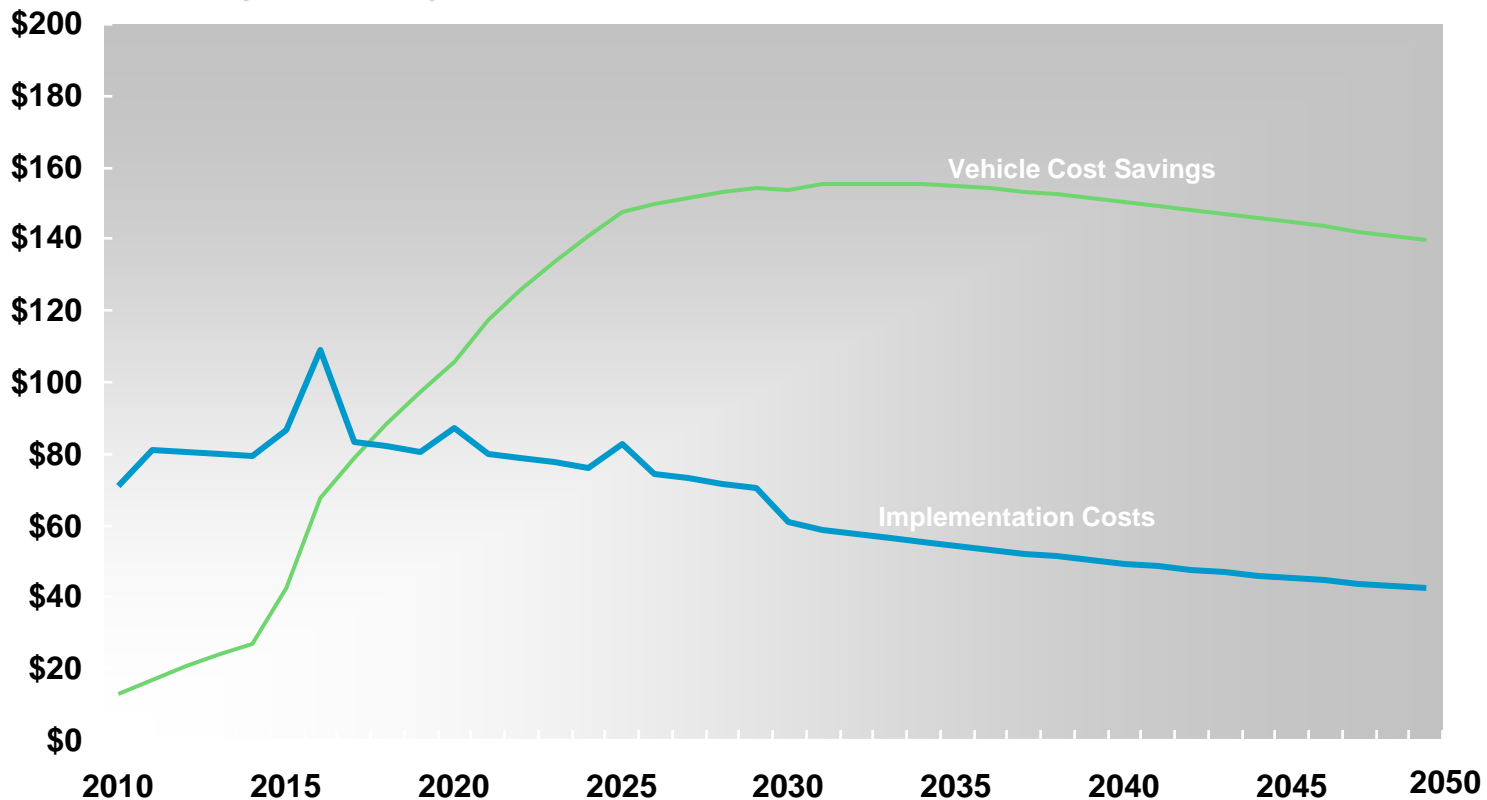


Note: This figure displays the GHG emission range across the six bundles for the aggressive and maximum deployment scenarios. The percent reductions are on an annual basis from the Study Baseline. The 1990 and 2005 baseline are included for reference.

Direct Vehicle Costs and Costs of Implementing Strategy “Bundles”

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2008 Dollars (in Billions)



Note: This figure displays estimated annual implementation costs (capital, maintenance, operations, and administrative) and annual vehicle cost savings [reduction in the costs of owning and operating a vehicle from reduced vehicle-miles traveled (VMT) and delay. Vehicle cost savings DO NOT include other costs and benefits that could be experienced as a consequence of implementing each bundle, such as changes in travel time, safety, user fees, environmental quality, and public health.



Summary of Bundle Results

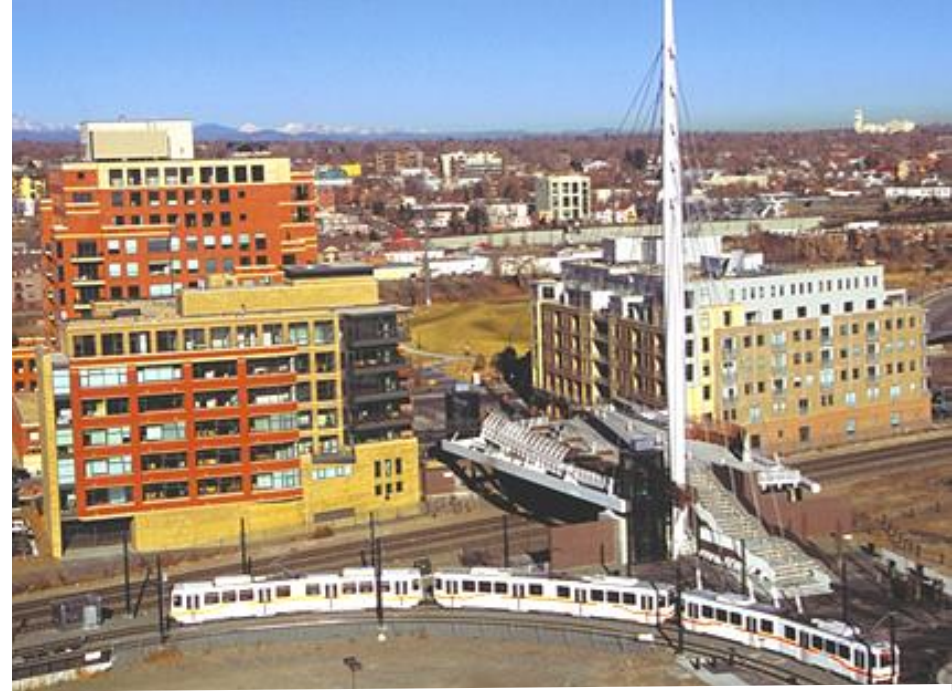
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(2010 to 2050 – Aggressive Deployment)

	GHG Reduction (Gt)	Implement. Costs	Change in Vehicle Costs	Net Costs per Tonne
1. Near Term / Early Results	7.1	\$676	-\$3,211	-\$356
2. Long Term/Maximum Results	7.6	\$2,611	-\$4,846	-\$293
3. Land Use / Transit / Non-motorized	3.8	\$1,439	-\$3,270	-\$484
4. System and Driver Efficiency	5.0	\$1,870	-\$2,214	-\$69
5. Facility Pricing	1.4	\$2,371	-\$1,121	\$891
6. Low Cost	7.5	\$599	-\$3,499	-\$387

- Some strategies are effective in achieving **near-term** reductions, reducing the cumulative GHG challenge in later years
 - Near term strategies include: speed limits, congestion pricing, eco-driving, expanded transit service
- Investments in land use and improved travel options involved **longer timeframes** but would have enduring benefits
 - Substantial investments and policy changes required

- Many strategies contribute to other **social, economic and environmental goals** while reducing GHGs
 - Reduced congestion, livability, expanded travel options, improved environmental quality, economic development, improved safety, enhanced public health...
 - Strong price signals combined with system investments enhance both environment and economy
- Both **national level** and **state, regional, local approaches** to deployment of strategies are important
 - Effectiveness of bundles will differ according to regional variations



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