Growing Cooler:
Why Sidewalks are as Sexy as Hybrids

Steve Winkelman
Center for Clean Air Policy

Climate 2050

Montreal, Canada
26 October, 2007

Overview

Steve Winkelman

- Context: Transportation and climate
- Problem: Death by 1,000 Strip Malls
- Solution: Location, Location, Location
- The Evidence:
  - » Savings: 20 to 40% VMT per capita
  - » Punch line: Smart growth can save as much as hybrids
- Real-world results:
  - » Portland, OR; Arlington, VA

Don Chen

- Market Demand: Build it and they will come
- Policy Opportunities

Center for Clean Air Policy Highlights

- CCAP works on climate change policy at the local, state, national and international levels with governments, industry and NGOs
  - » Climate plans: CA, CT, MA, ME, NJ, NY
  - » GHG policy projects in China, Mexico, Brazil, India
  - » CCAP Transportation Emissions Guidebook
  - » Linking **Green-TEA** and Climate Policy dialogue
  - » Urban Leaders Adaptation Initiative
  - » US and European Climate Policy Dialogues

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Growing Cooler: The Evidence on Urban Development and Climate Change

- Publisher: Urban Land Institute
- Authors
  - **Reid Ewing**, University of Maryland
  - **Keith Bartholomew**, University of Utah
  - **Steve Winkelman**, Center for Clean Air Policy
  - **Jerry Walters**, Fehr & Peers Associates
  - **Don Chen**, Smart Growth America
- Funding
  - US EPA, Hewlett Foundation, Surdna Foundation
- Download: **www.smartgrowthamerica.org**

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US must cut GHGs 60-80% below 1990 levels by 2050 to keep 2-3°C in play

- **15-30% below 1990 by 2020 to keep on track**
  - » US GHGs now 20% above 1990 levels
  - » Delayed action means higher risks and costs
- Transportation about 1/3 of US CO2 emissions, and growing fastest
- **Major reductions will be needed in all sectors**
  - » Other sectors (electricity, industry) unable to compensate for transportation

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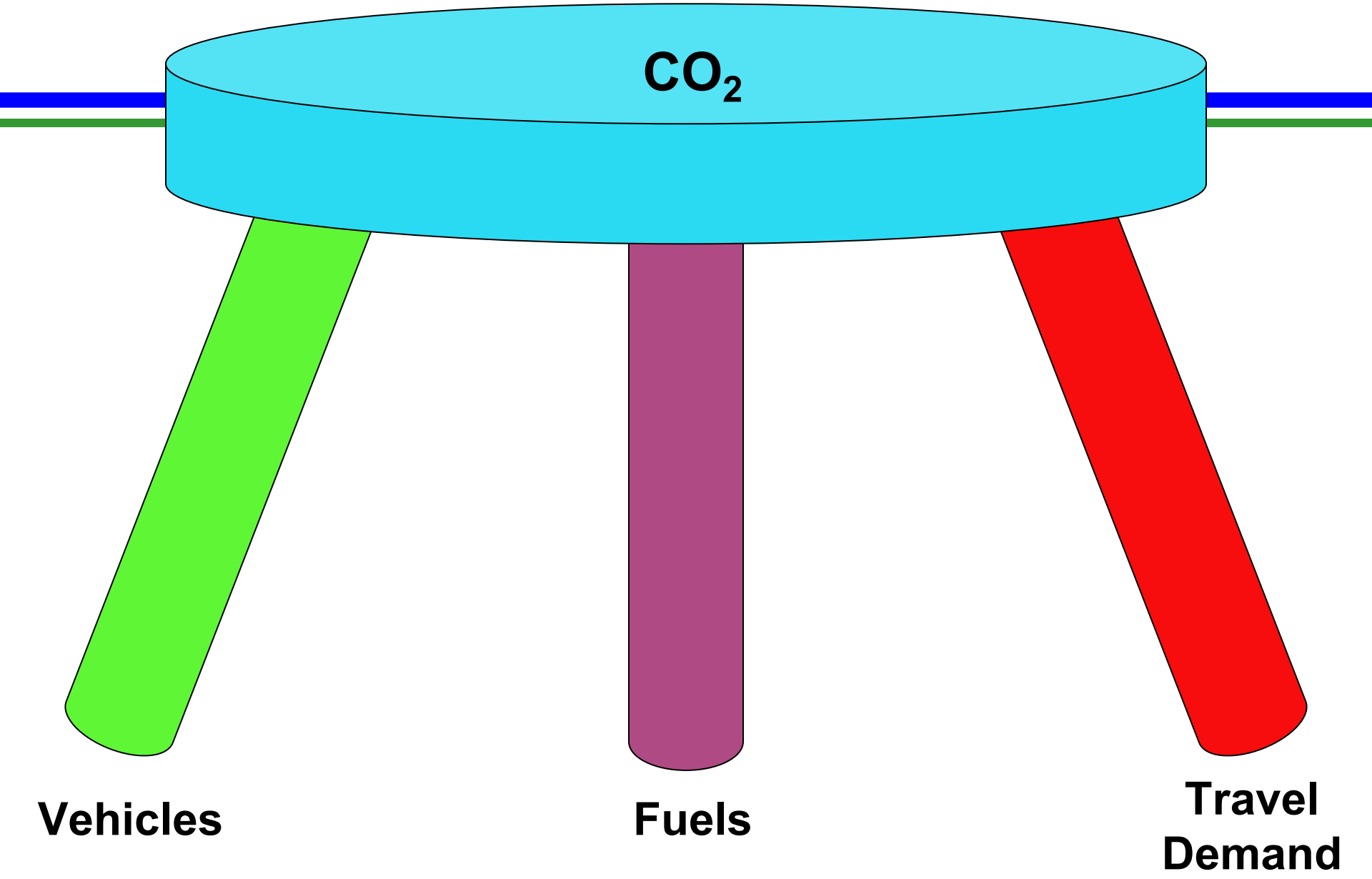
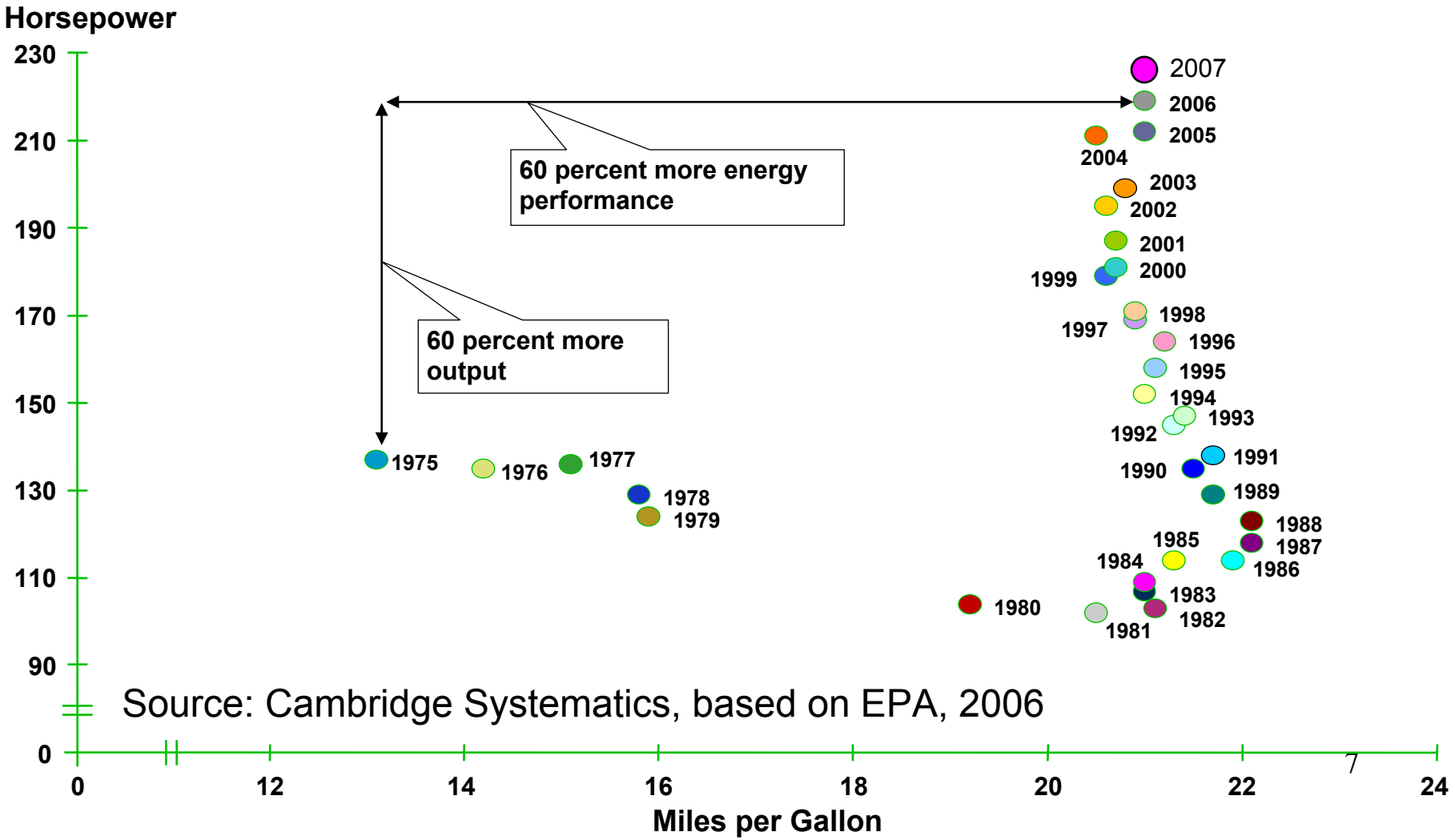
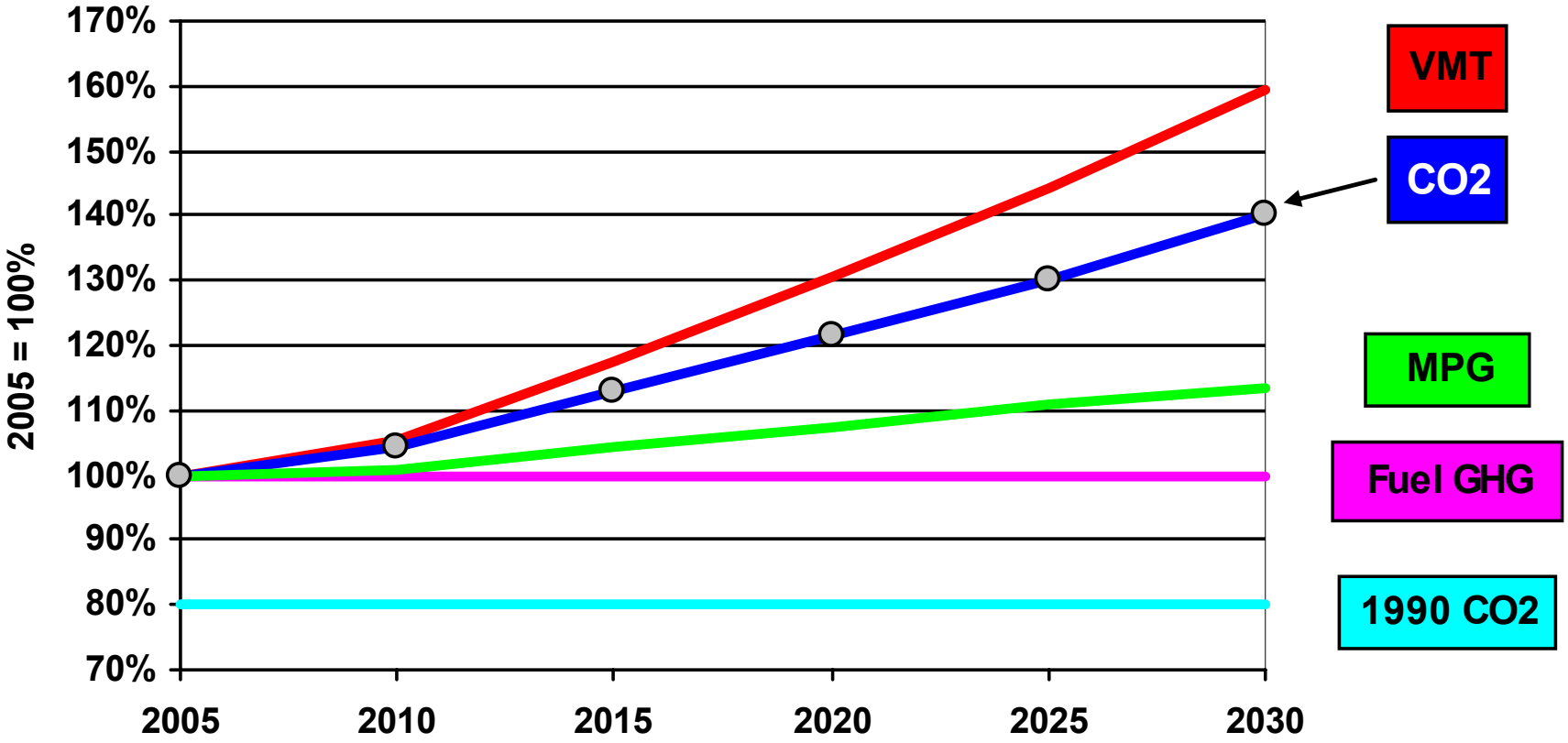
The Three Legged Stool



Where has all the technology gone? Gone to power everyone…



US VMT Growth Projected to Outpace Vehicle & Fuel Improvements



Source: EIA AEO 2007

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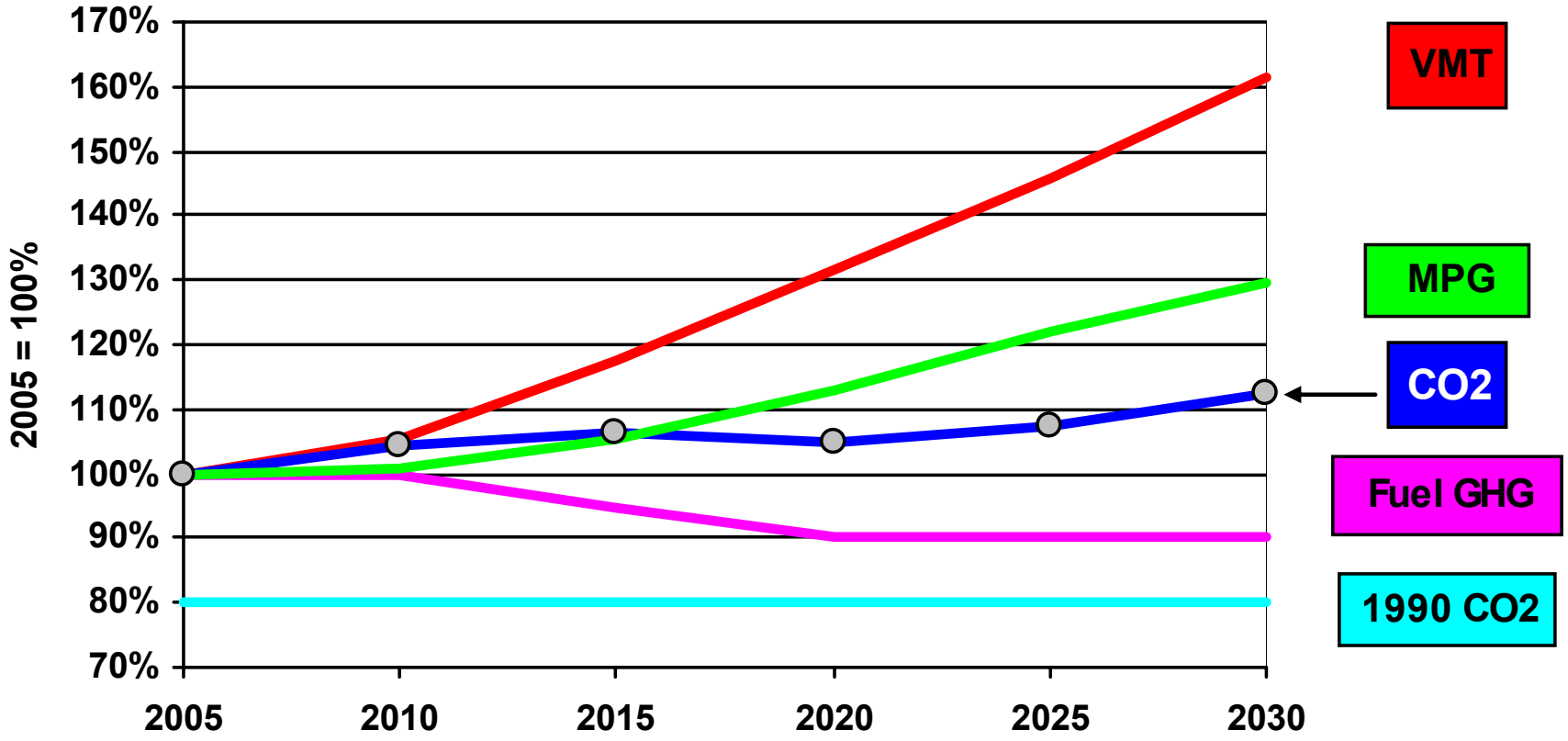
Senate CAFE (35 mpg or 6.7 l/100km) + CA Fuel stds (-10%): 40% above 1990 levels in 2030



Sources: VMT: EIA with 10%rebound MPG: US Senate, Fuels: CARB

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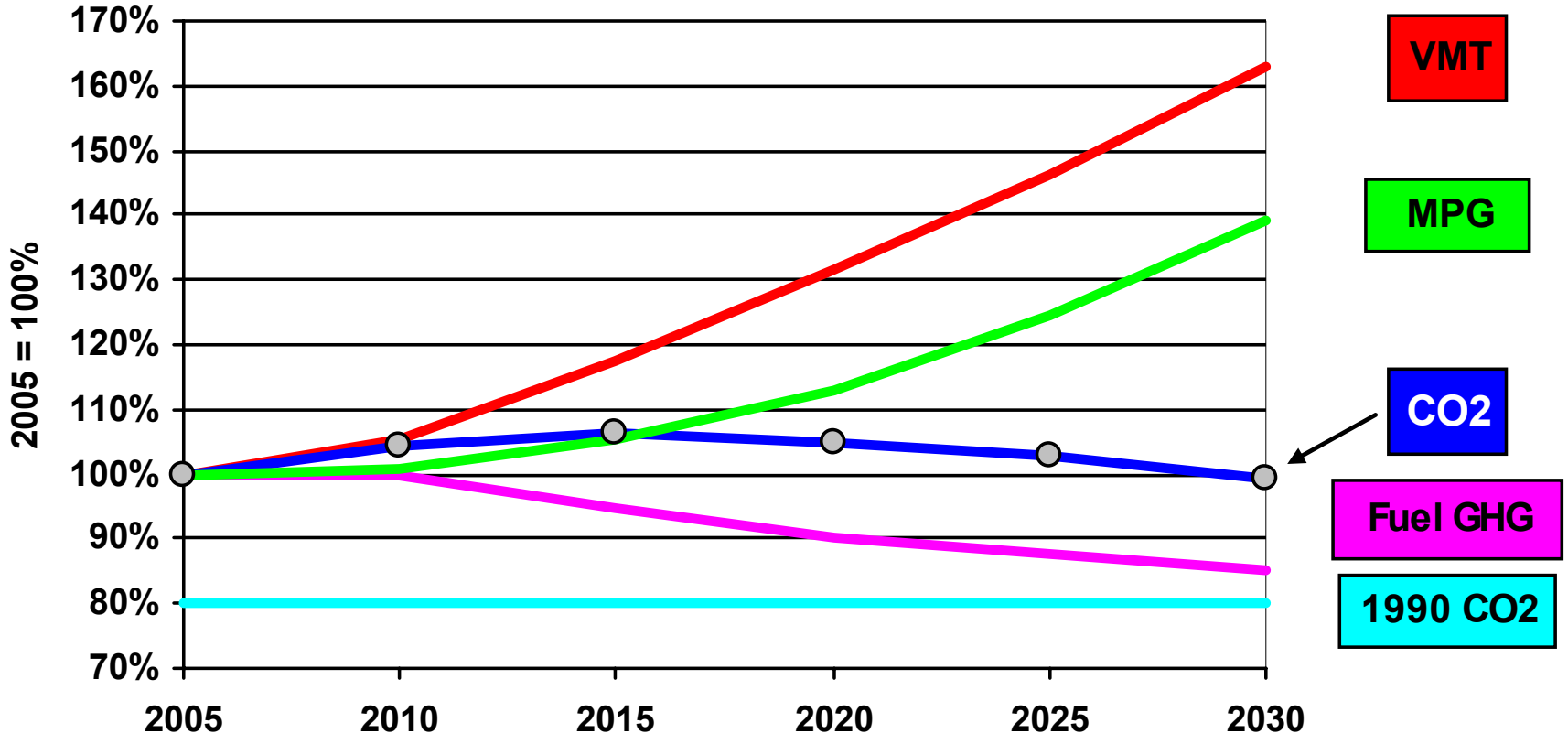
45 mpg (5.2 l/100km) CAFE in 2030 & -15% Fuel GHGs: 24% above 1990 in 2030



Sources: VMT: EIA with 10% rebound, MPG & Fuel: Trend Extrapolation

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What to we know about Land Use and Driving?

History and Policies Matter

Daily VMT per Capita by Region (2005)

New York - Newark	17
Portland, OR	20
Seattle	23
Atlanta	31
Houston	39

Int'l Estimates:

Hong Kong	5
Typical Europe	12

Perspective Matters

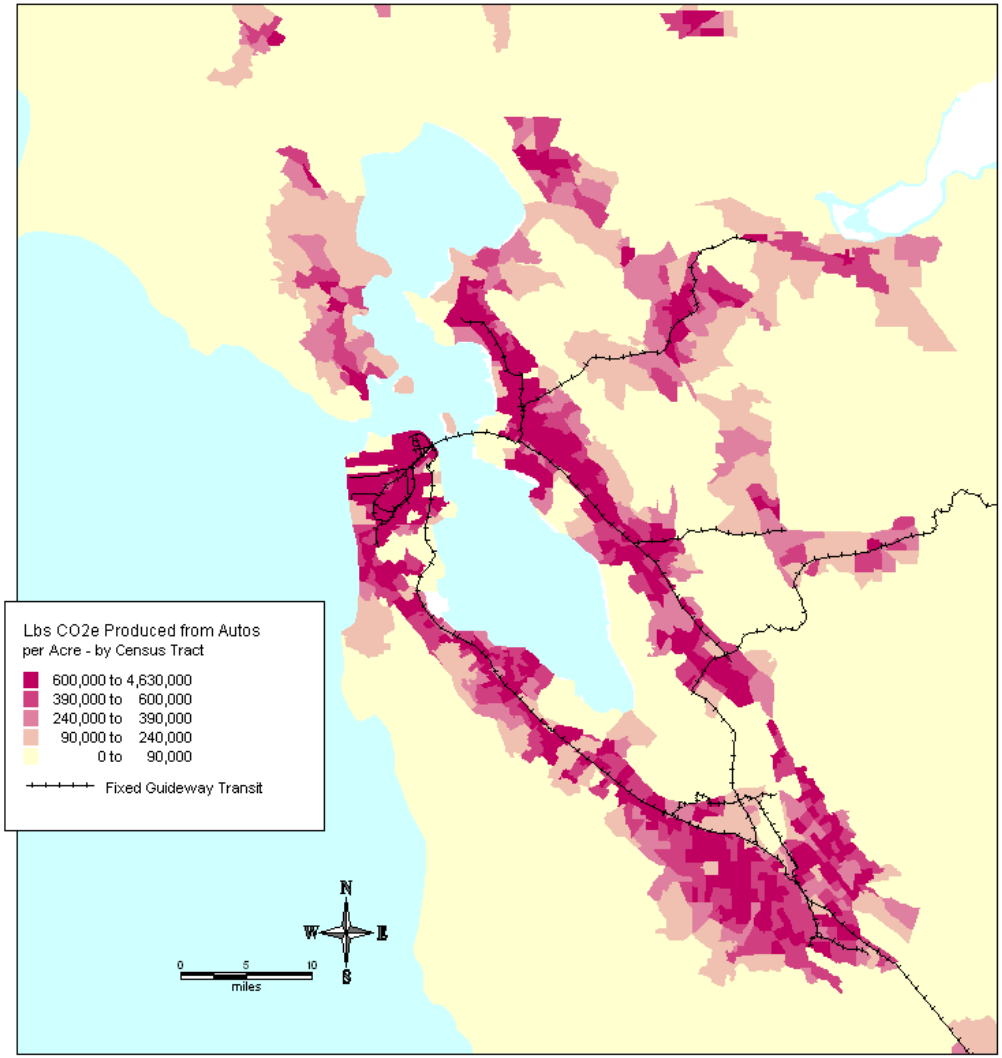
CO_2 per Acre

Source :

Center for Neighborhood Technology

prepared for and peer reviewed by Transportation Research Board of the National Academy of Sciences

CO2 Generated by Automobiles
in the San Francisco Region per Year
Two Views of Cities and CO2



Traditional View:
Cities produce large amounts of GHGs.

Compact is more efficient

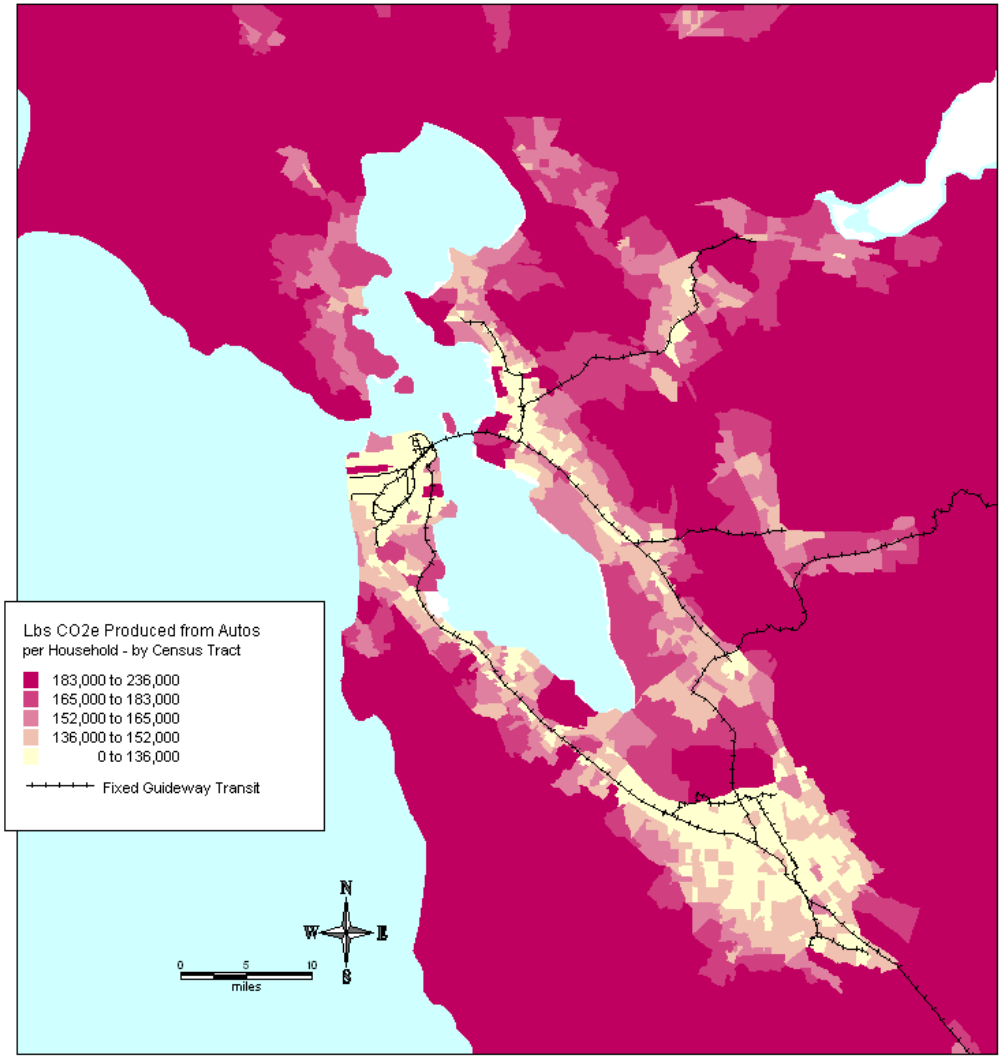
CO_2 per Household

Source :

Center for Neighborhood Technology

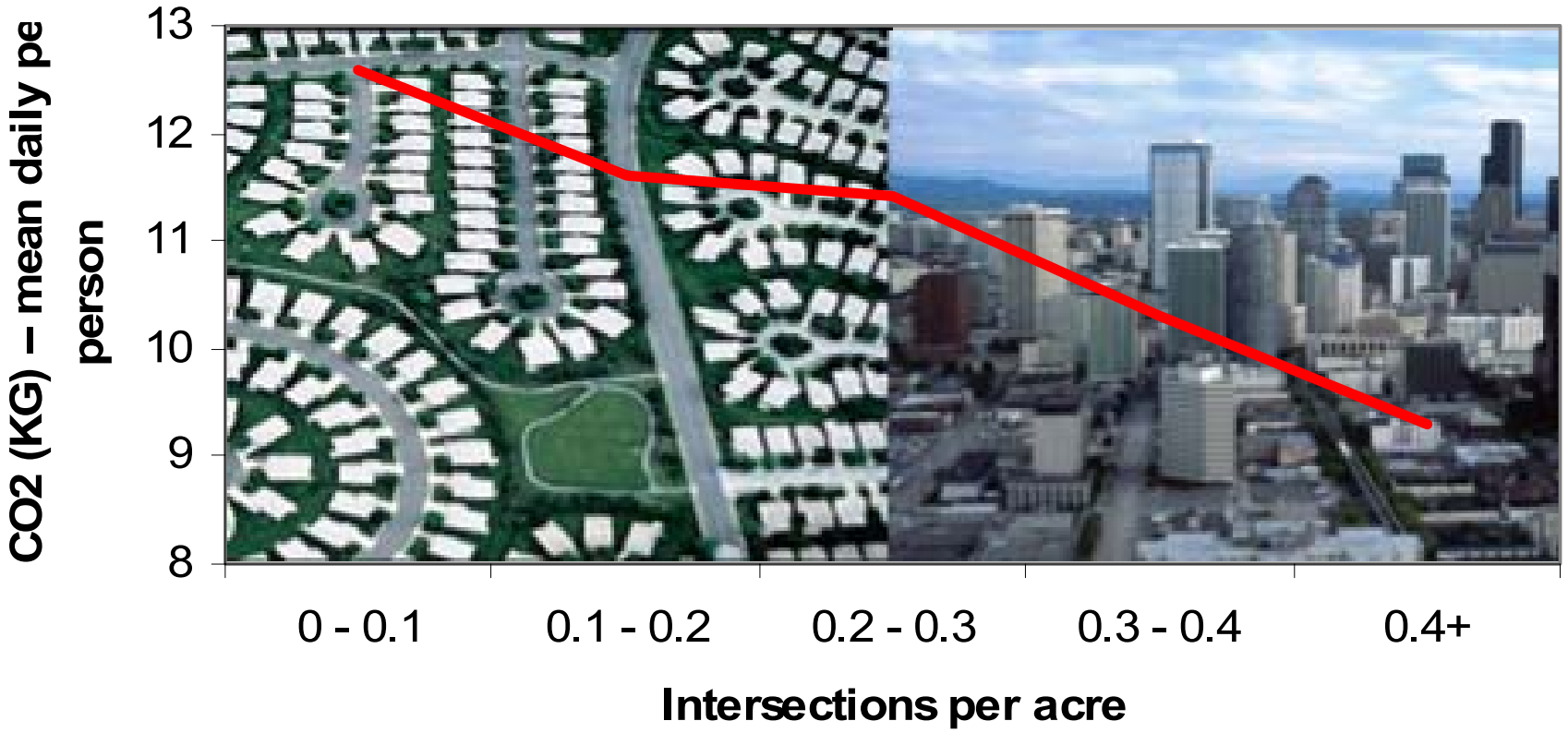
prepared for and peer reviewed by Transportation Research Board of the National Academy of Sciences

CO2 Generated by Automobiles
in the San Francisco Region per Year
Two Views of Cities and CO2



Emerging View:
City dwellers produce relatively low amounts of GHGs.

Regional Location Matters
(King County 2005, provided by Larry Frank)



(Frank, Winkelman, Chapman, Cavage, & Leinberger. Brookings., forthcoming)

Design Matters

2 km drive vs. 1 km walk

Source: Larry Frank

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The 3 Questions Answered in *Growing Cooler*

1. How much can smart growth reduce driving?
   → 20-40% VMT reduction per increment of dvpt
   → 12-18% reduction in Metropolitan VMT by 2050
   → Just from land use -- excludes pricing, other policies

2. How much CO2 would that save?
   → 85 MMTCO2 in 2030

3. What policy changes will be required?
   → Don Chen will address today

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4 Literatures Reviewed in *Growing Cooler*

1. Aggregate travel studies
2. Disaggregate travel studies
3. Regional simulation studies
4. Project simulation studies

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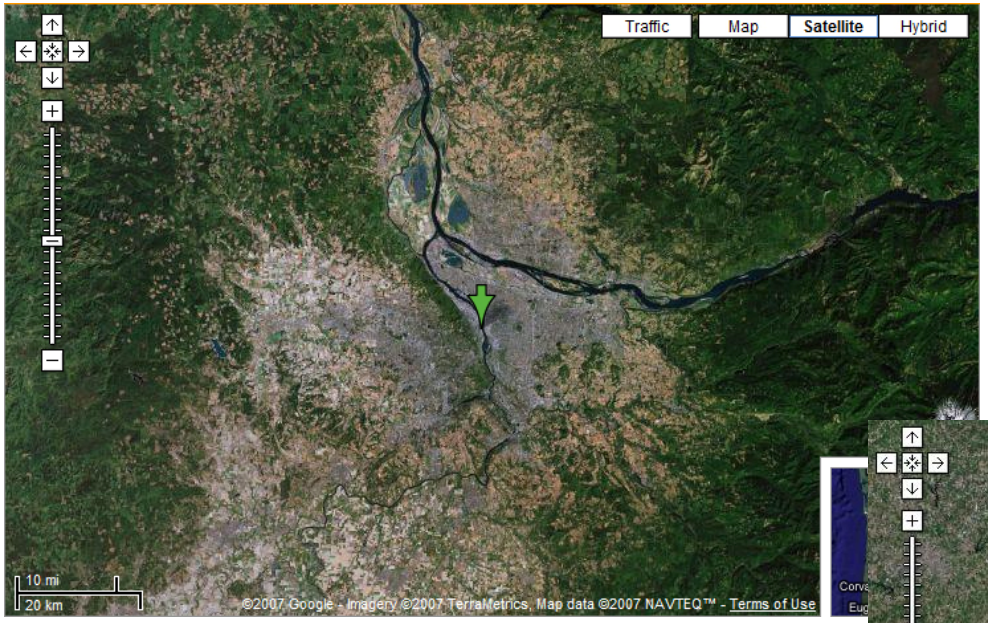
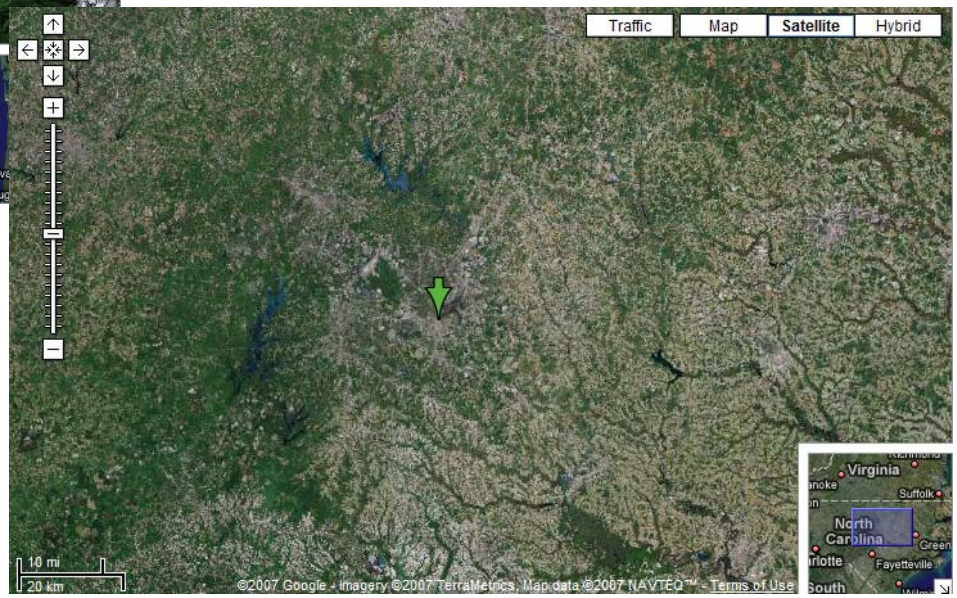
Metropolitan Regional Views: Portland, OR vs. Raleigh, NC





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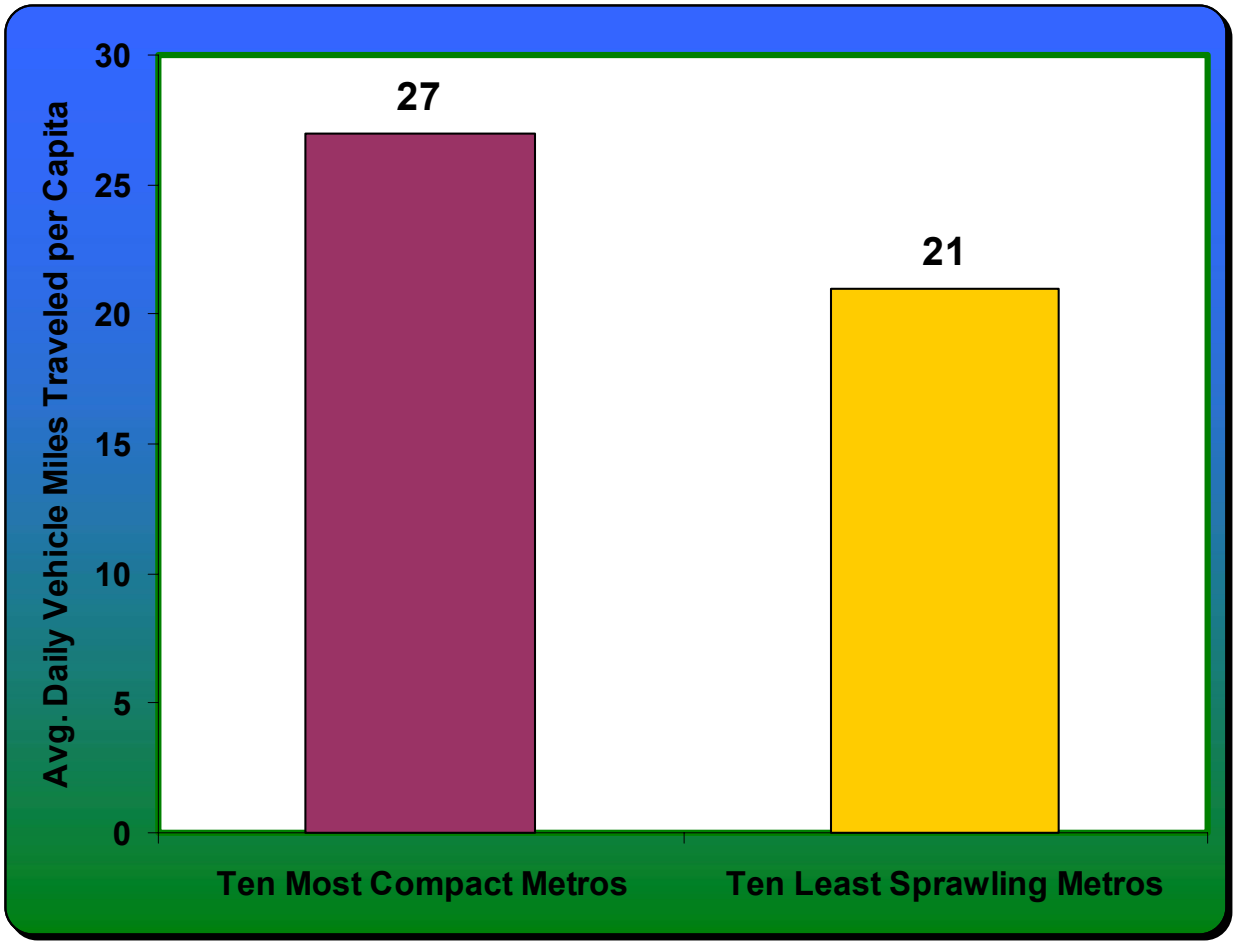
Metro Comparisons: - 25% VMT with Compact Development



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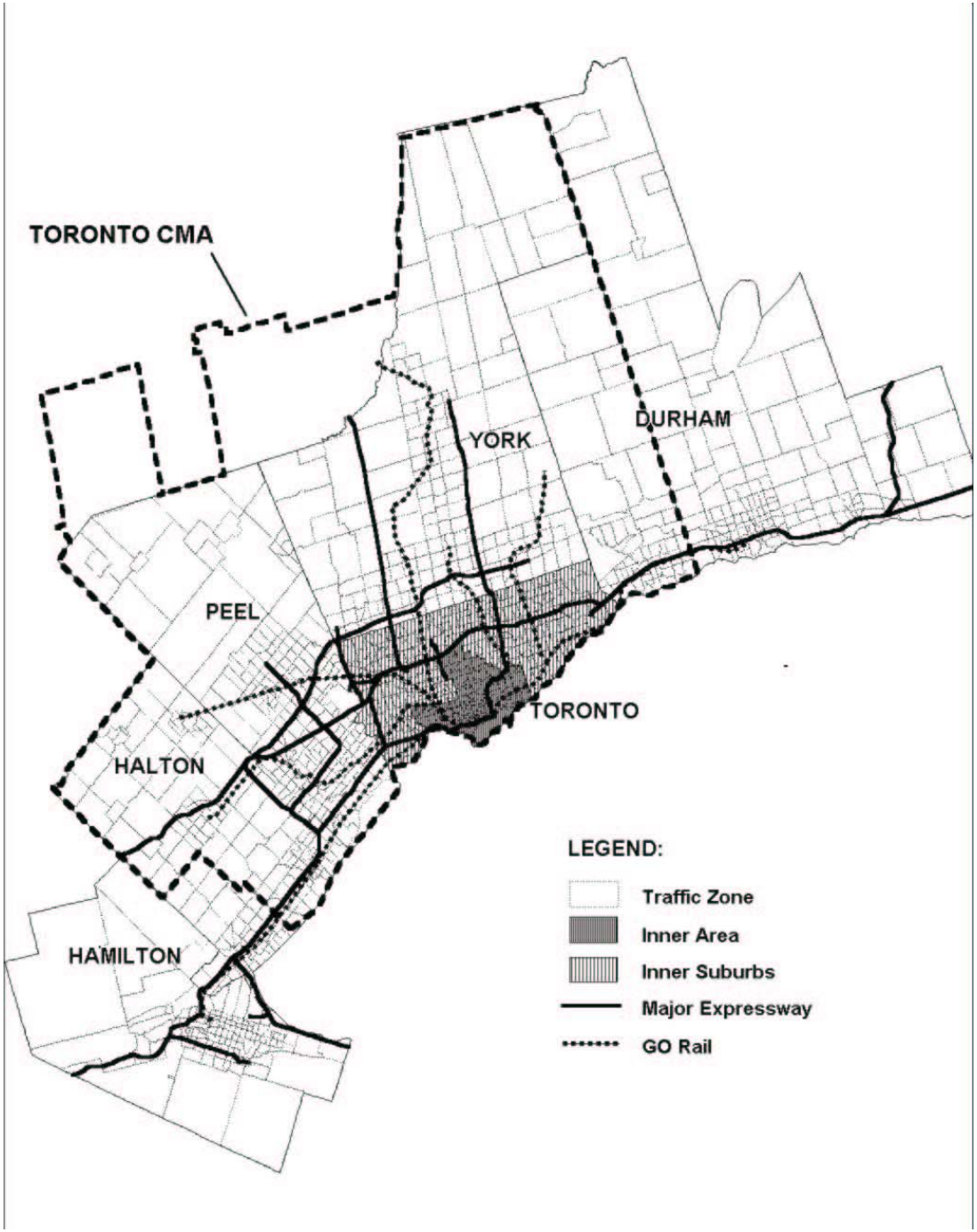
Canadian Mortage Housing Corportation: GHGs and Urban Travel

Study Area: Toronto

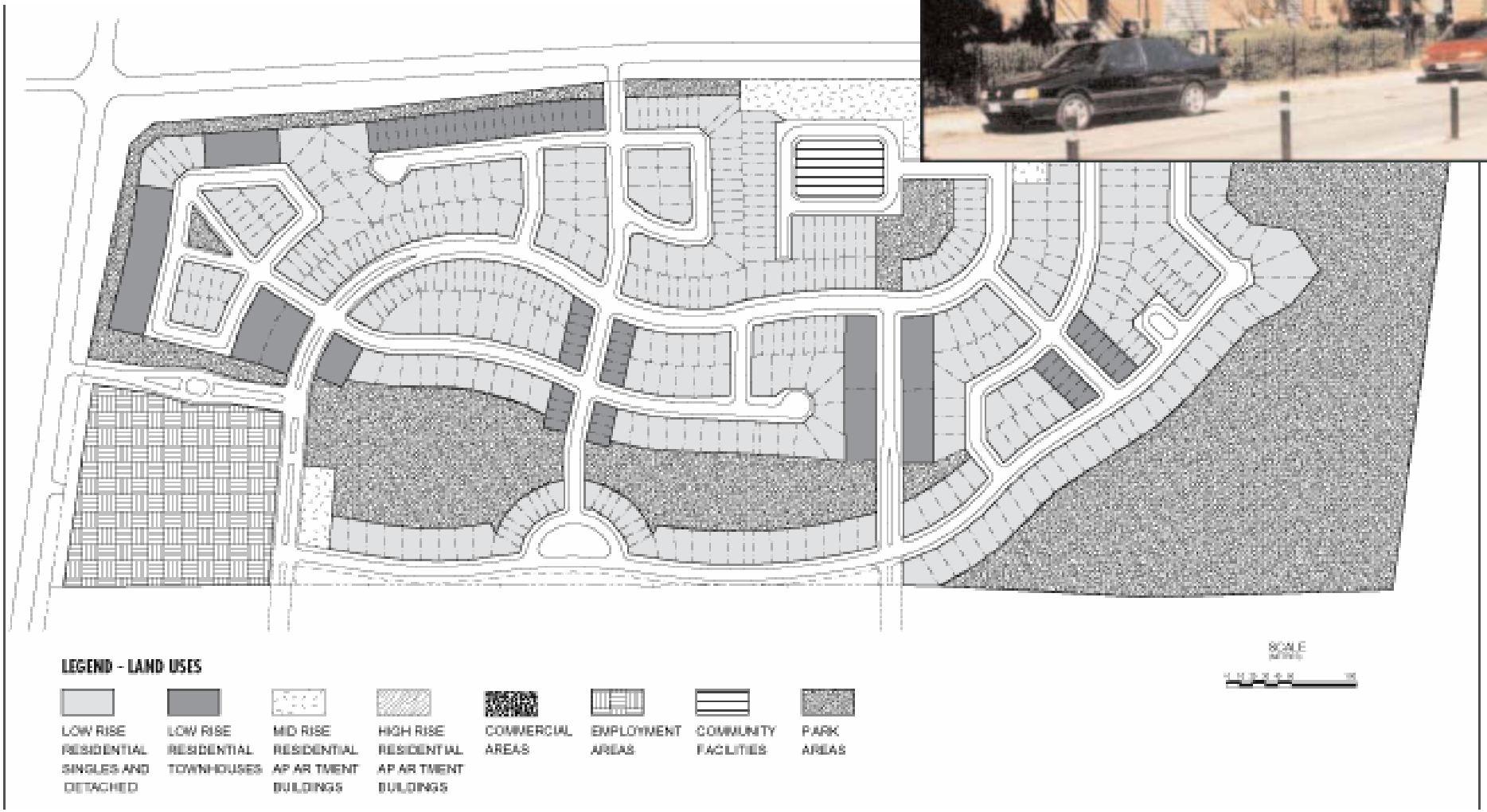


Source: C. Zegras MIT , from IBI Group, 2000.

Conventional Suburban Subdivision

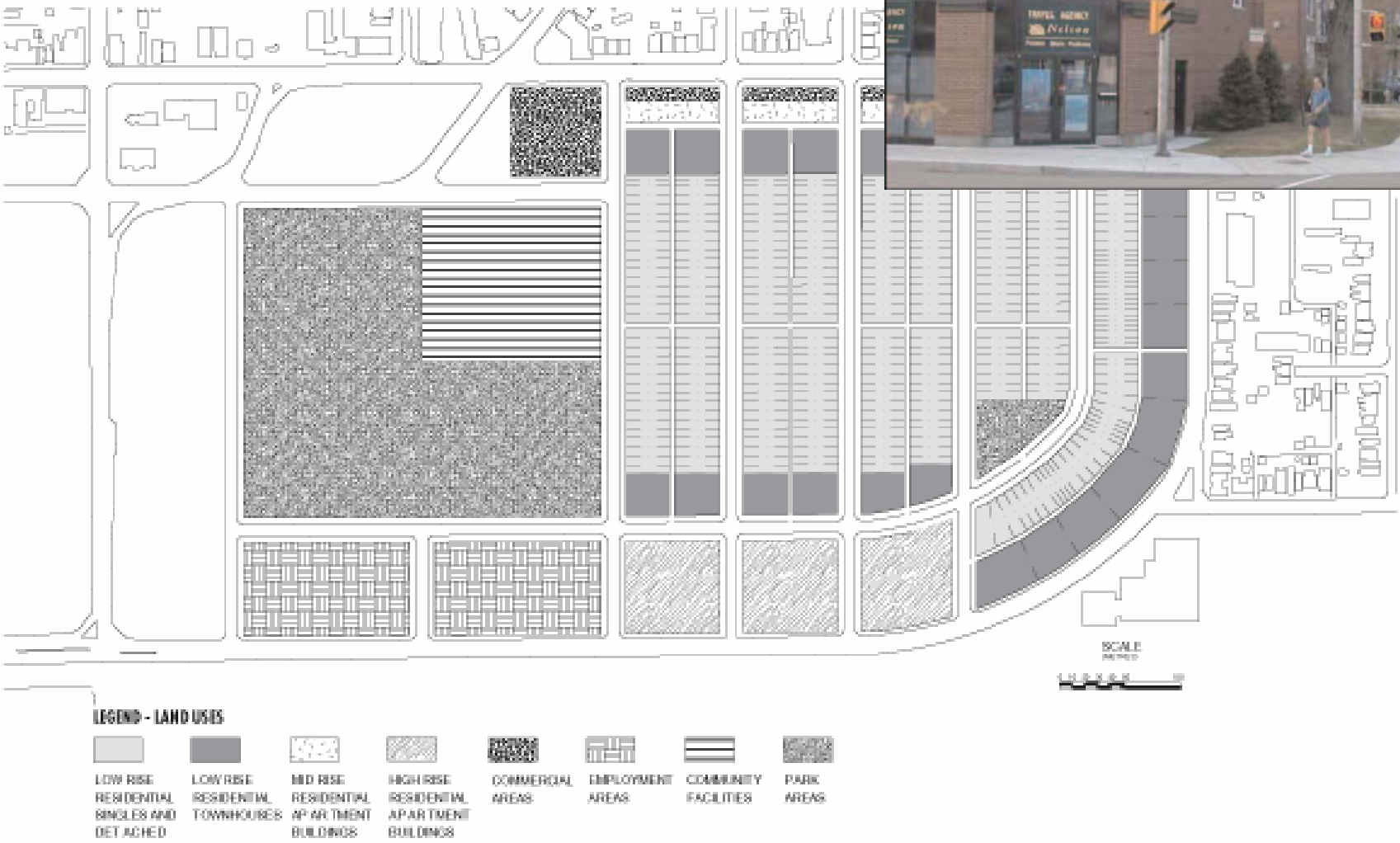
Source: C. Zegras, from IBI Group, 2000.

Medium Density Development



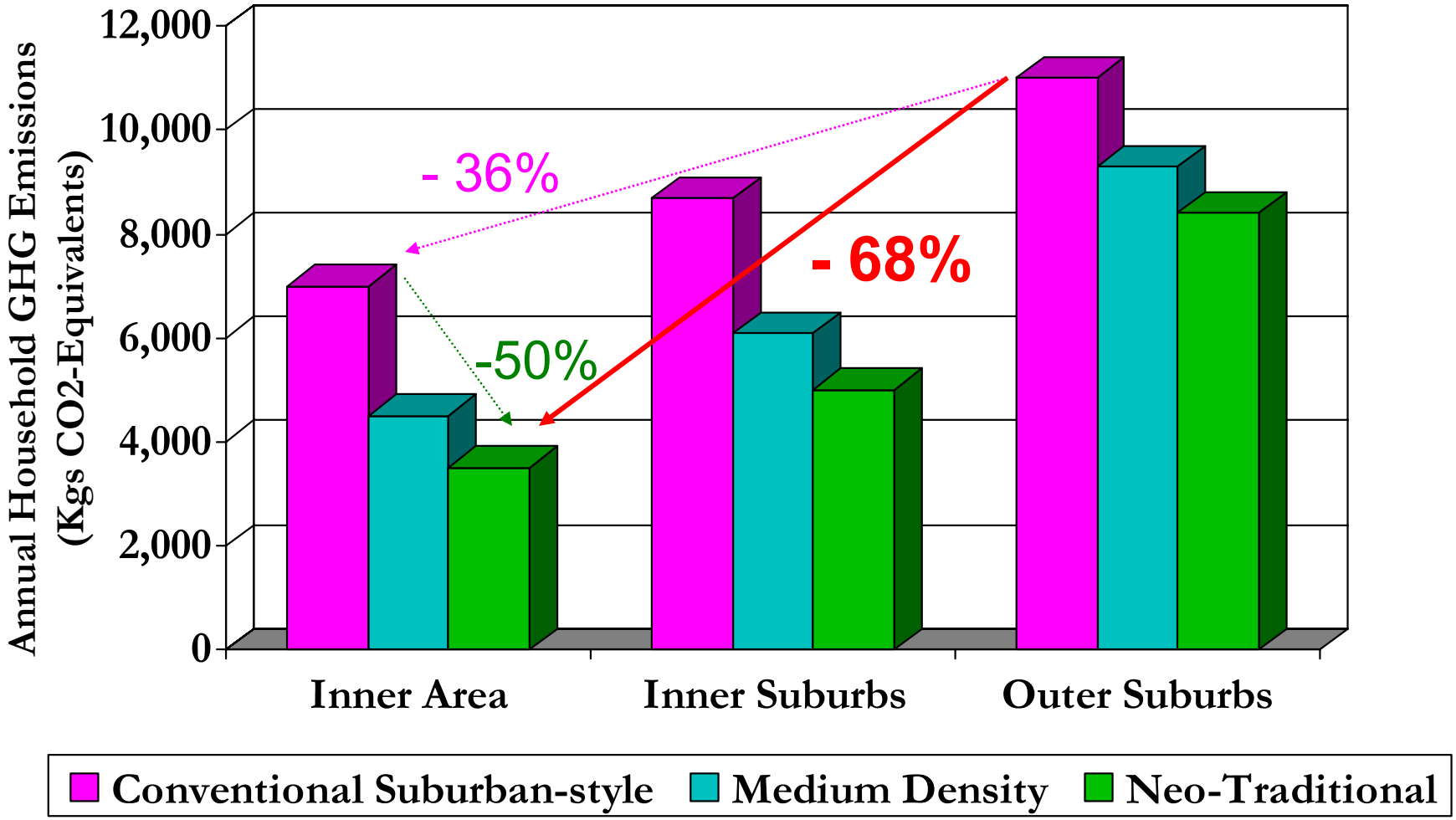
Source: C. Zegras, from IBI Group, 2000.

"Neo-Traditional" Development



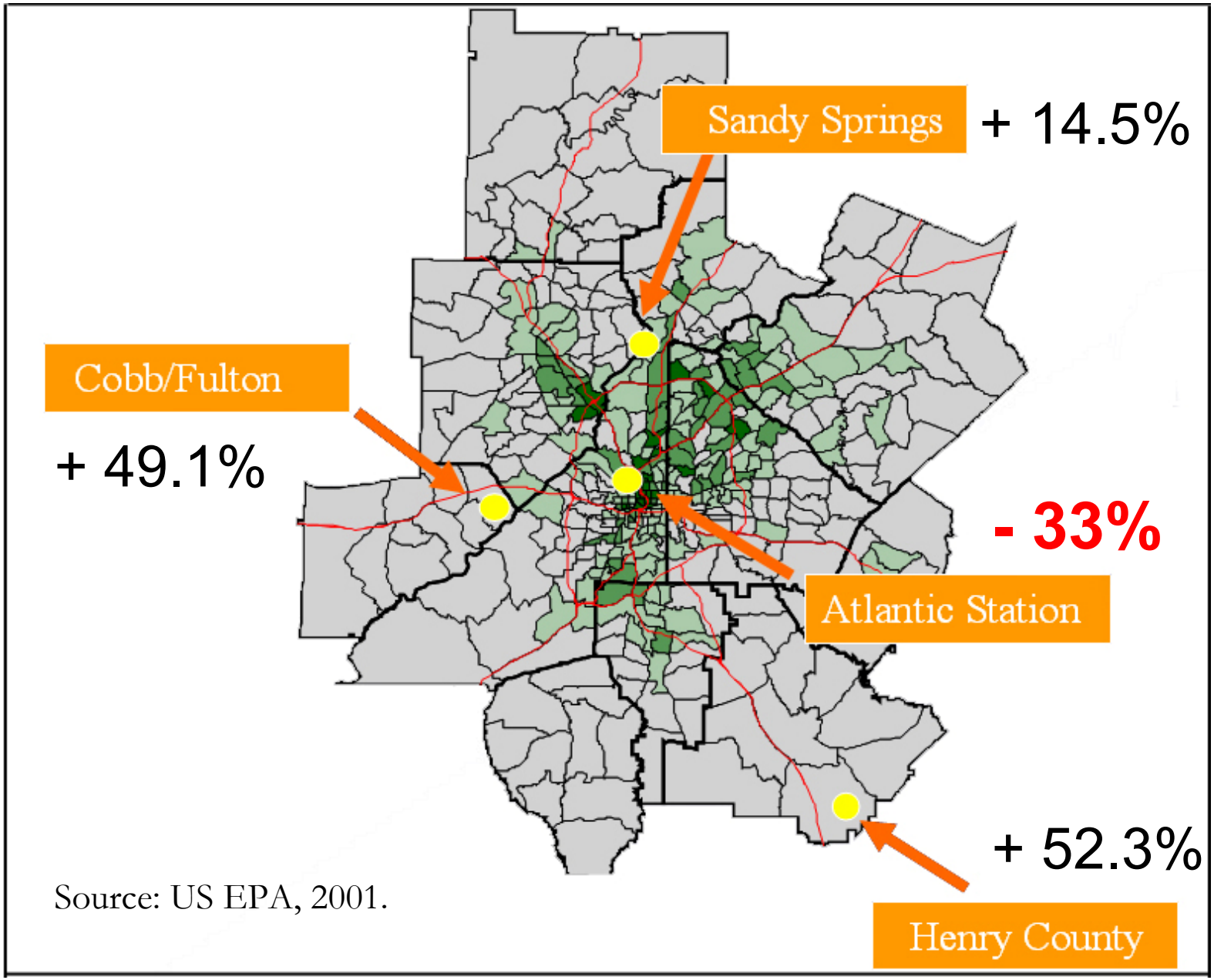
Source: Zegras, from IBI Group, 2000.

CMHC Results: Transport GHGs

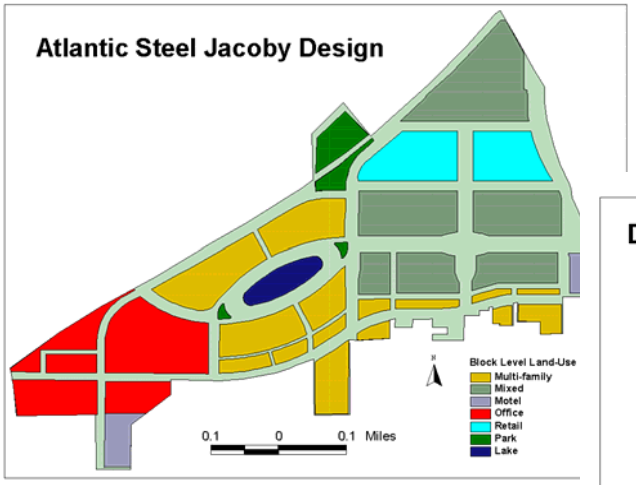


Source: Based on Zegras from IBI Group, 2000.

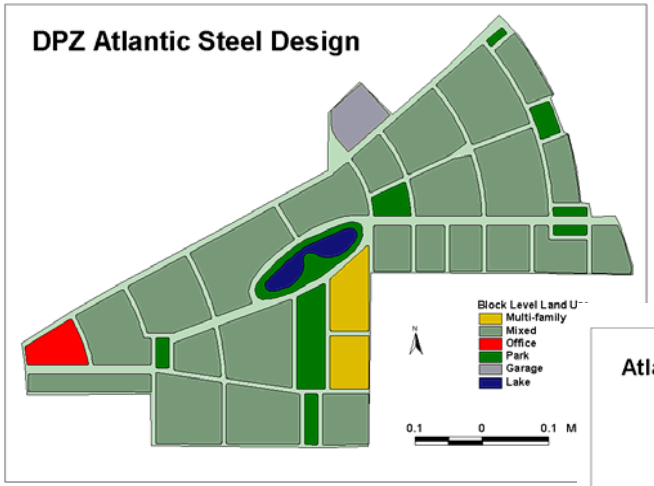
Atlantic Station: Location Alternatives



Atlantic Station: Site Design Alternatives

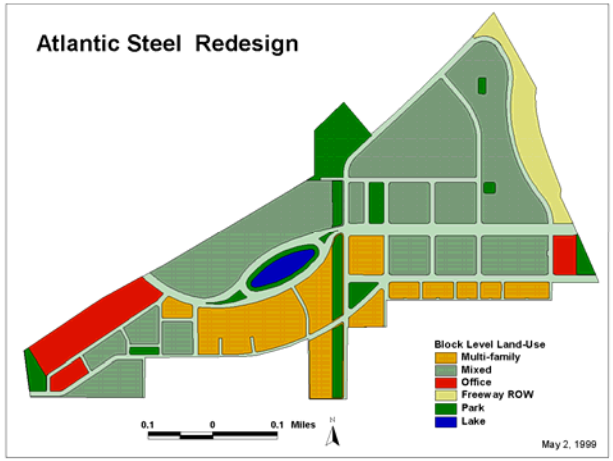


- 3.8%



- 5.8%

- 5.1%



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Source: Walters et al, 2000.

Atlantic Station: Thriving Community

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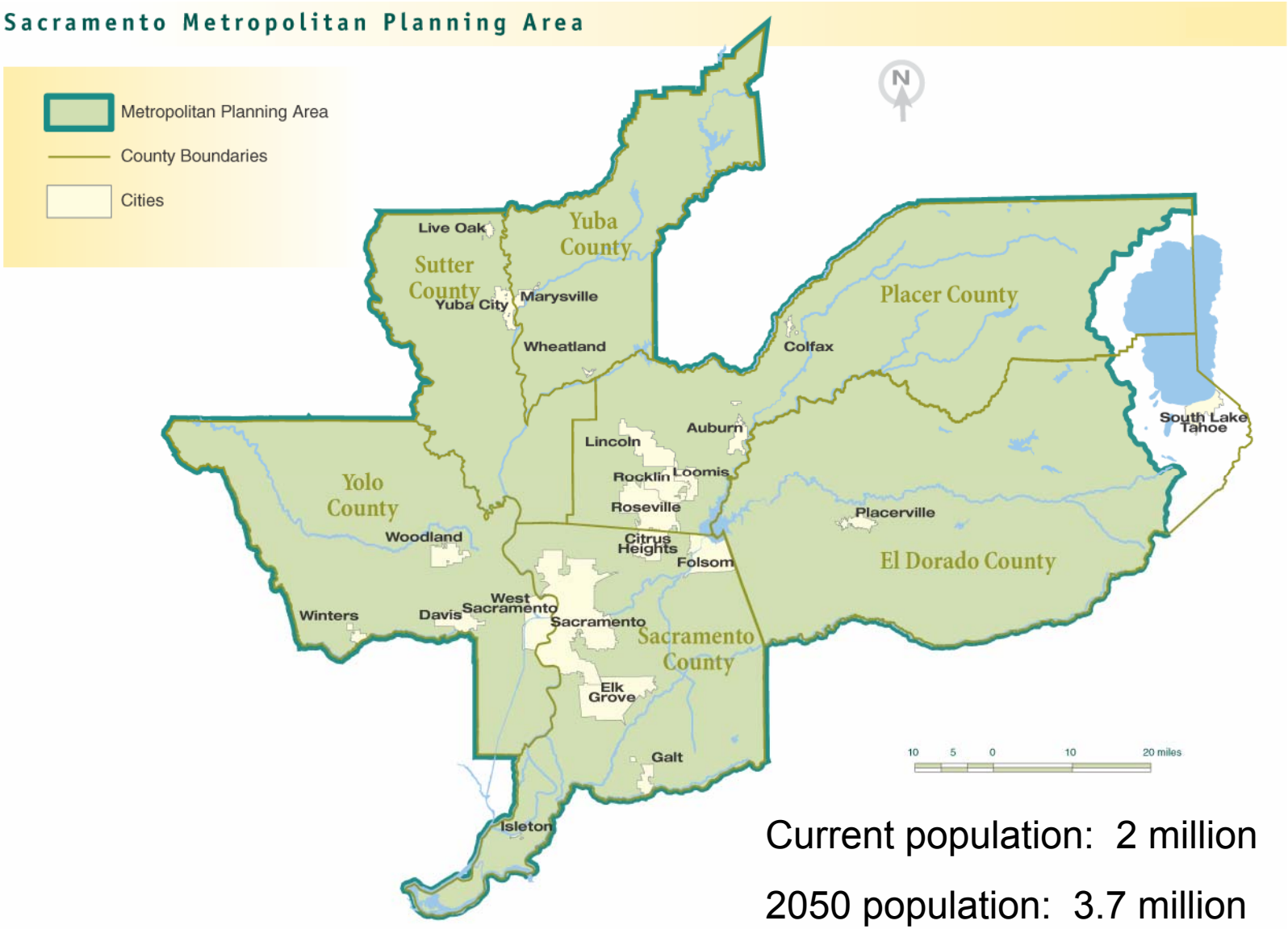
Sacramento Area Council of Governments

SACRAMENTO REGION Blueprint TRANSPORTATION/LAND USE STUDY

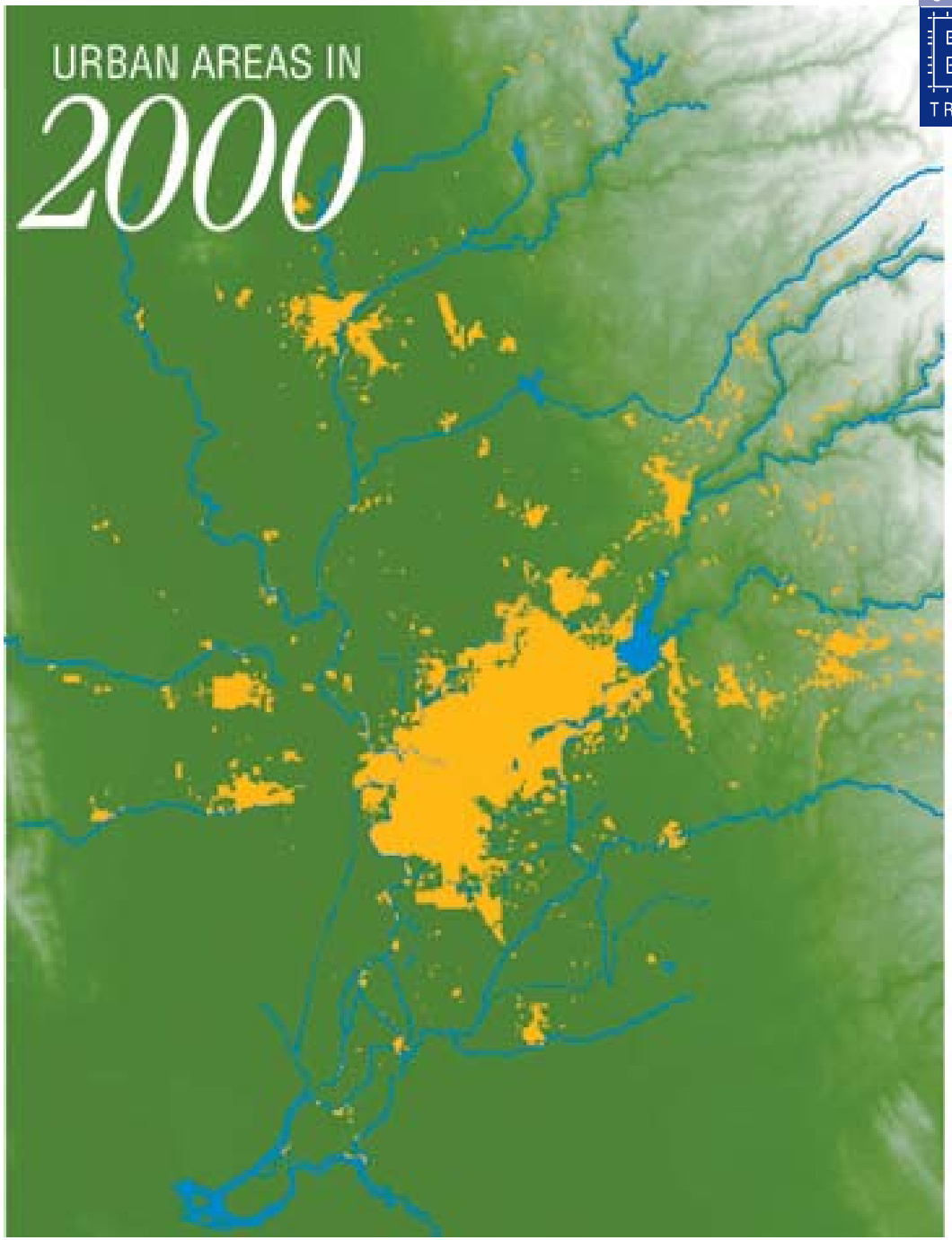


Current population: 2 million

2050 population: 3.7 million

SACRAMENTO REGION
Blueprint
TRANSPORTATION/LAND USE STUDY

How would the region change if current trends continue?

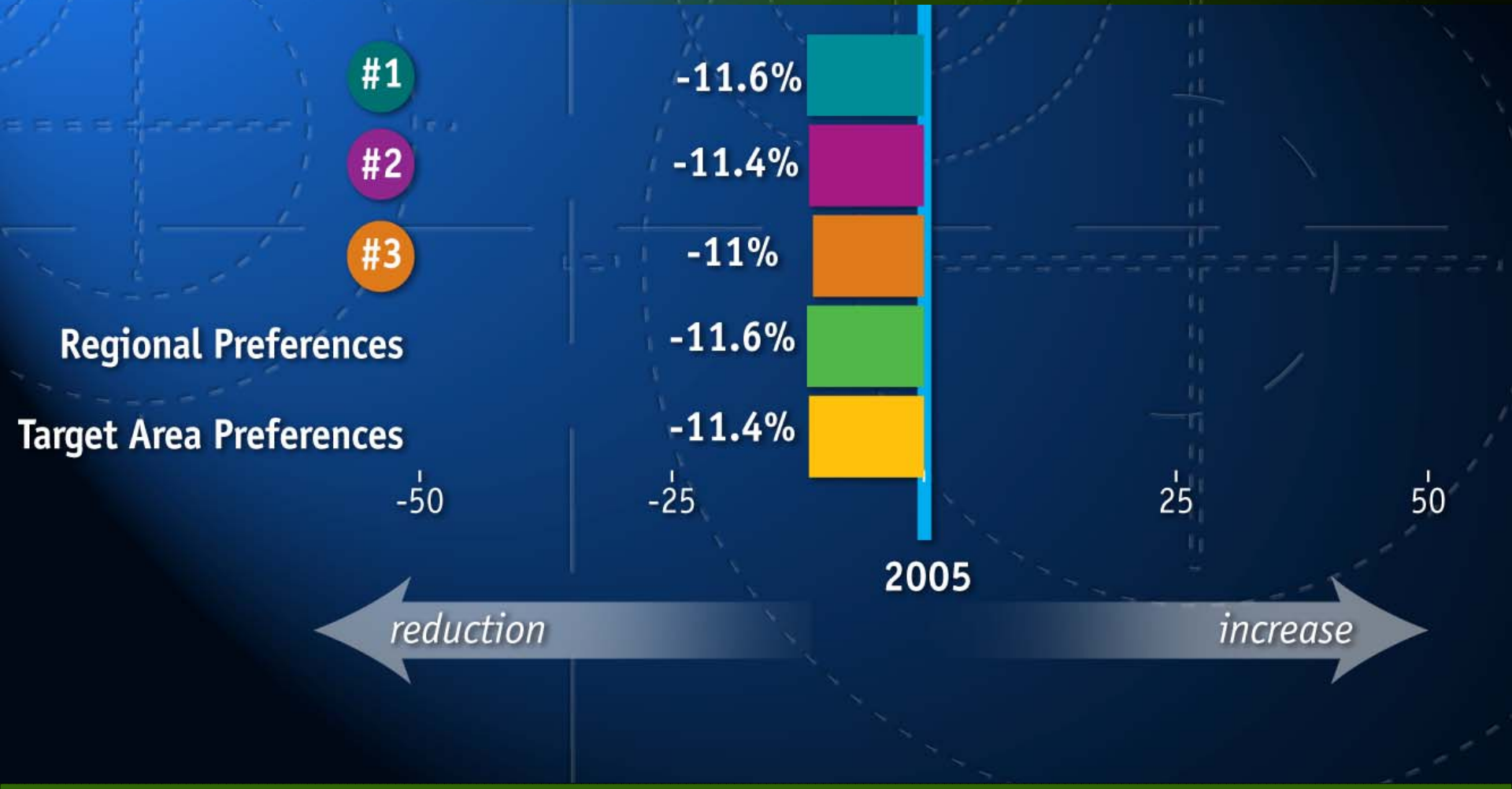


SACRAMENTO REGION
Blueprint
TRANSPORTATION/LAND USE STUDY

Sacramento becomes Atlanta!

Vehicle Miles of Travel per Household

SACRAMENTO REGION
MTP2035
METROPOLITAN TRANSPORTATION PLAN
THE NEXT STEP IN BLUEPRINT



The Future Ain't Here Yet

"**Nearly half of what will be the built environment in 2030 doesn't even exist yet,** giving the current generation a vital opportunity to reshape future development."

Arthur C. Nelson, "Planning for a New Era," *Journal of the American Planning Association*, Fall 2006.

Can we Build it?

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Yes we can!

Photo Source: Arthur C. Nelson

Can we retrofit suburbia?

Sure.

Ugh

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Source: Urban Advantage

Ahhh

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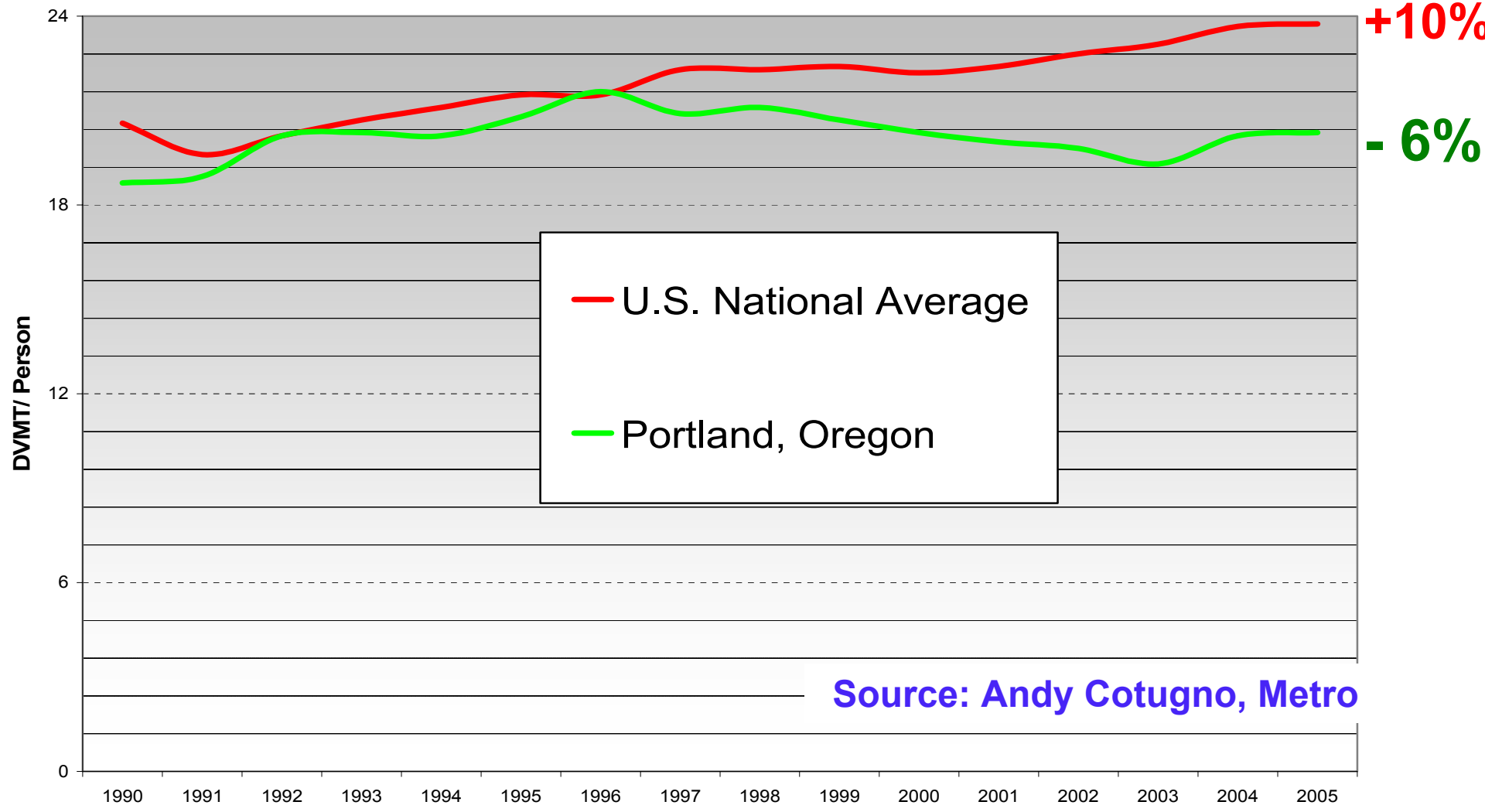
Source: Urban Advantage

Has it ever been done?
Portland OR: VMT/capita 1990 to 2005



Arlington-Ballston Corridor
VMT steady since 1980 despite 2X growth

Growing Cooler: The Bottom Line

Projected 2030 Savings from Smart Growth

- Shifting 60% of new growth to compact patterns
  - » 85 million metric tons of CO2 in 2030
- Equal to a 28% increase in CAFE standards to 32 mpg in 2020
  - » Half the savings of the Senate's 35 mpg CAFE bill
- Fuel cost savings in 2030: $24 billion (USD)
  - » Cumulative: $250 billion

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A
B

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Questions? Comments? Thank You!

For more information:

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Dialogue. Insight. Solutions.

Supplemental Material

Transit, Pricing, Smart Growth, etc. could cut VMT 23% by 2030 (NRDC/Cowart)

Widespread implementation of best practices:

1.	**Pay-as-you-drive**	368 B VMT
2.	**Smart Growth, NMT**	298 B VMT
3.	**Speed limits & Drivers Training**	73 B VMT
4.	**Road pricing**	65 B VMT
5.	**Parking measures**	58 B VMT
6.	**Other TDM** (HOV, telecommute)	58 B VMT
7.	**Transit**	49 B VMT

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