Cost-Effective GHG Reductions through Smart Growth & Improved Transportation Choices

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Rail–Volution 2009
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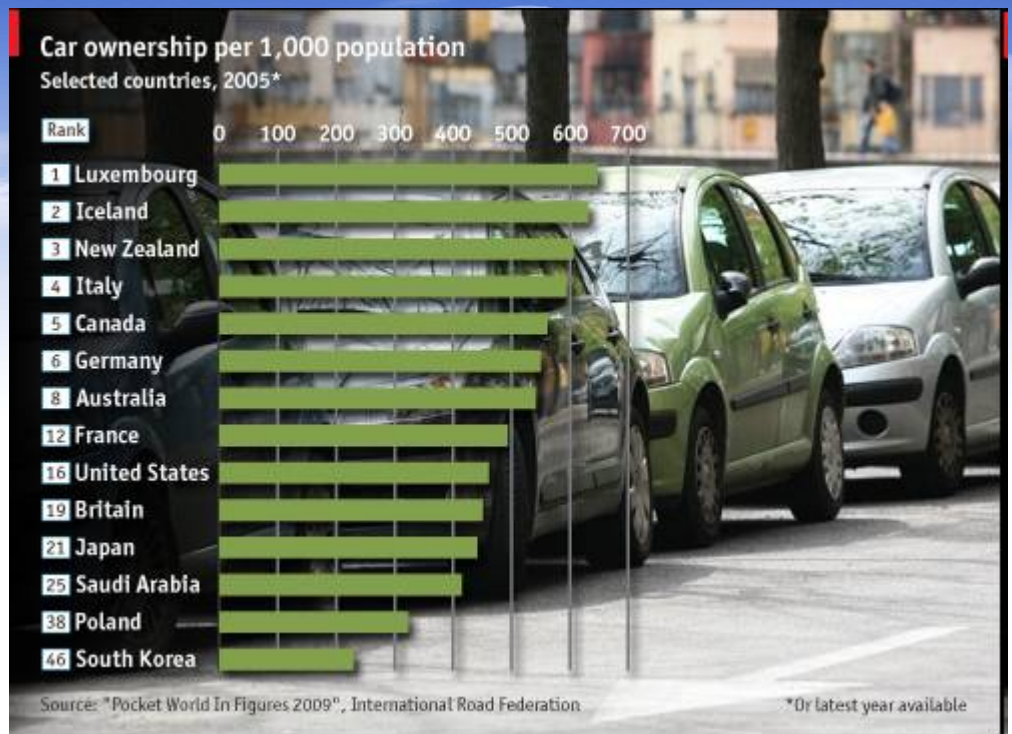
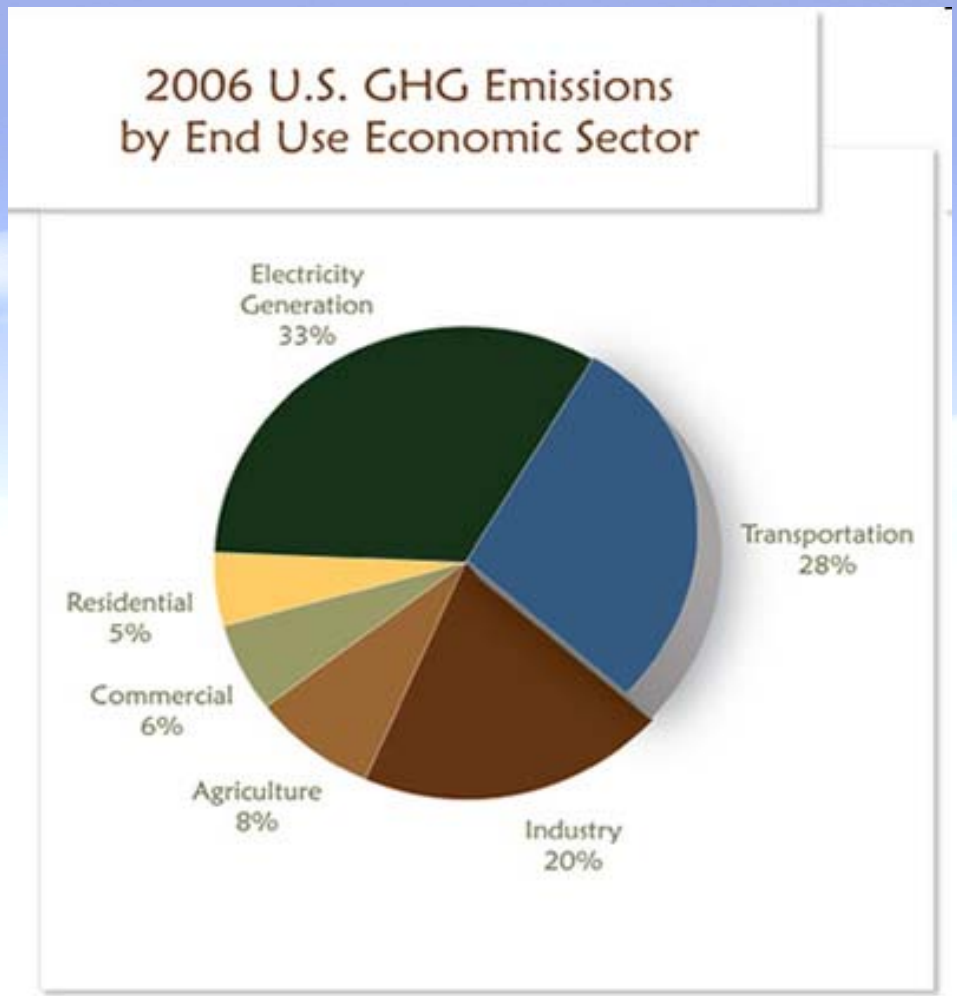
- Non-partisan, objective guidance for crafting and implementing climate policy
- Stakeholder dialogues: International, United States, VMT & Climate Policy
- Urban Leaders Adaptation Initiative
  - *Ask the Climate Question* (June 2009)
- Research: Economic Benefits of Smart Growth
  - *Cost-Effectiveness of Travel Efficiency* (June 2009)
  - *Growing Wealthier* (Fall 2009)
- International Climate Policy and Transportation
  - Developing country transport GHG policies

VMT and Transportation GHG

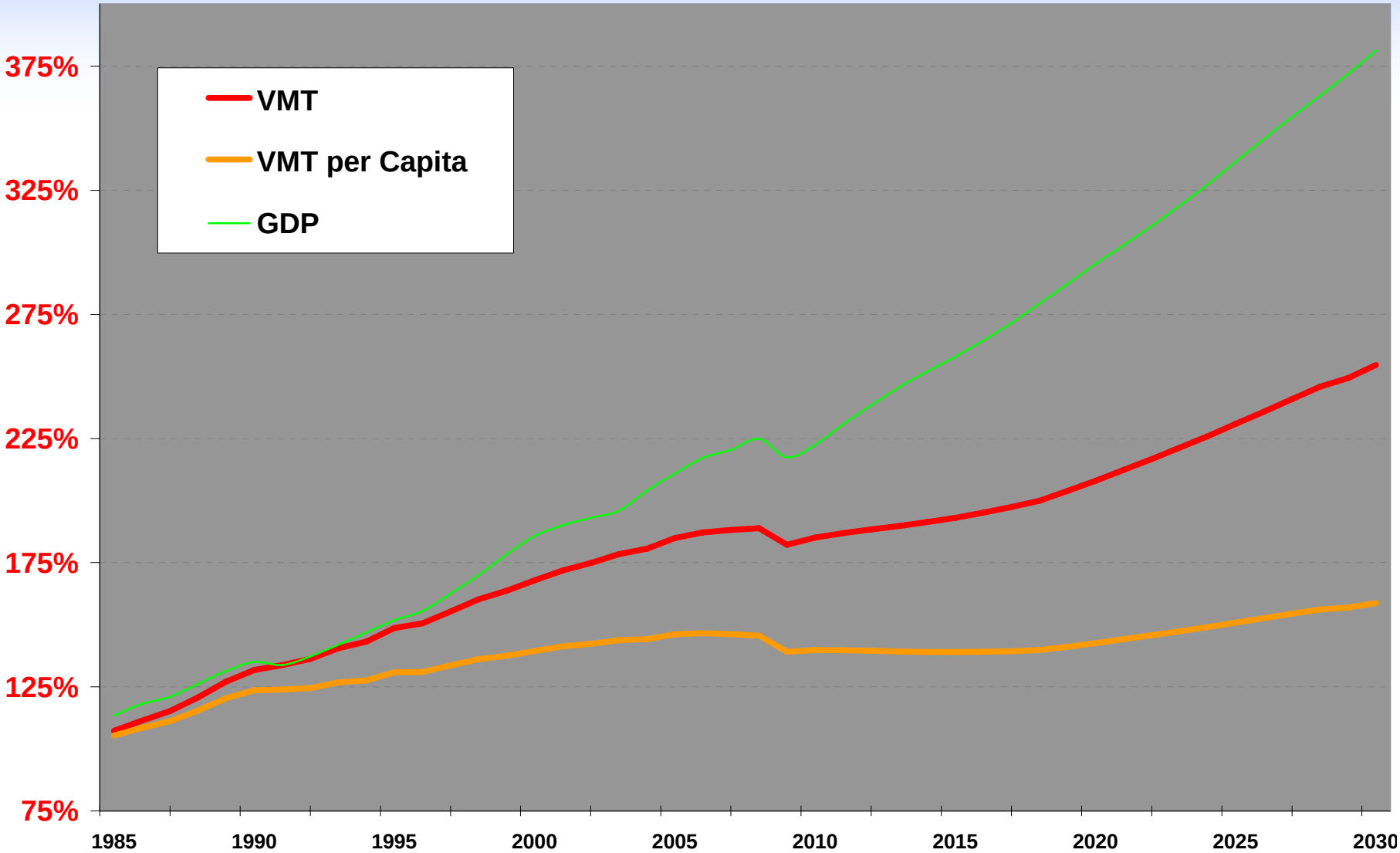


Transportation produces almost 1/3 of US greenhouse gases



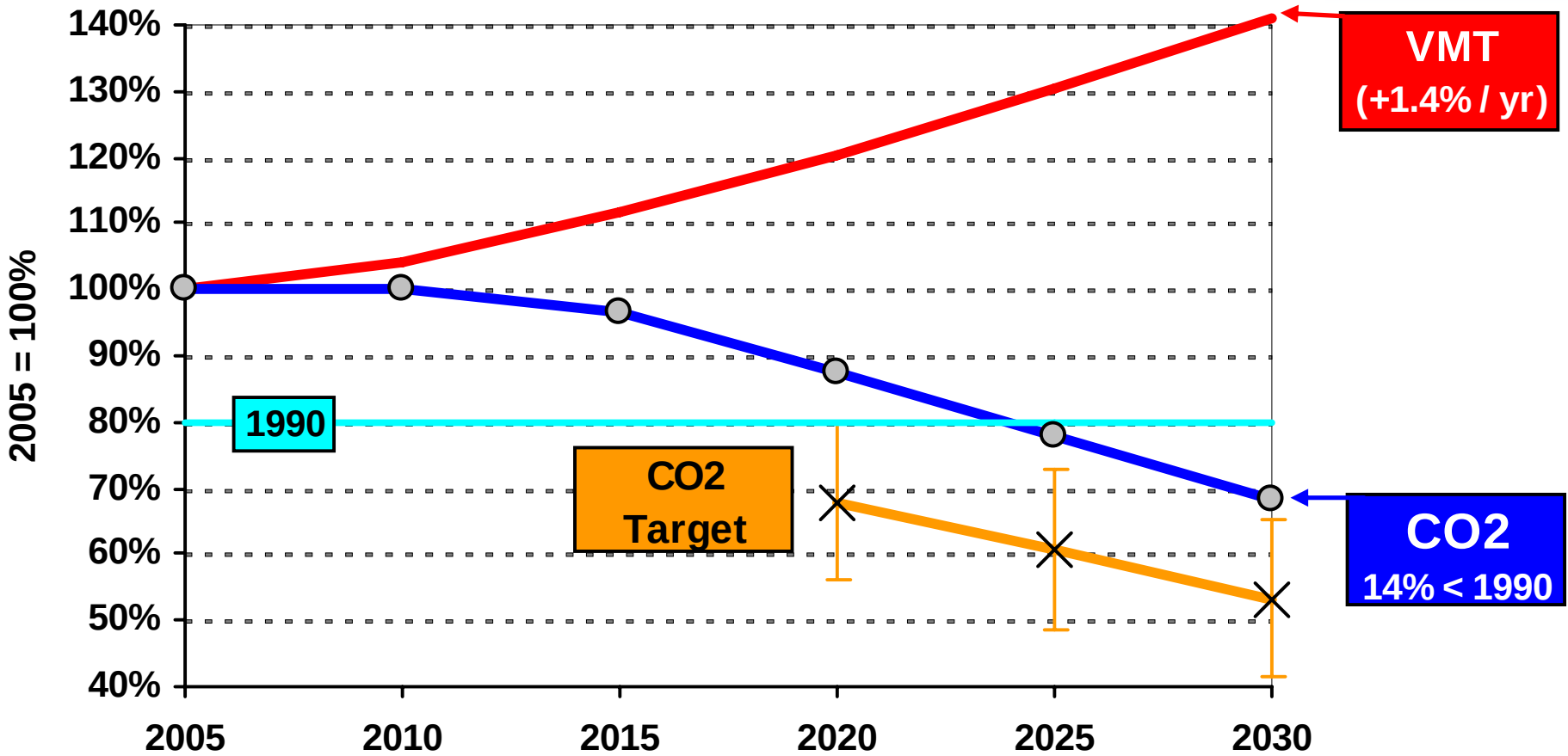

Transportation
GHG
Vehicles
VMT
Fuels

VMT growth: Historic & Forecast 1985-2030



S. Winkelman, CCAP, 2009: based on FHWA, BEA, EIA, BLS

if VMT up 15% *per capita*
(=1.4%/yr, w/ 55 mpg CAFE & -15% GHG)



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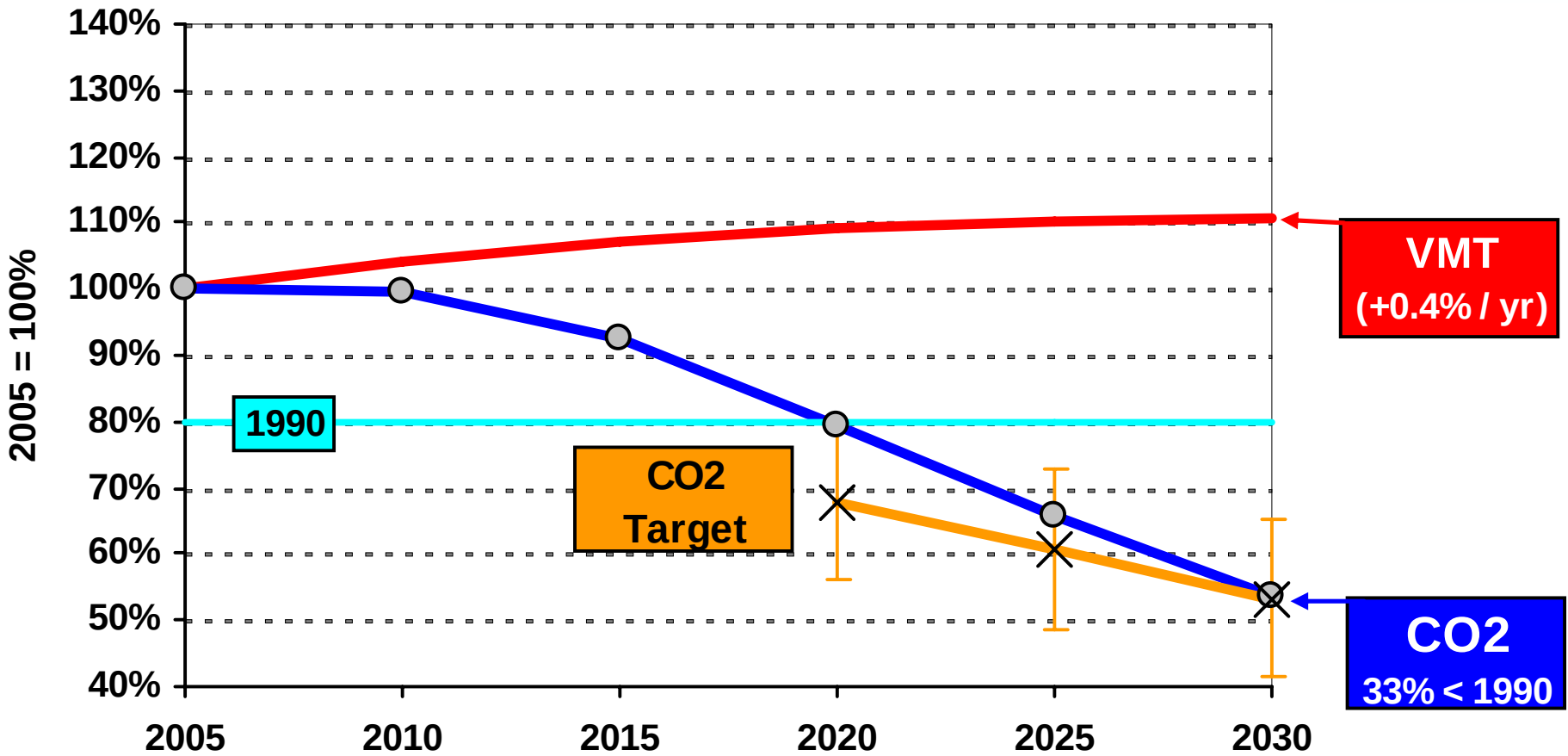
S. Winkelman, CCAP. 2030: 55 mpg CAFE & -15%Fuel GHG.

if VMT **down 10%** *per capita*
(= 0.4%/yr, w/ 55 mpg CAFE & -15% GHG)



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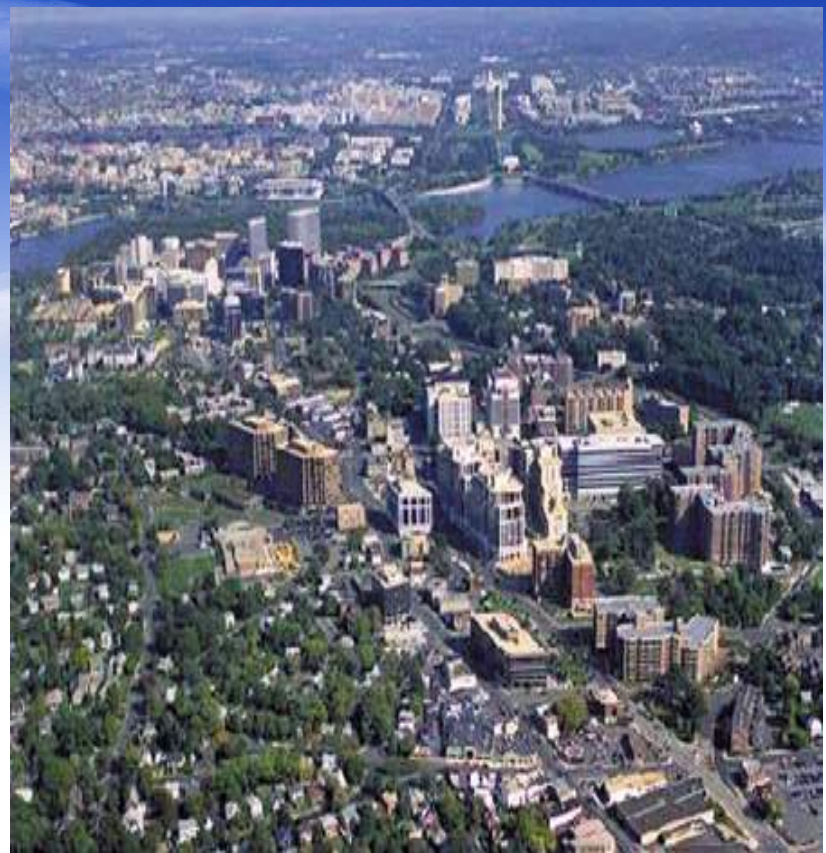
S. Winkelman, CCAP. 2030: 55 mpg CAFE & -15%Fuel GHG.

Reducing VMT through Smart Growth and Improved Transportation Choices

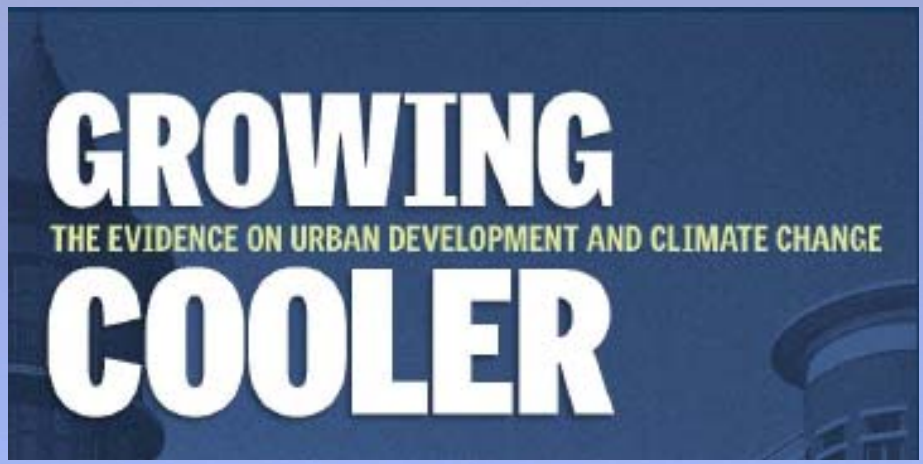


Growing Cooler
(Ewing et al., 2007)

- **Update zoning, smart growth planning principles**
- **4% national total VMT reduction by 2030**
- **80 MMT CO_2 savings in 2030: 50% of 35 MPG CAFE**

Moving Cooler
(Cambridge Systematics, 2009)

- **Comprehensive policy bundle**
- **could cut VMT by 20% in 2030**
- **4%-24% GHG reduction from BAU, depending on aggressiveness**



Ewing, Bartholomew, Winkelman, Walters & Chen

Urban Land Institute

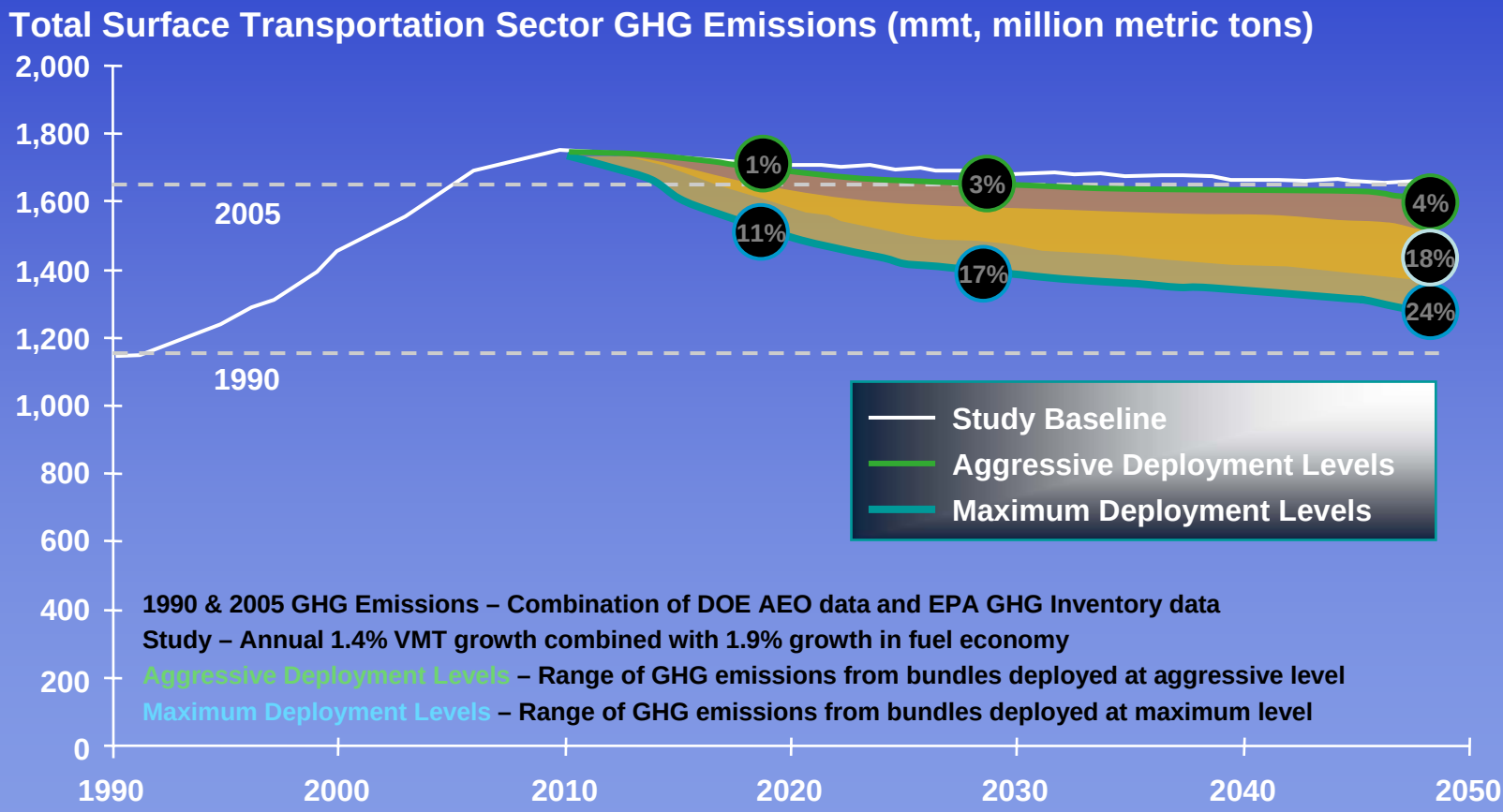
2008

- **Land Use is critical** for slowing VMT growth.
- Large unmet market demand for smart growth.
- Empirical and modeling literatures show that VMT is 20-40% lower with compact development.
- Comprehensive set of measures (e.g., land use, pricing, transit) required for major GHG reductions.

Range of Annual GHG Reductions for Six Strategy Bundles

(Aggressive and Maximum Deployment)

Moving Cooler



GHG emission range across the six bundles are shown for the aggressive and maximum deployment scenarios. The percent reductions are on an annual basis from the Study Baseline. The 1990 and 2005 baselines are included for reference.

Community Best Practices can cut VMT per capita by 10%

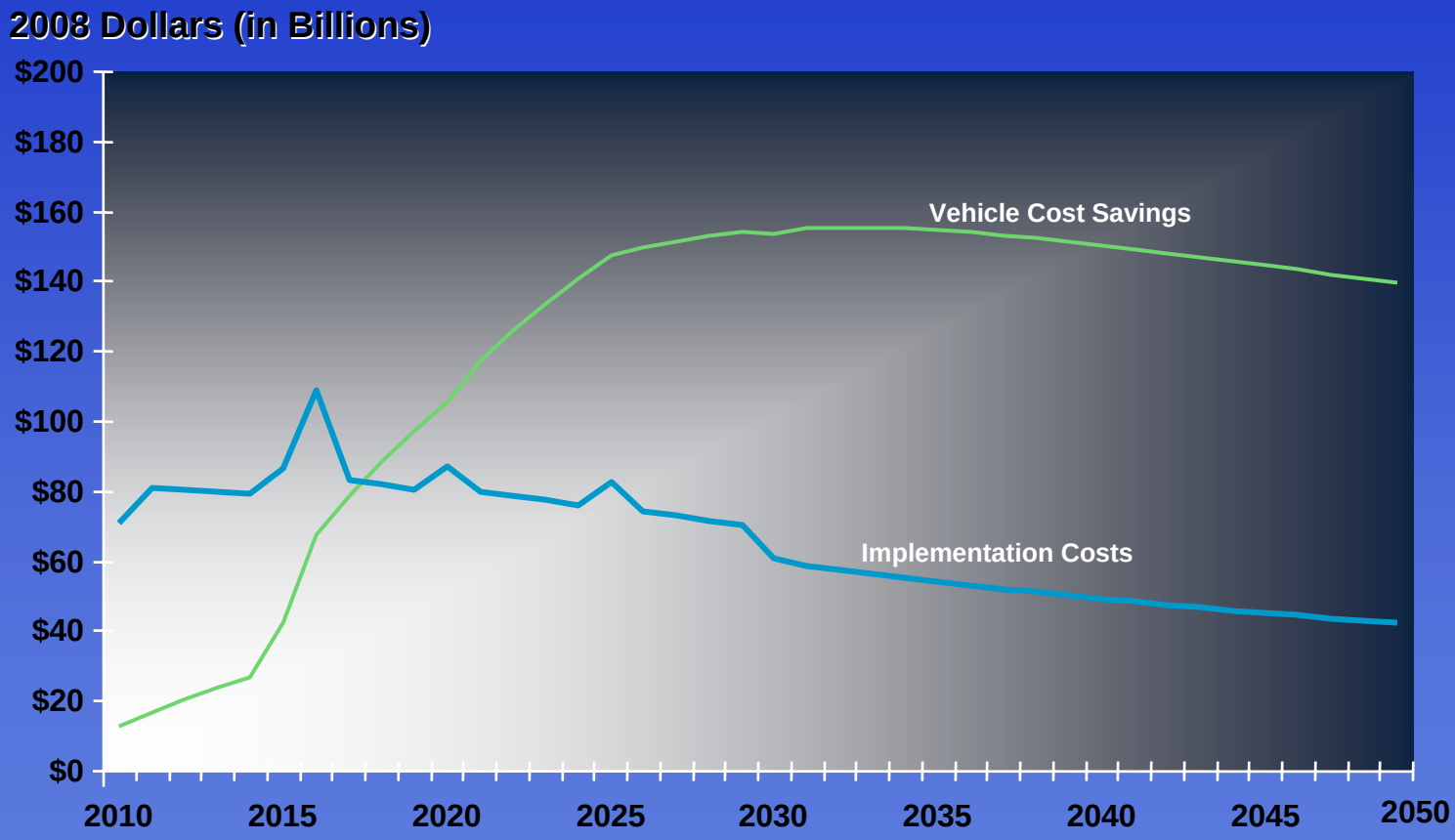
- Portland region: -9% VMT/capita (1990-2007)
  - Pop +14%, grew as economic center. US: +8%/capita
- Arlington, VA: -25% VMT/capita (1980-2005)
  - 60% lower VMT than regional avg – household $ savings
- Atlantic Station: -50% VMT/capita
- Sacramento: -8% VMT/capita (through 2035)
- NYC: -1% traffic pop +2%, jobs +6% (2002-7)
  - transit +8%, bike +70%
- "Sexy sidewalks" work
  - Efficient communities can absorb growth

Reducing VMT through Smart Growth and Improved Transportation Choices

- Cost Effectively -

Moving Cooler

Direct Vehicle Costs and Costs of Implementing Strategy "Bundles"



Estimated annual implementation costs (capital, maintenance, operations, and administrative) are shown with 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 (2010 to 2050 – Aggressive National Deployment)

	GHG Reduction (Gt)	Implementation Costs (billions)	Change in Vehicle Costs (billions)	Net Cost per Ton
1. Near Term/ Early Results	**7.1**	**$676**	**-$3,211**	**-$356**
2. Long Term/ Maximum Result	**7.6**	**$2,611**	**-$4,846**	**-$293**
3. Land Use/ Transit/ Nonmo-torized transport	**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**

Economic Benefits of Smart Growth
detailed in *Growing Wealthier*

- Smart growth, done well, can:
  - Meet market demand for walkable areas
  - Protect housing values in a downturn
  - Reduce net infrastructure costs
  - Increase walking and biking; reduce obesity
  - Reduce overall household costs
  - Leverage private investments in communities
  - Reduce energy and water consumption
  - Improve public health and reduce medial costs
  - Improve U.S. energy security

It’s the economy...

- Travel efficiency can reduce CO2 at net costs savings (CCAP 2009)
  - Sacramento: save $9 billion, savings of $200/ton
  - Atlanta: Tax revenues $300 million > upfront costs
  - Portland: bikes to save $1,000/ton CO2
  - Georgia: -7% VMT, $400 billion savings
  - Tampa: $60 million streetcar attracted $1 billion pvt
  - PAYD: could cut CO2 8% and save $50 billion/yr
  - Short-tem: cut oil use 14% at < $3/ton CO2
  - Arlington households spend 60% less on gasoline

Local Example: Atlantic Station

- 138 acre redevelopment project in Atlanta: compact and transit-oriented
- Avg daily VMT 50-60% lower than regional average
  - Based on initial measurements, EPA had projected 38% VMT reduction
- 0.63 MMTCO2 over 50 years (CCAP projection)
- Loan: $195 million. Increased tax revenues: $30 million/yr
  - Additional consumer savings of 73 million gallons of gasoline
- Will likely result in ***zero cost*** or a ***net savings*** per ton CO2 due to future revenue and savings.

Regional Example: Sacramento

- SACOG spent $4 million on Blueprint scenario planning, modeling, public engagement
- The adopted smart growth scenario projected to:
  - Save 7.2 MMTCO2 through 2050
  - Reduced infrastructure costs: **-$9.4 billion**
  - Increased transit operating costs: +$121 million/year
  - Reduced consumer fuel costs: -$655 million/year
- CCAP calculates NPV: $1.4 billion
- **Net *savings* of $198/ton CO2 emission reduced**

State Example: Georgia

- McKinsey and Company study:
  Investments in transit, HOV/HOT, demand management, and the freight system could yield net economic benefits.
- Economic benefits: **$400 billion** over 30 years
  - 320,000 jobs over 20 years
- VMT savings of **7% per capita** 2010-30
- CCAP calculates cumulative transportation GHG savings of 18 MMTCO2.
  - Economic benefit equal to **$22,000 per ton CO2**

Helping Attract Private Investment

Street Cars & Economic Development

- Portland: $73 million public investment, helped attract $2.3 billion in private investments within two blocks
- Little Rock: $20 million attracted $200 million
- Tampa: $60 million attracted $1 billion

Source: Center for Transit Oriented Development, *Street Smart*

Estimating $/ton CO2 of Short-term measures

- OECD/IEA: U.S. can quickly cut oil use by 14% at less than $3 per of ton CO2, via:
    - Car-pooling
    - Telecommuting
    - Compressed work week
    - Eco-driving
- Enforcing 55 mph highway speed limits
  - Additional 2.4% savings
  - $39/ton CO2

Estimating $/ton CO2 of Pricing Example: Mileage Based Insurance

Brookings Studies:

- Changing all car insurance policies to “pay as you drive” (PAYD) can save the US $50-60 billion/year.

- Universal PAYD system in California would:
  - Reduce VMT by 8%
  - Meet **8% of AB32 2020 goals**
  - Reduce annual fuel use by 1.2 billion gallons
  - 2/3 of households in California would have lower premiums, saving an average of **$276 per vehicle per year**

Busting the Myths about GHG and Smart Growth

Myths about Smart Growth	**Myth Busters**
1. No one wants it	*Growing Cooler*
2. It can't be done	*Growing Cooler*
3. GHG savings are minimal	*Growing Cooler & Moving Cooler*
4. It's really expensive	**"Growing Wealthier"**
5. Reducing VMT is the most expensive GHG control strategy	*Moving Cooler* & **"Growing Wealthier"**

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Communities can
Do. Measure. Learn.

Do: Implement directionally correct measures

- Smart growth, transit, TOD, TDM, NMT…

Measure: See what happens

- VMT, fuel sales, traffic flow

Learn: Where and why did it happen?

- Apply lessons to ongoing policy refinement

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