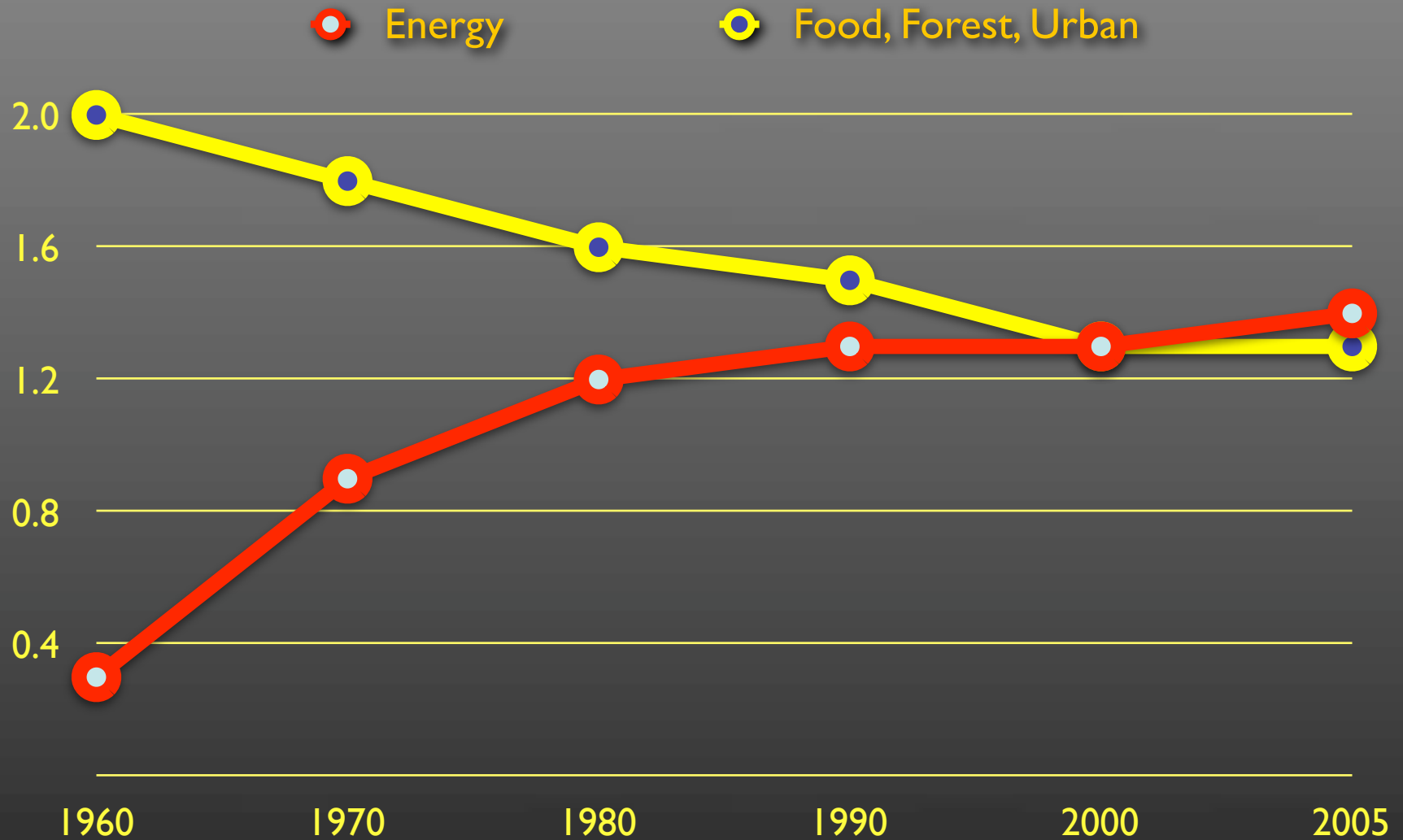


# Climate Change and The Land-use/ Transportation Challenge

How Much Change is Possible  
How Much Impact Will it Have

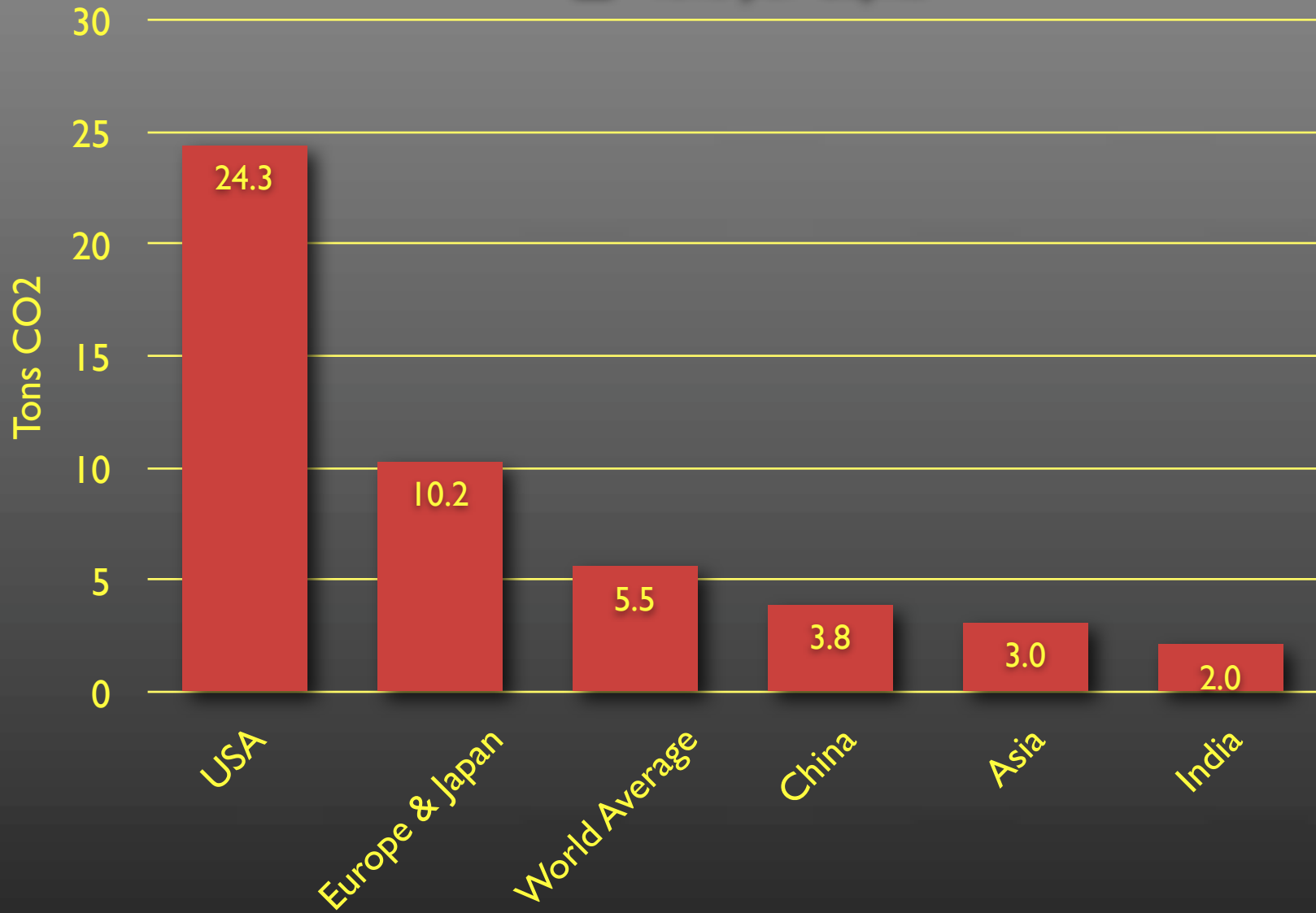
# Global Ecological Footprint per Capita



Source: Global Footprint Network

# Carbon Emission by Location

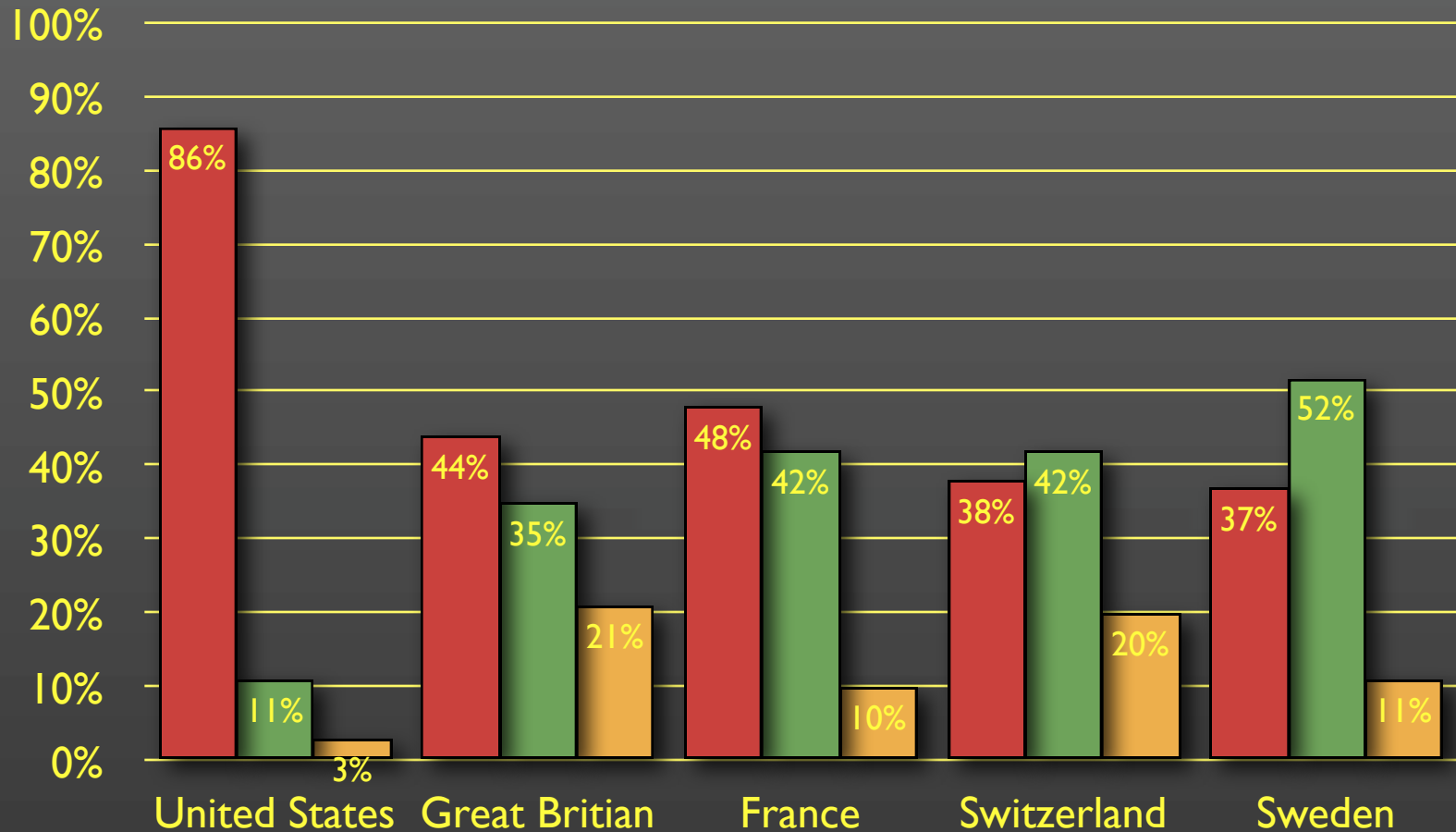
■ Tons per Capita



Source: Global Footprint Network

# Transportation Mode by Country

Atuo      Walk/Bike      Transit



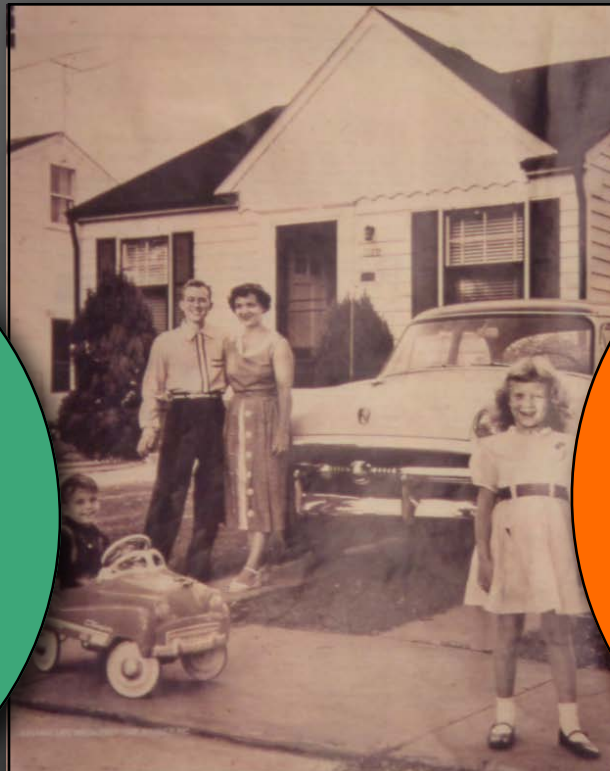
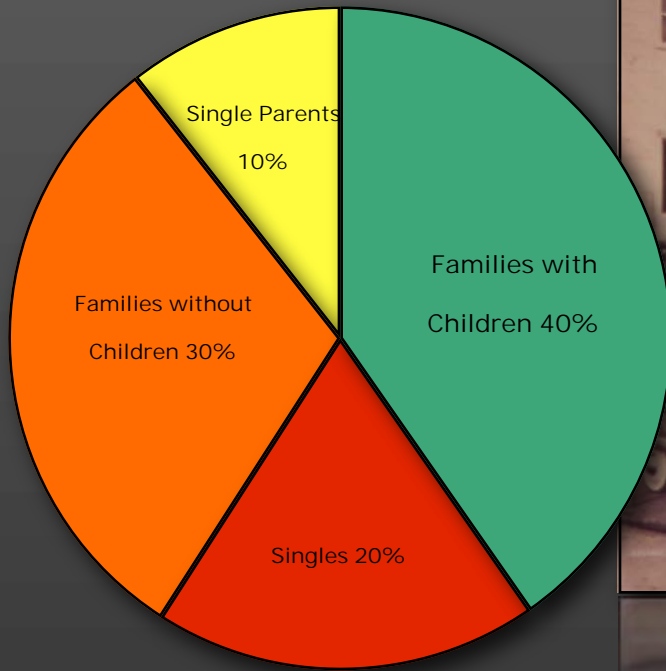


# The Suburban Experiment: A Half Century of Radical Change

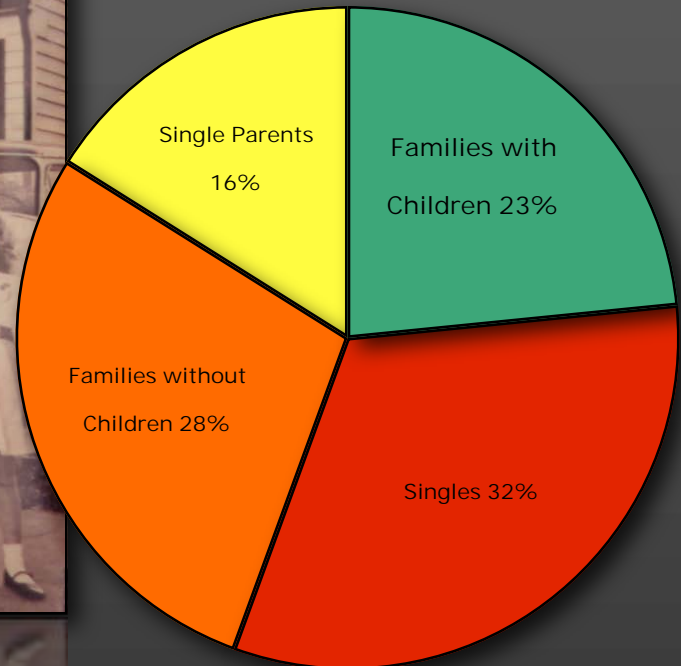
- \* **VMT per Household Doubles 1950–2000**
- \* **Autos Per Household from 1 to 1.7**
- \* **Families with Children down from 40% to 23%**
- \* **Working Women triples**
- \* **Urban Footprint per Household Quadruples**
- \* **1950 23% population in suburbs, now 50%**
- \* **1970 only 25% jobs in suburbs, 1990 it is 57%**

# Who We Are (Really)

1970 U.S. Census

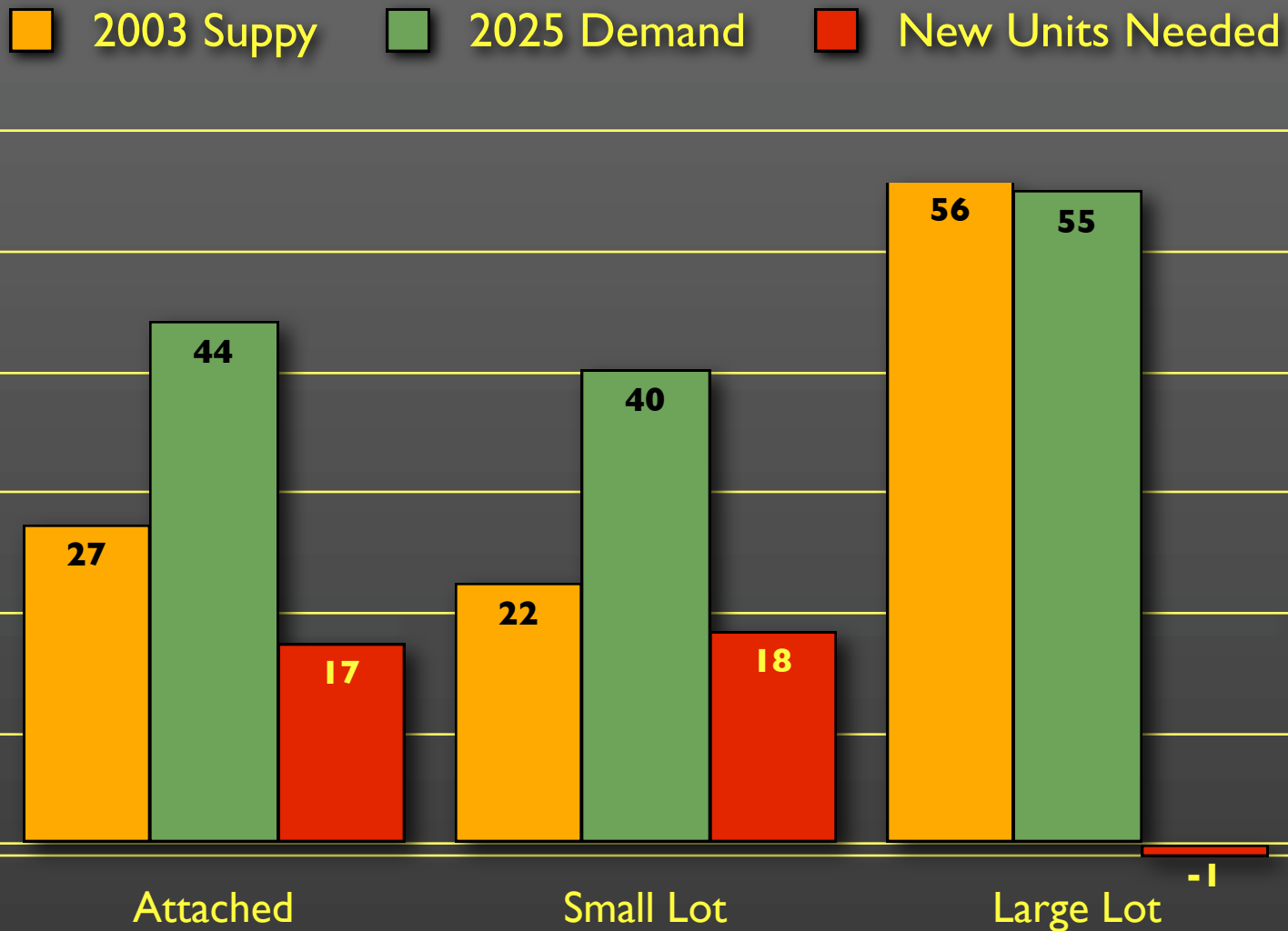


2003 U.S. Census



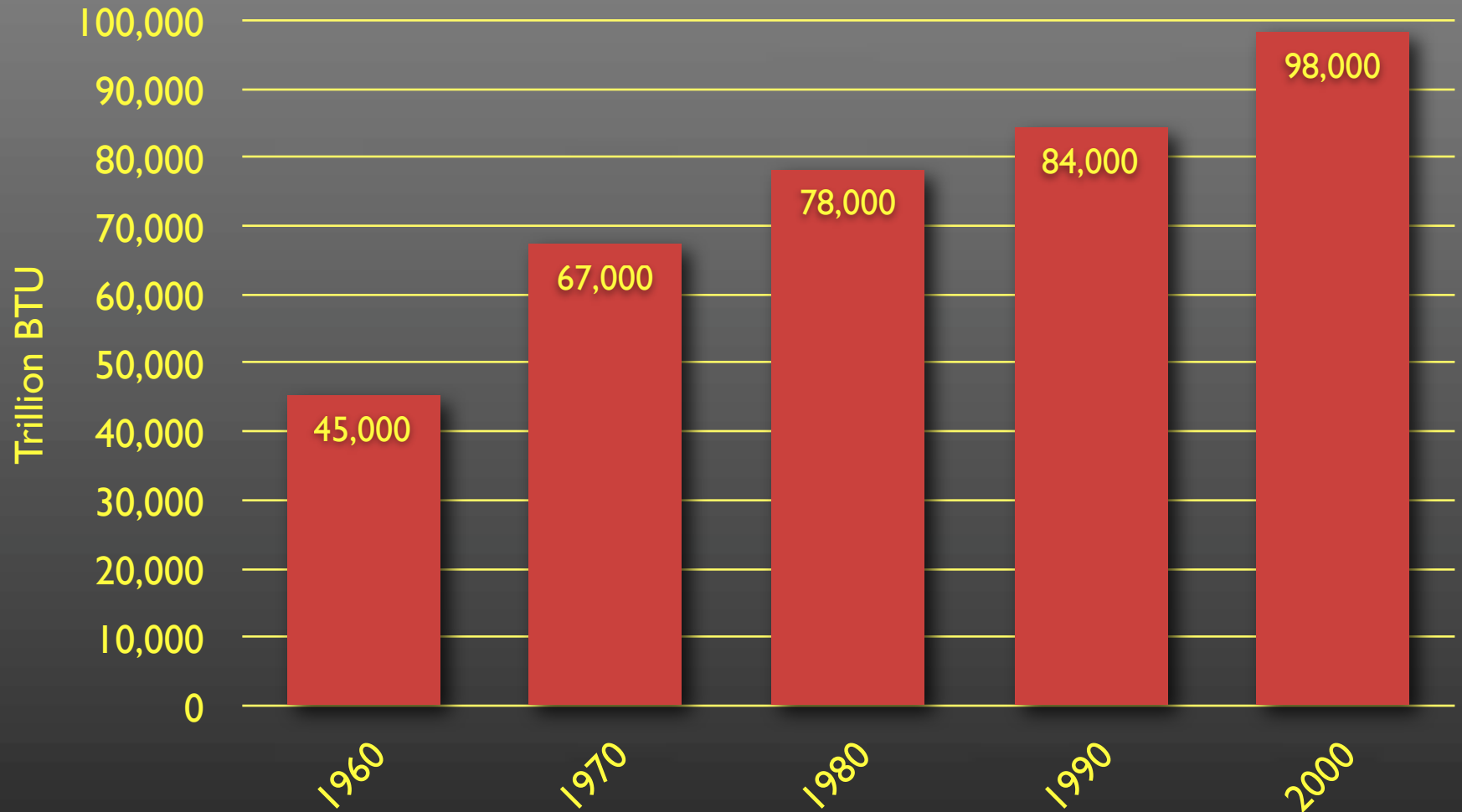
# 2003 Housing Supply vs 2025 Demand

Millions



# USA Total Energy Consumption

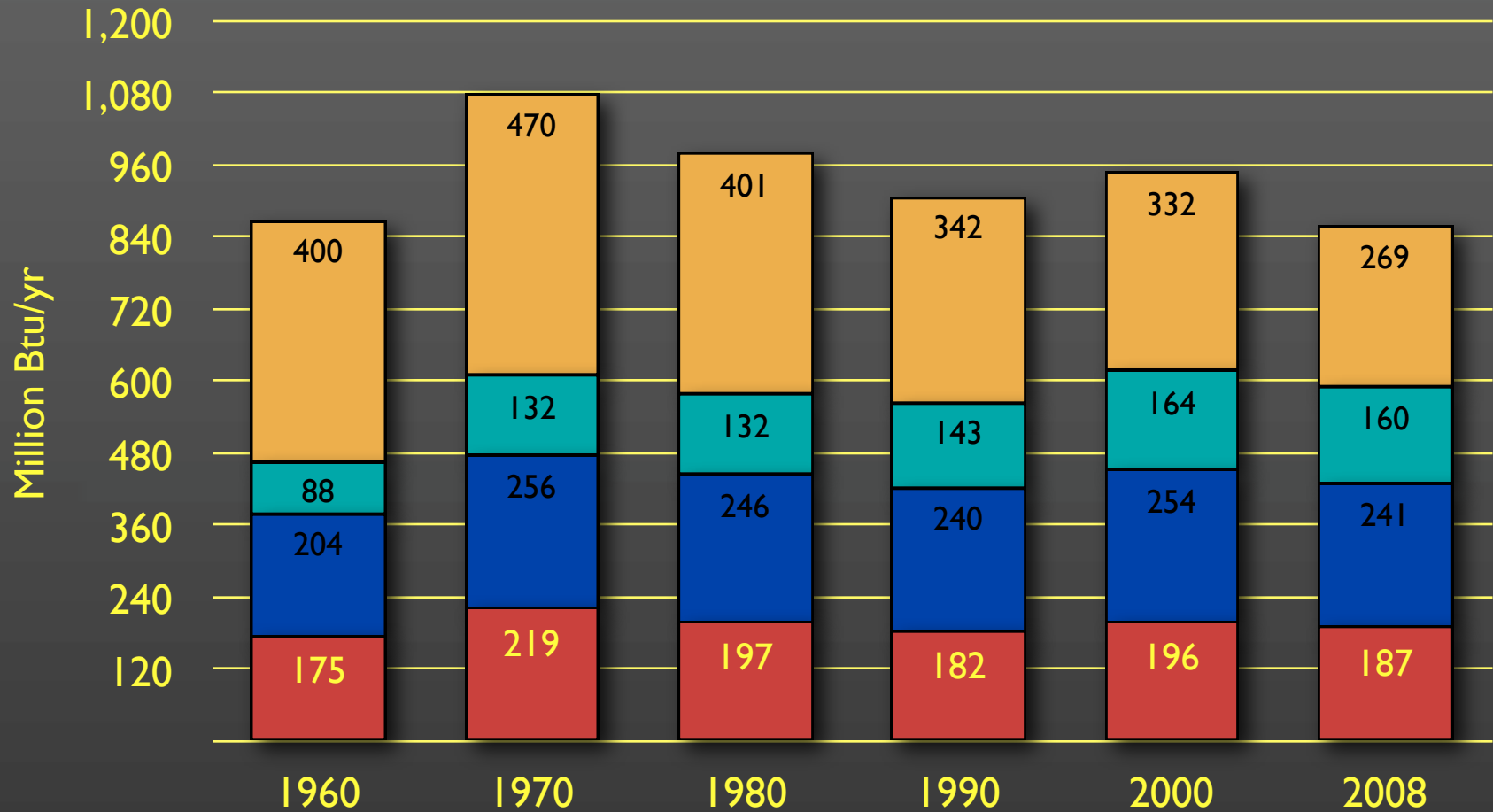
■ Trillions BTU/year



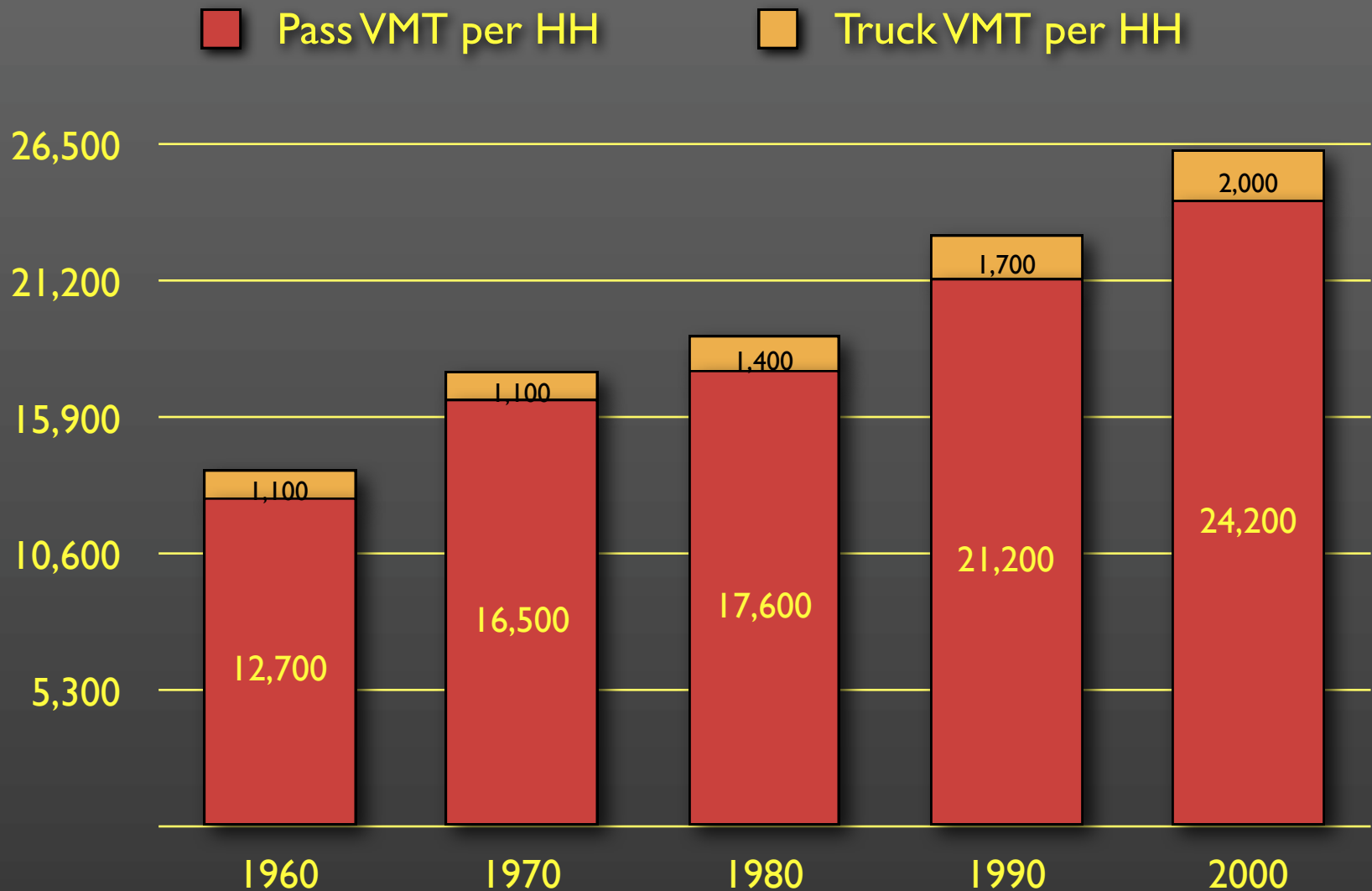
Source: Energy Information Agency Table 2.1a

# Total Energy Consumption per Household

Residential Transport Commercial Industrial



# VMT Per Household



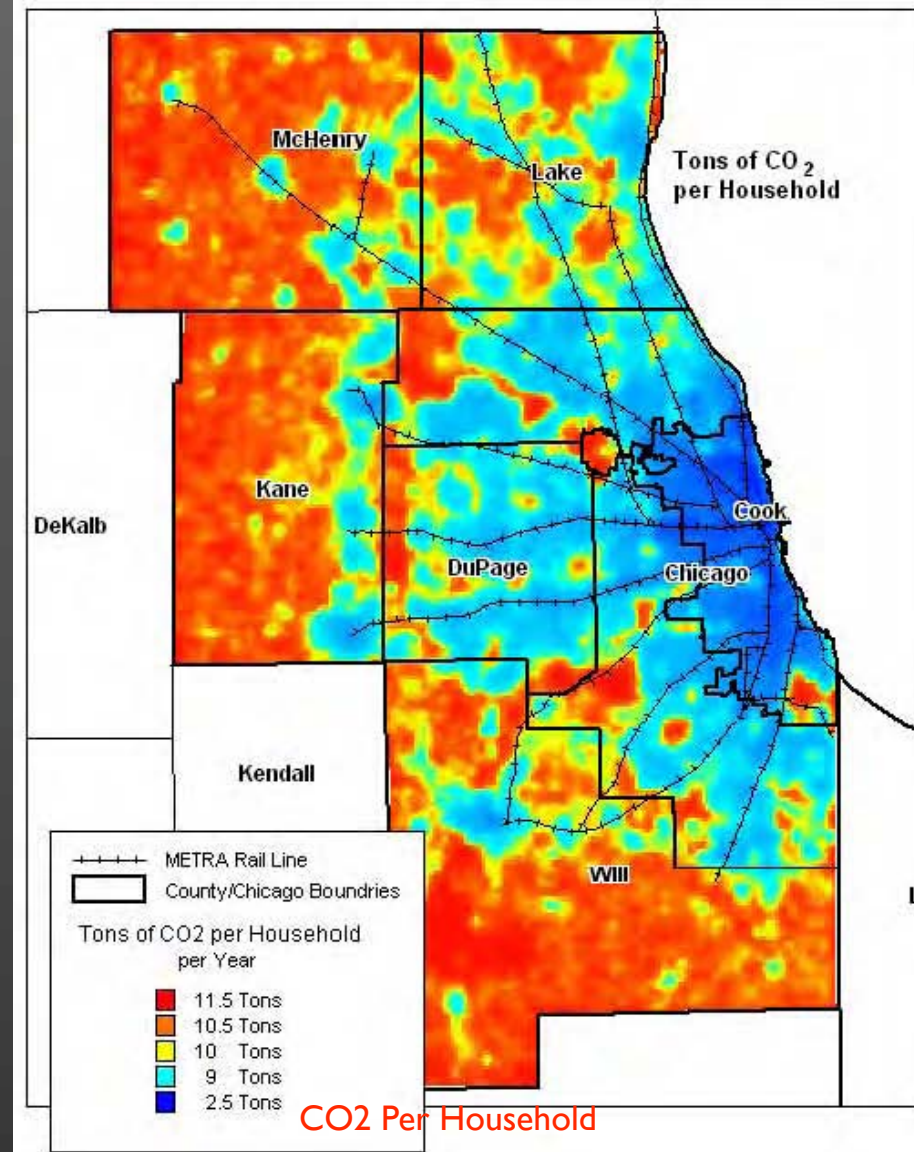
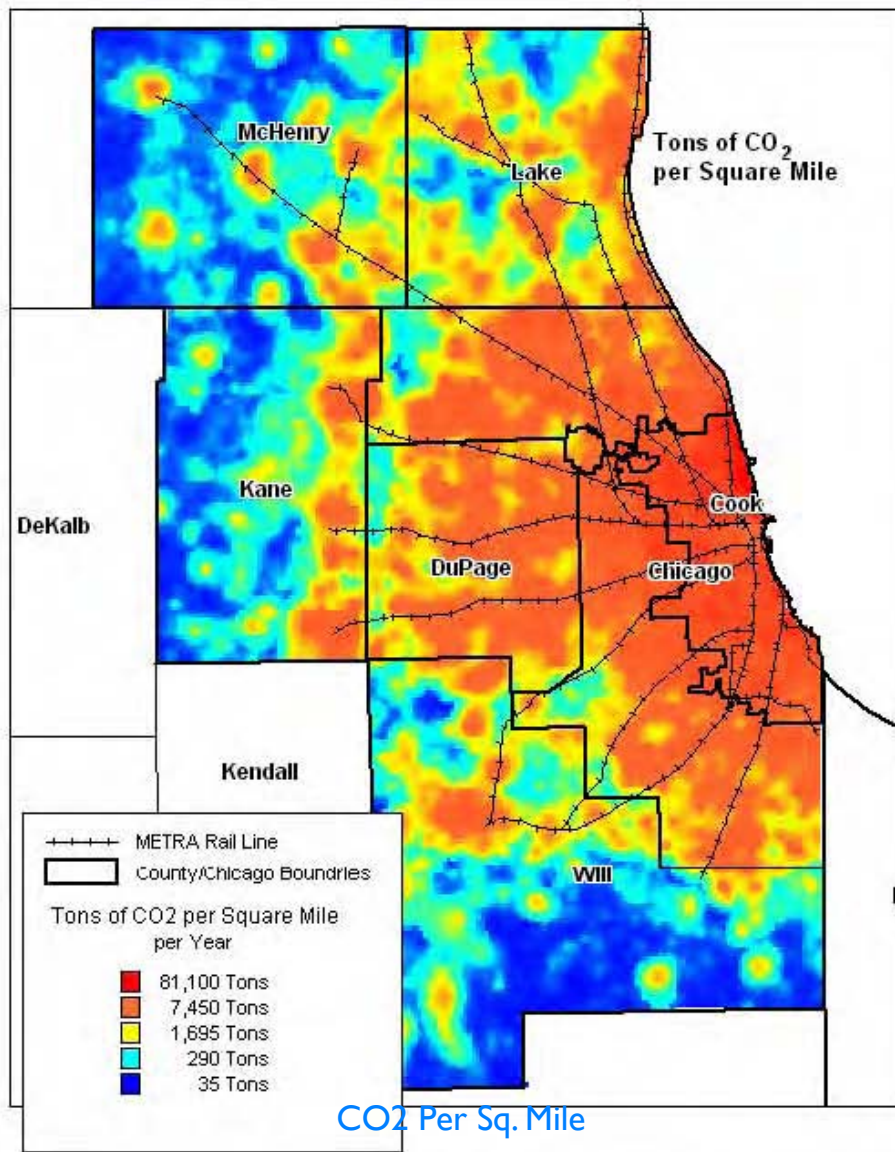
# Quantifying the Land-use/ Carbon Emission Connection

1. **Density**
2. **Diversity**
3. **Design**
4. **Destinations**
5. **Distance to Transit**
6. **Development Scale**
7. **Demographics**
8. **Demand Management**



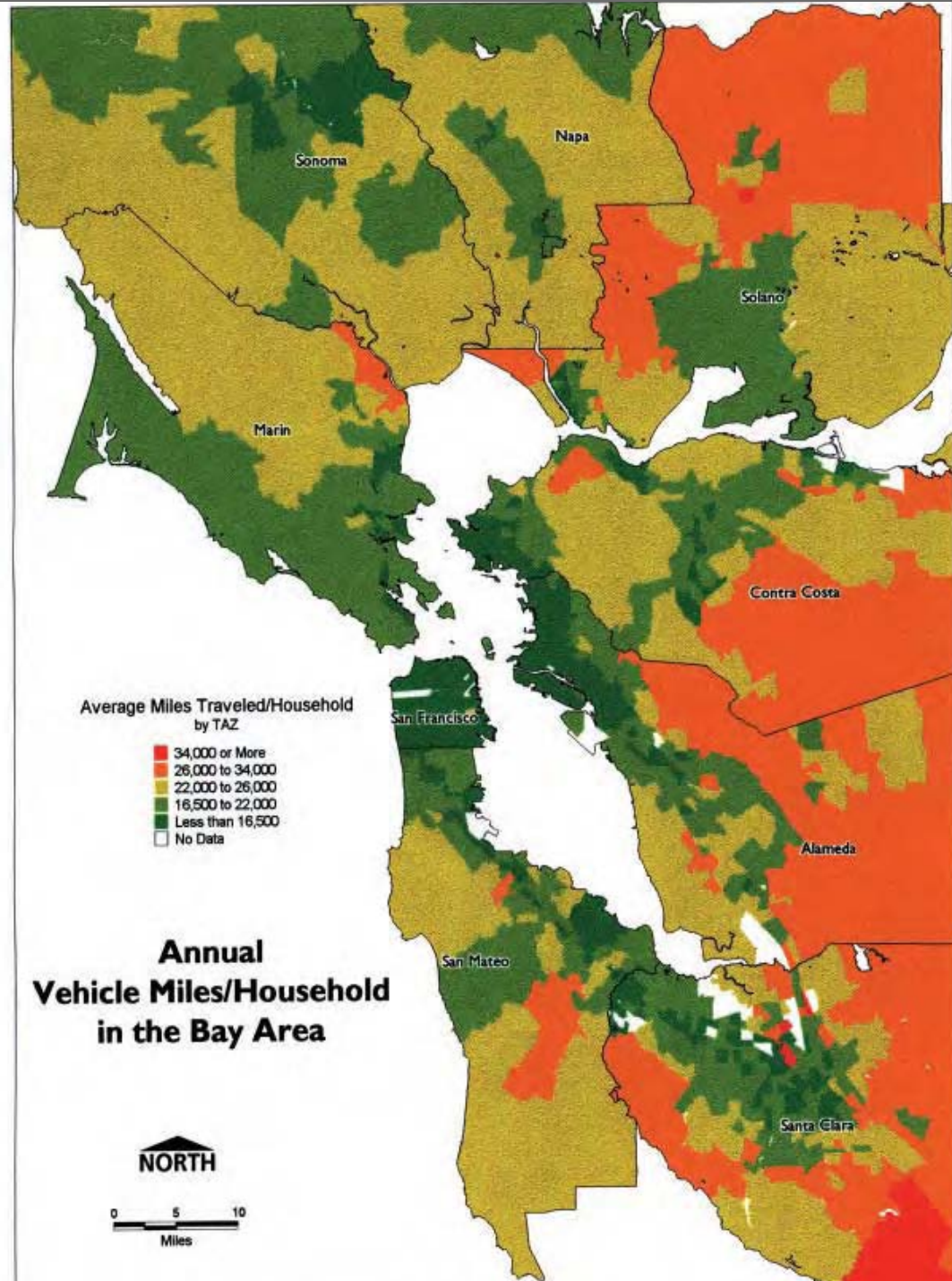
# Regional Carbon Emissions

## Chicago Metro Area

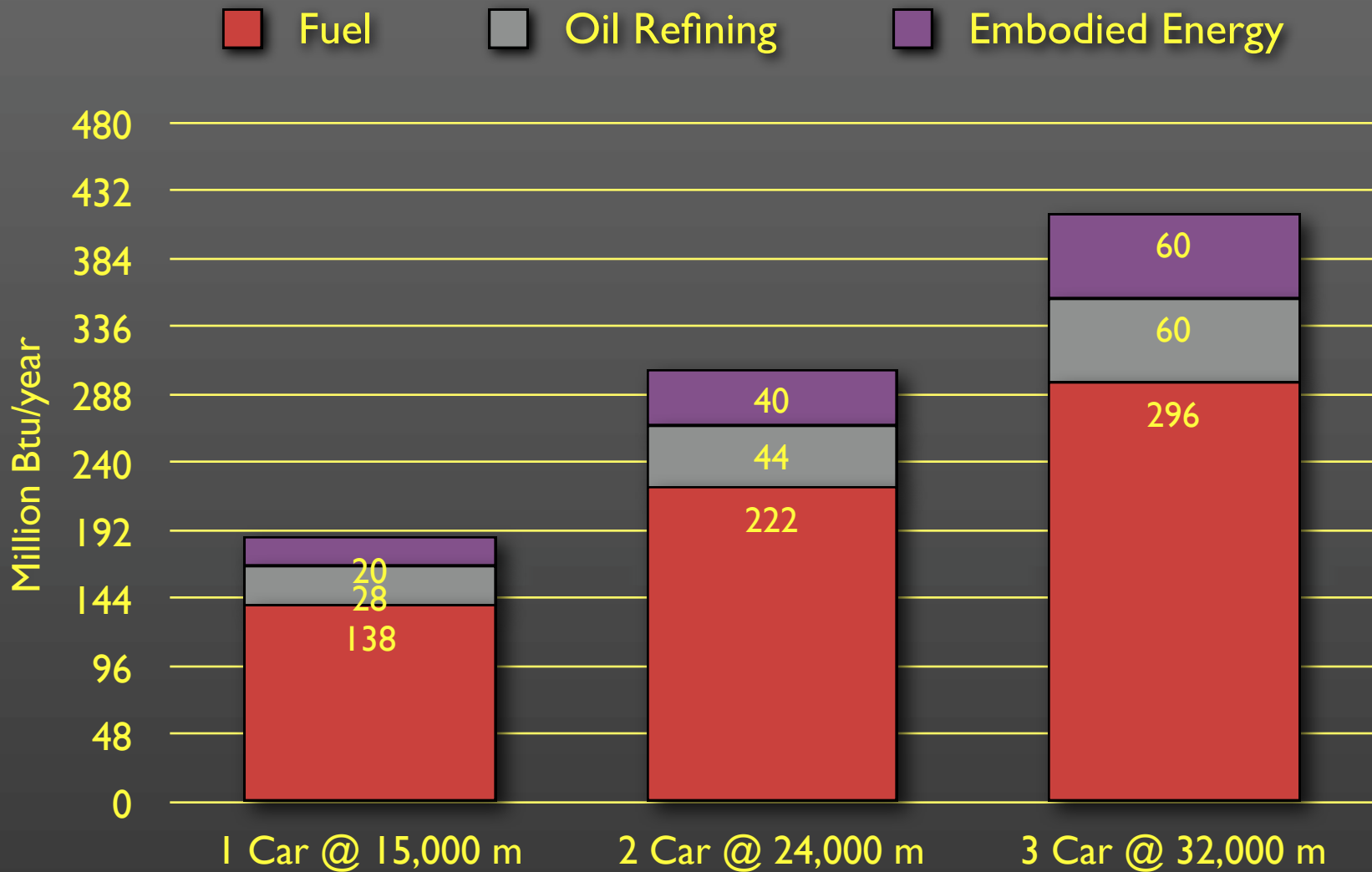




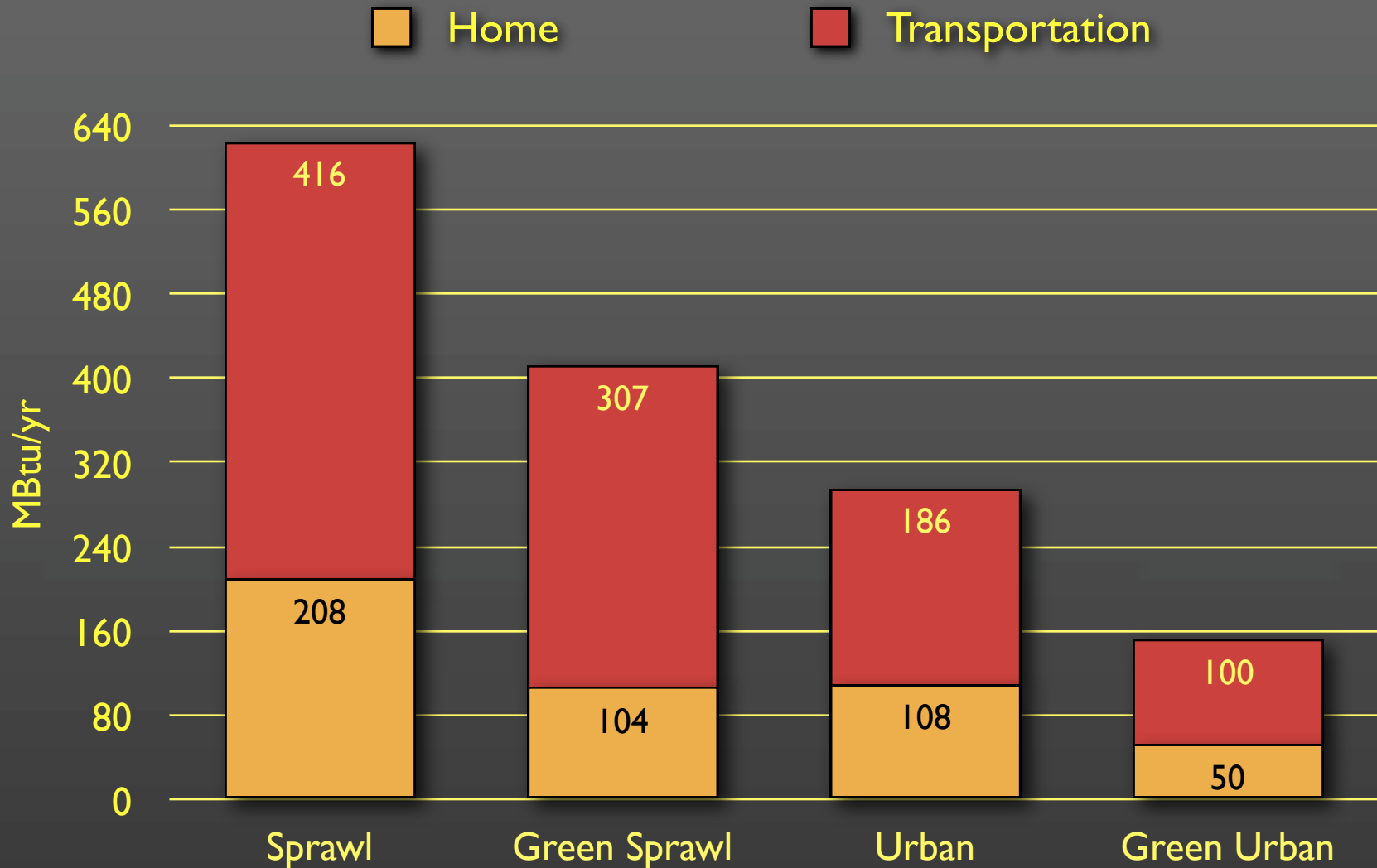
# VMT is a Product of Location, Density, Demographics, Transit, and Policy



# Transportation Energy Consumption

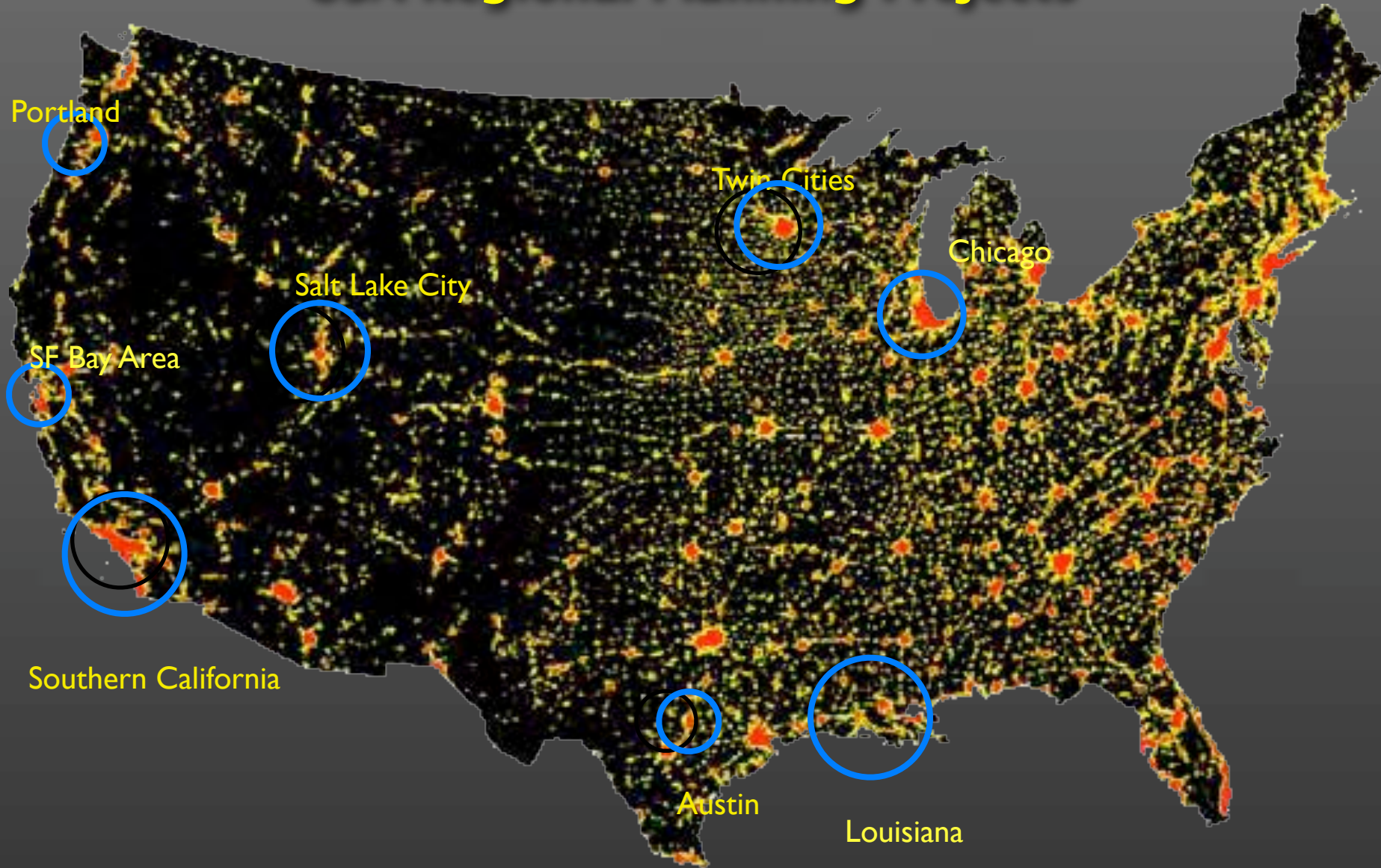


# Total Energy Consumption





# USA Regional Planning Projects





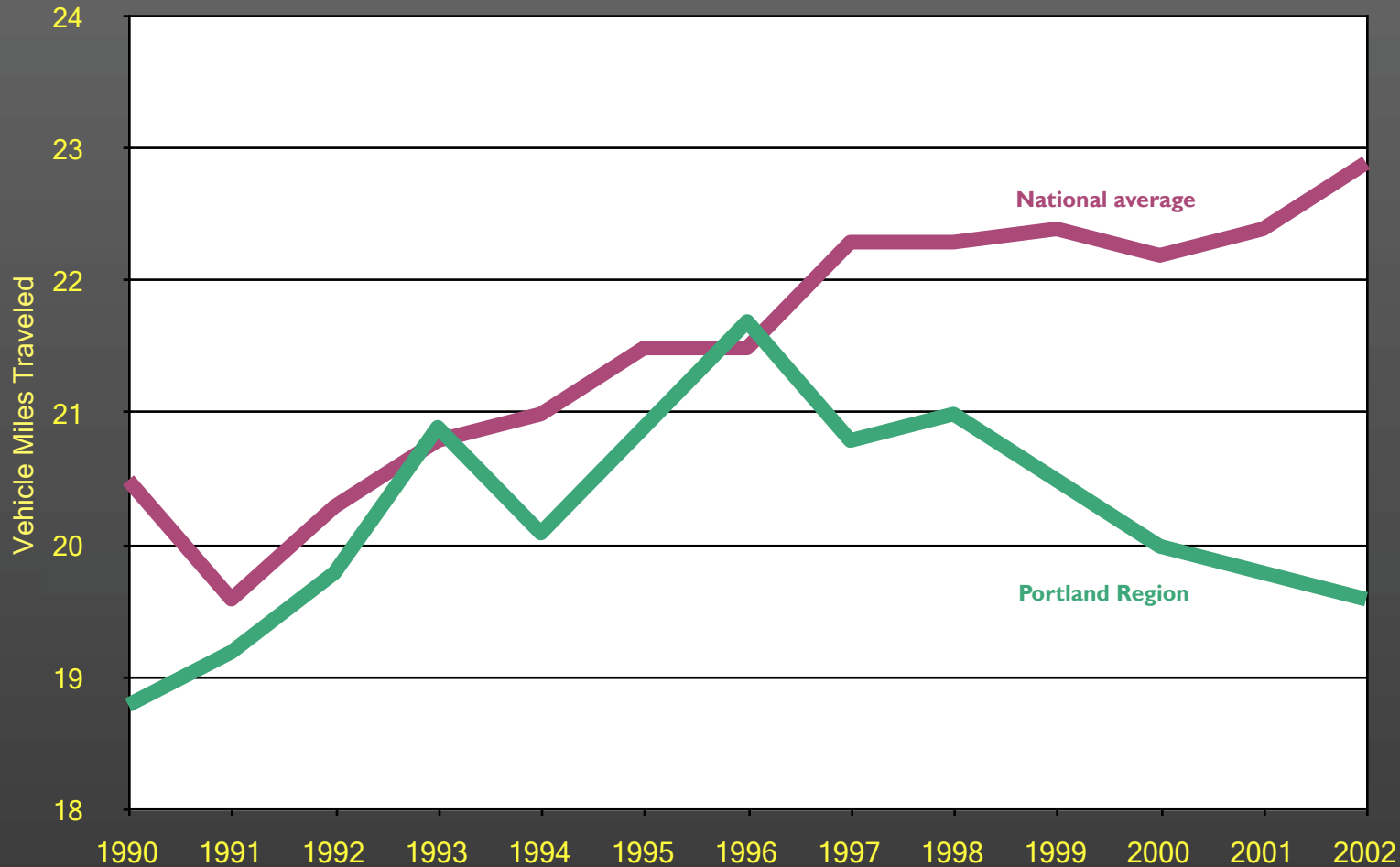
# Portland Metro 2040





# Portland Metro Region VMT

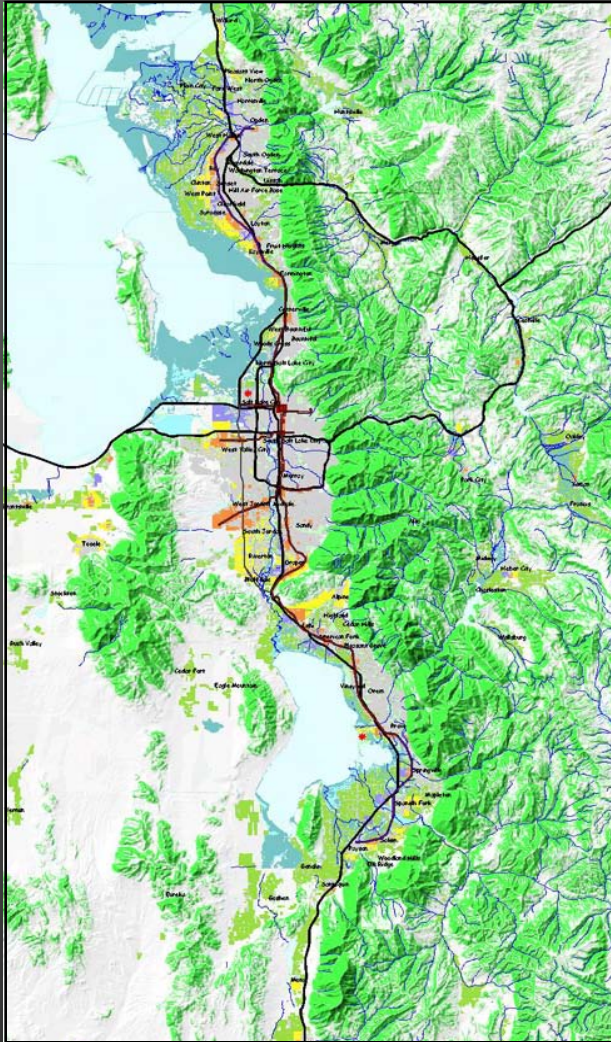
Average Daily VMT Portland Region vs. National Average, 1990-2002



Daily VMT in the Portland region declined 11% from 1996 to 2002, compared to a 6% increase nationally

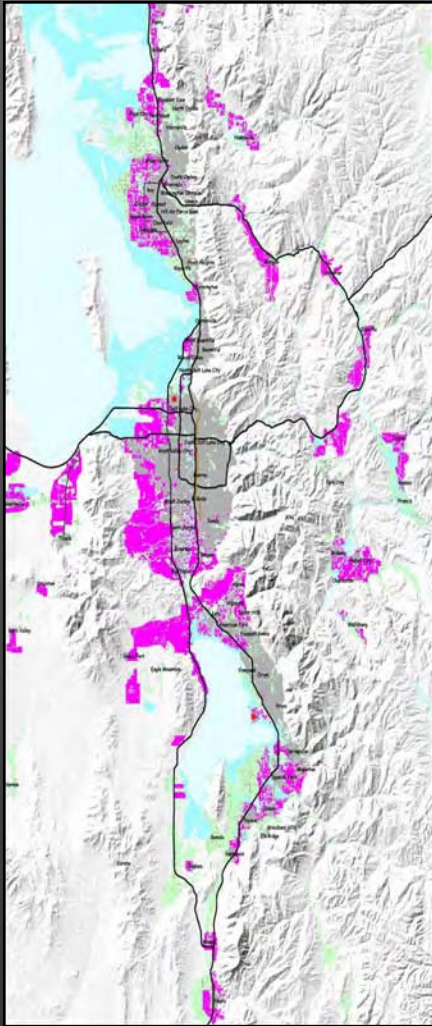
Source: State Highway Performance Monitoring System (HPMS); Federal Highway Administration, USDOT

# Salt Lake Regional Plan

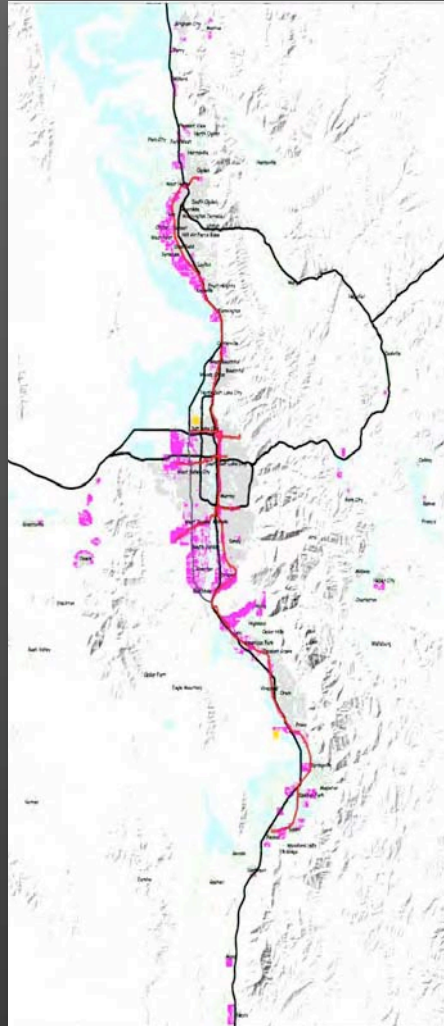




# Regional Development Alternatives



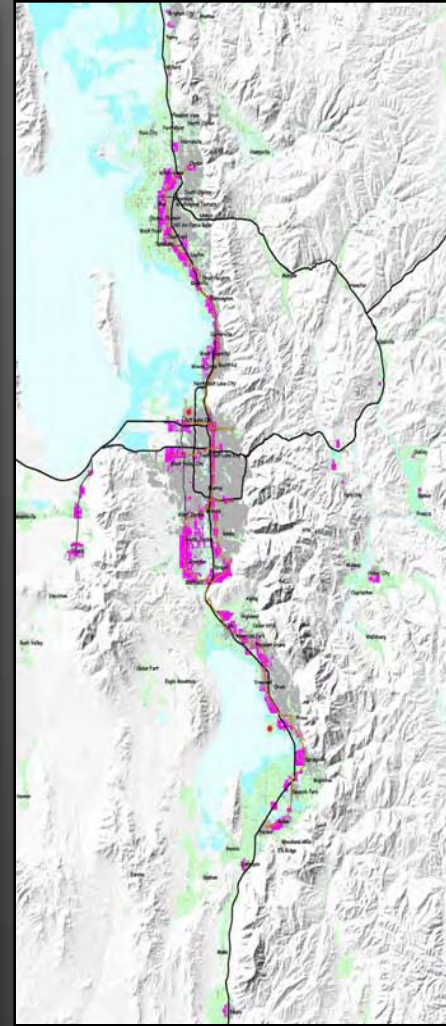
Scenario A



Scenario B



Scenario C

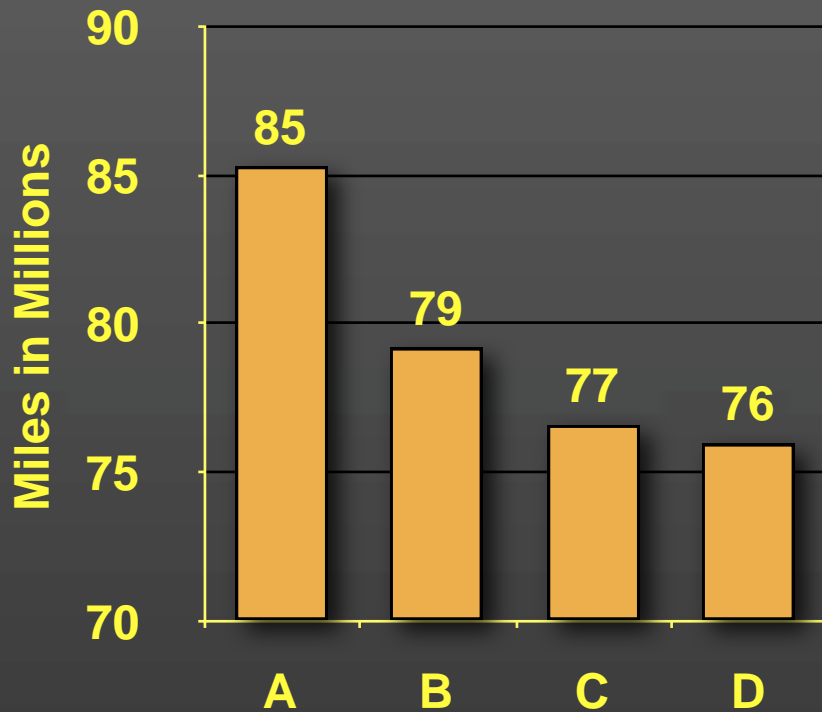


Scenario D

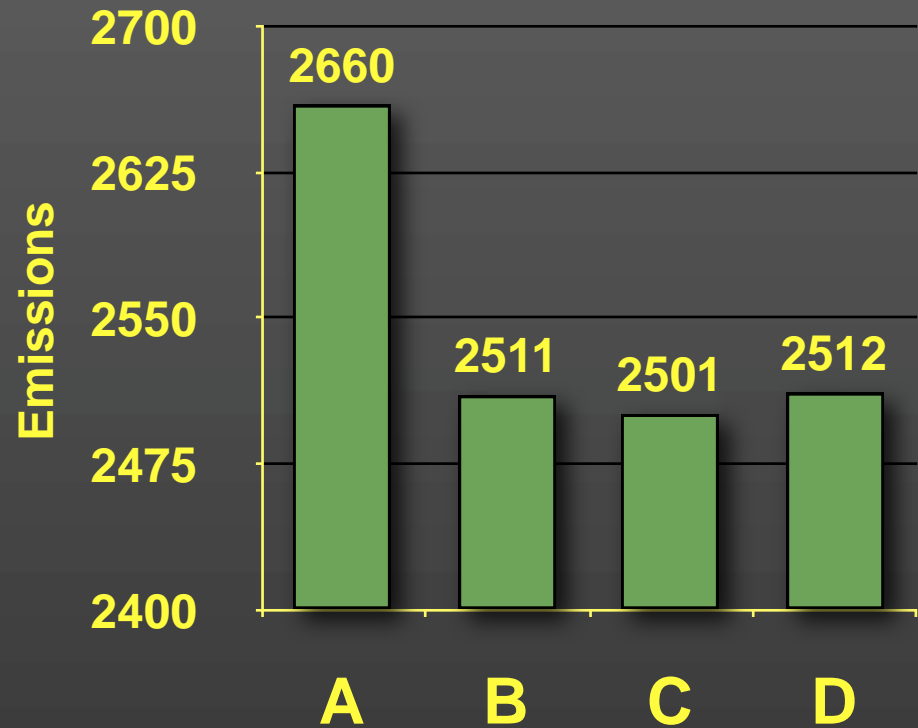


# Alternatives Analysis

Vehicle Miles Traveled  
per Day

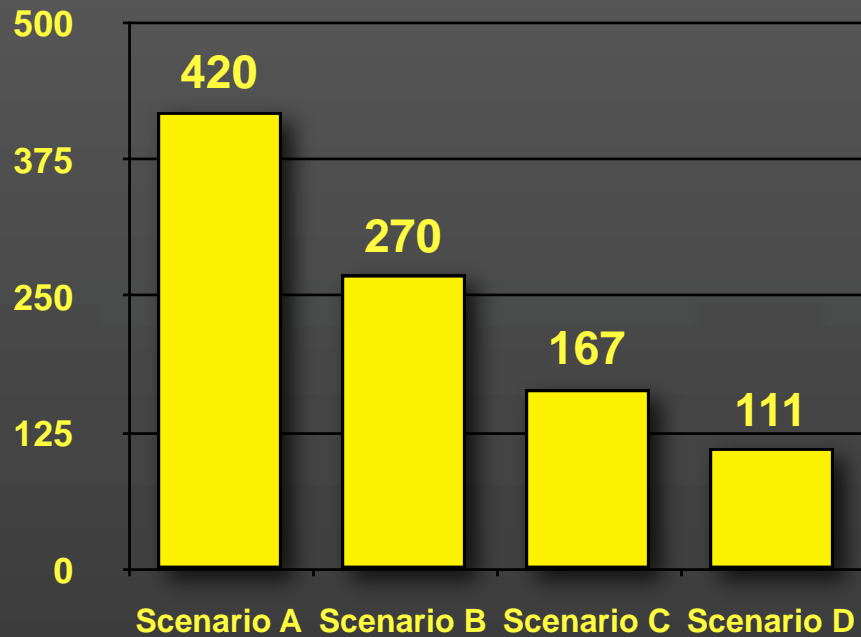


Total Emissions  
Tons per Day

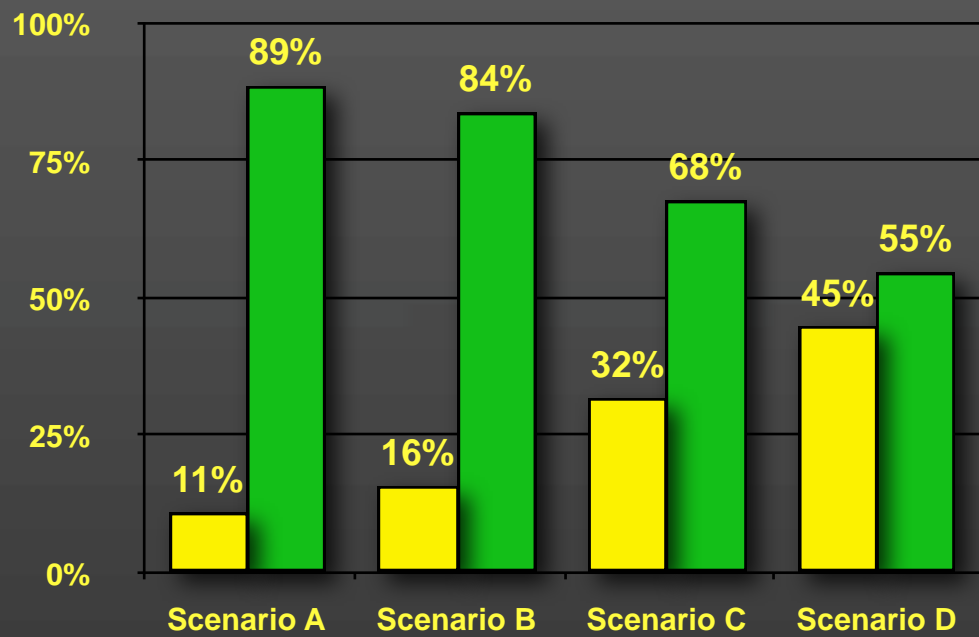


# Alternatives Analysis

Land Area Added  
(square miles)

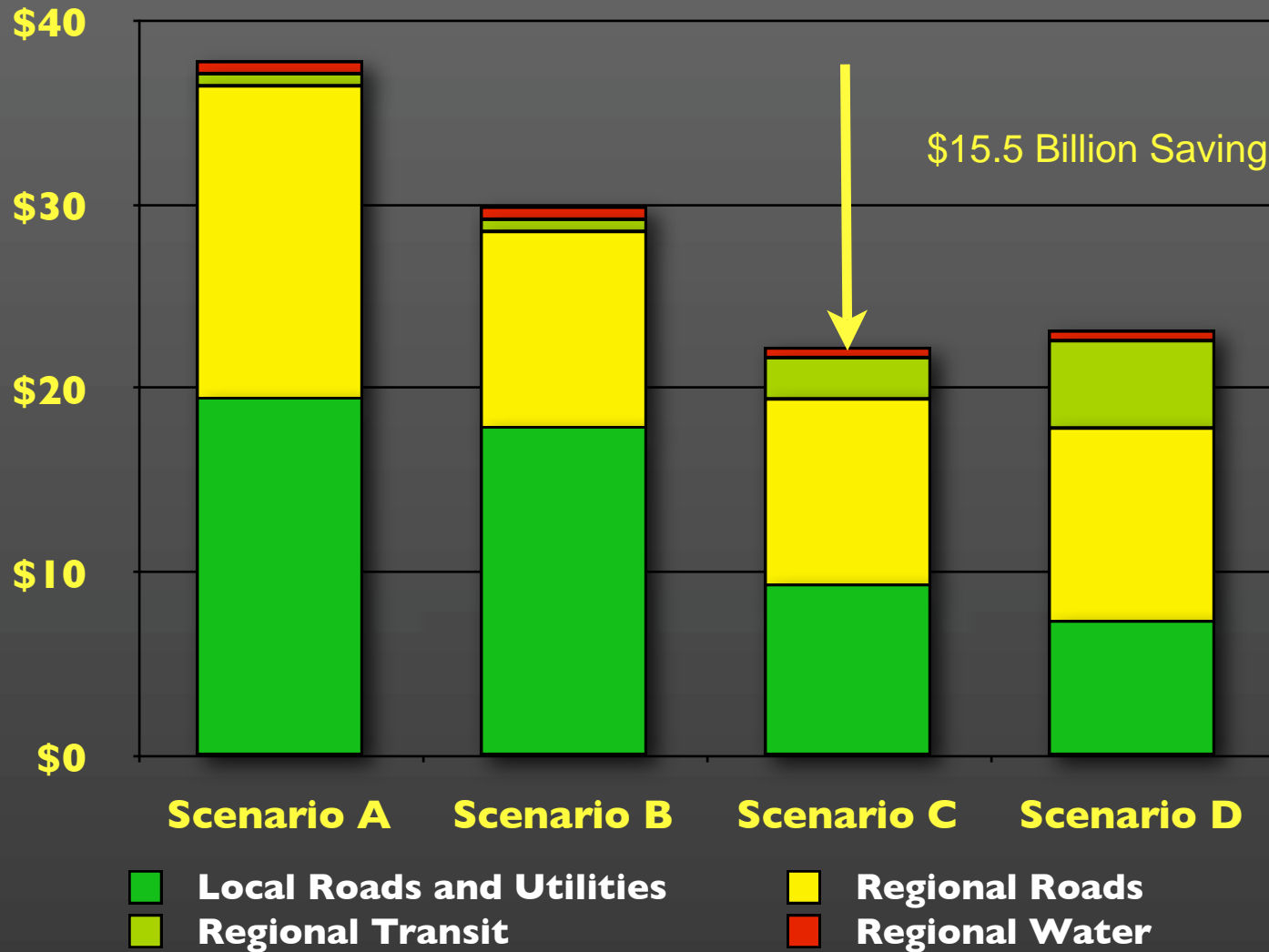


New Dwelling Unit Types



■ Multi-Family Units ■ Single-Family Homes

# Cost of Infrastructure (Billions)

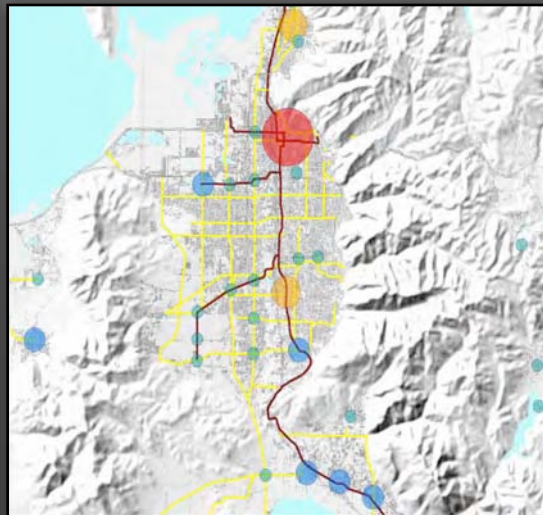


# Quality Growth Strategy

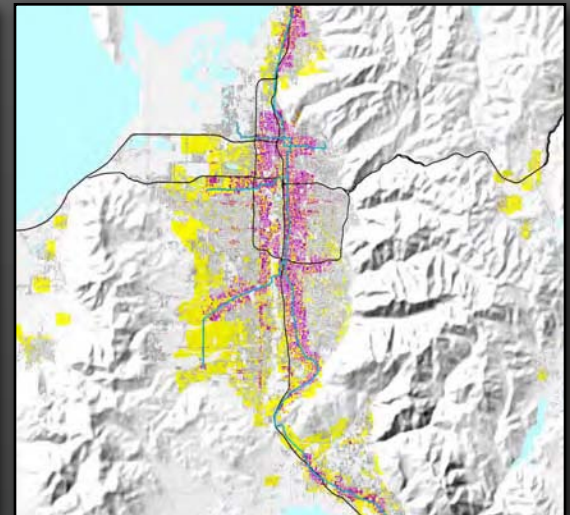
## Layers



Open Space &  
Constrained Land



Centers & Corridors

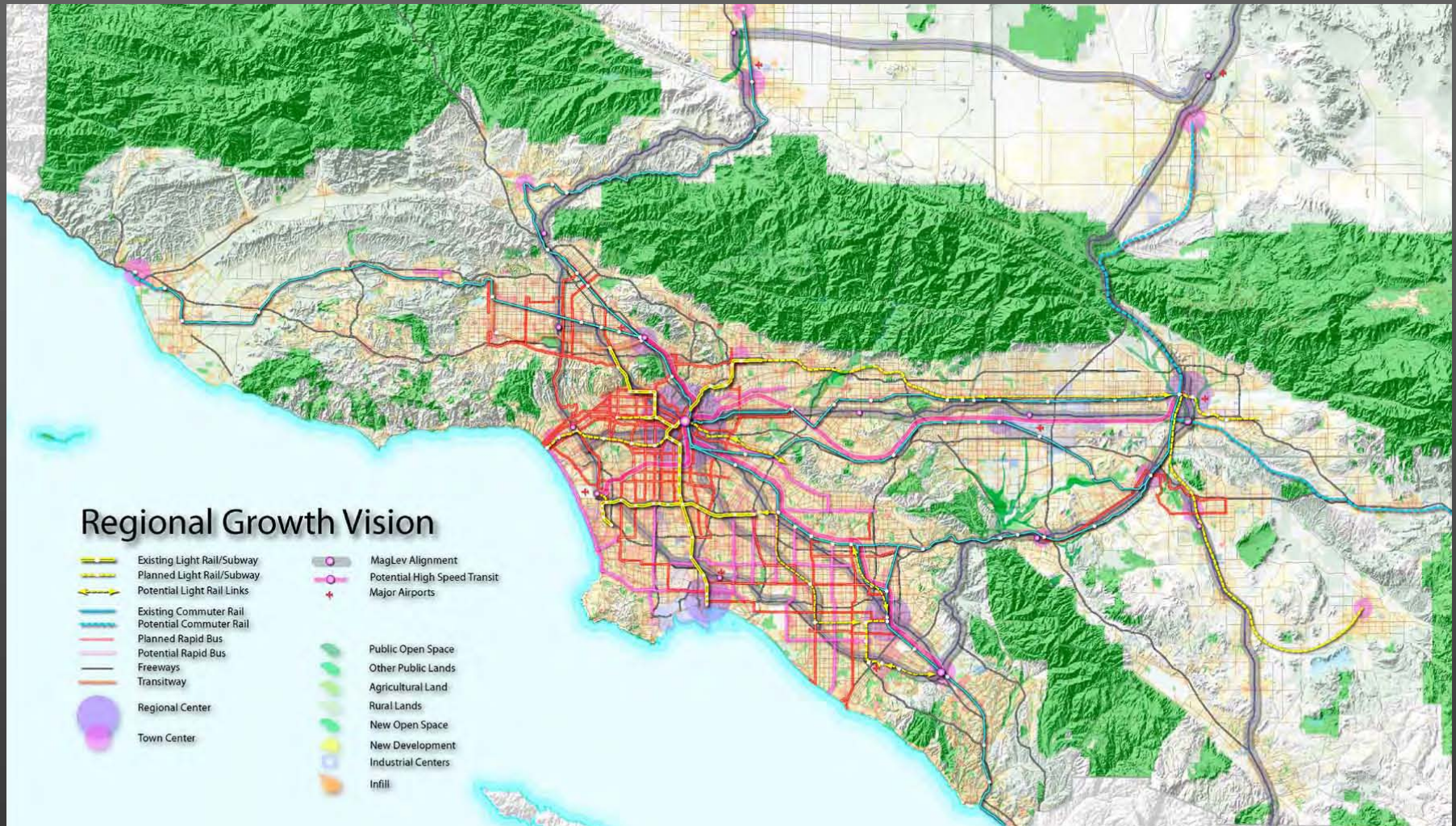


New Growth &  
Redevelopment



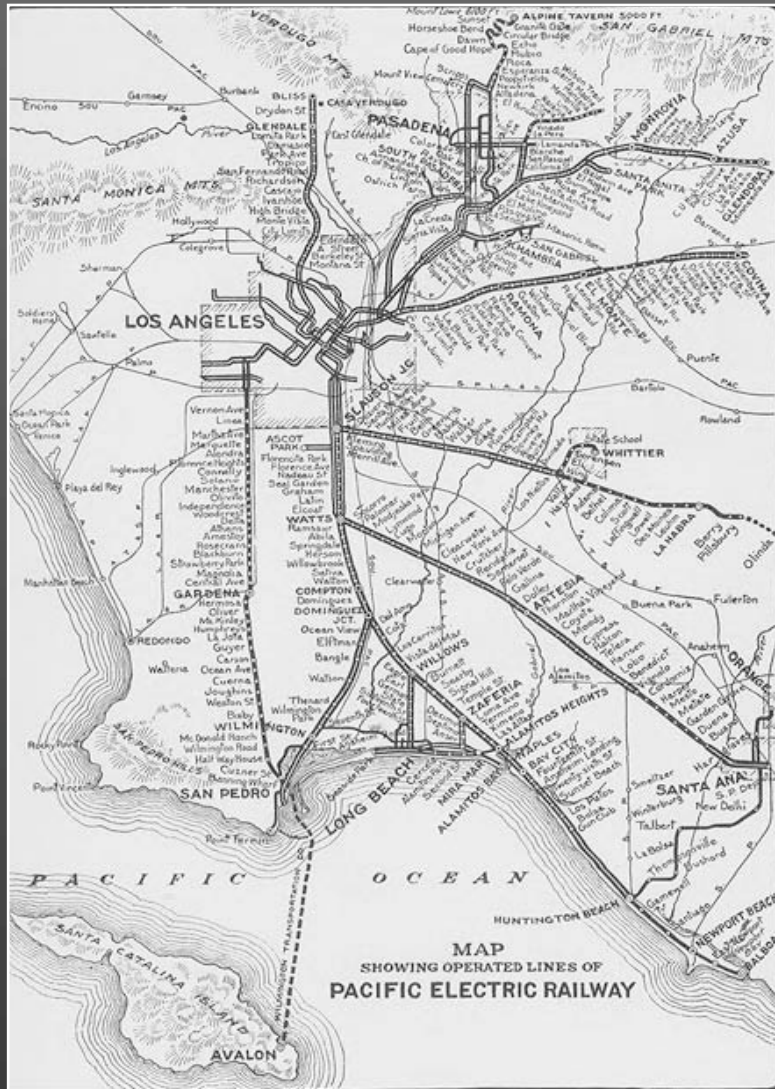
# COMPASS

## Regional Growth Vision





# Historic Los Angeles Rail System



1920s



1930s – Toluca

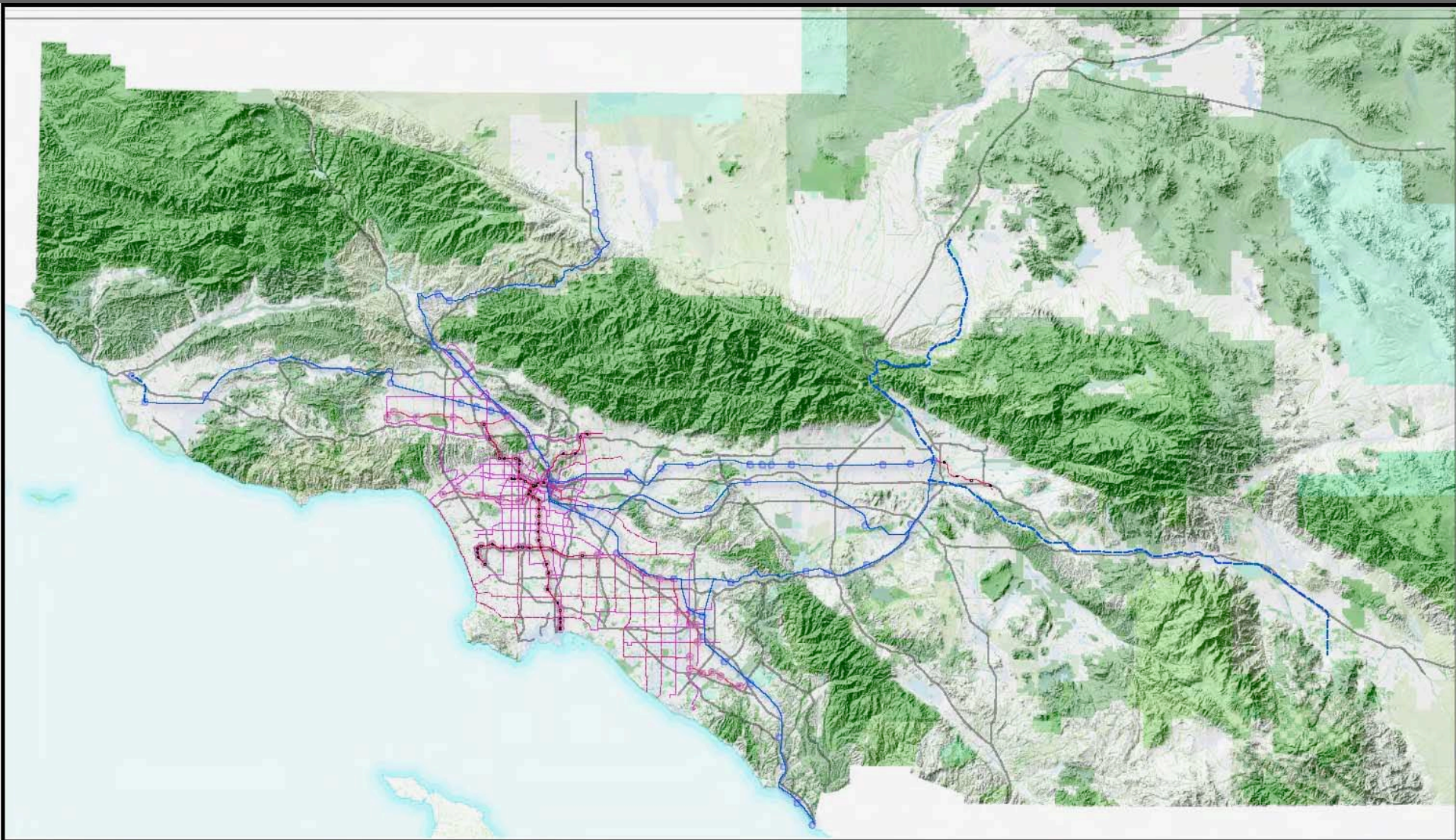


1950s – Hill Street, Downtown LA



# Mobility

## Transit Systems

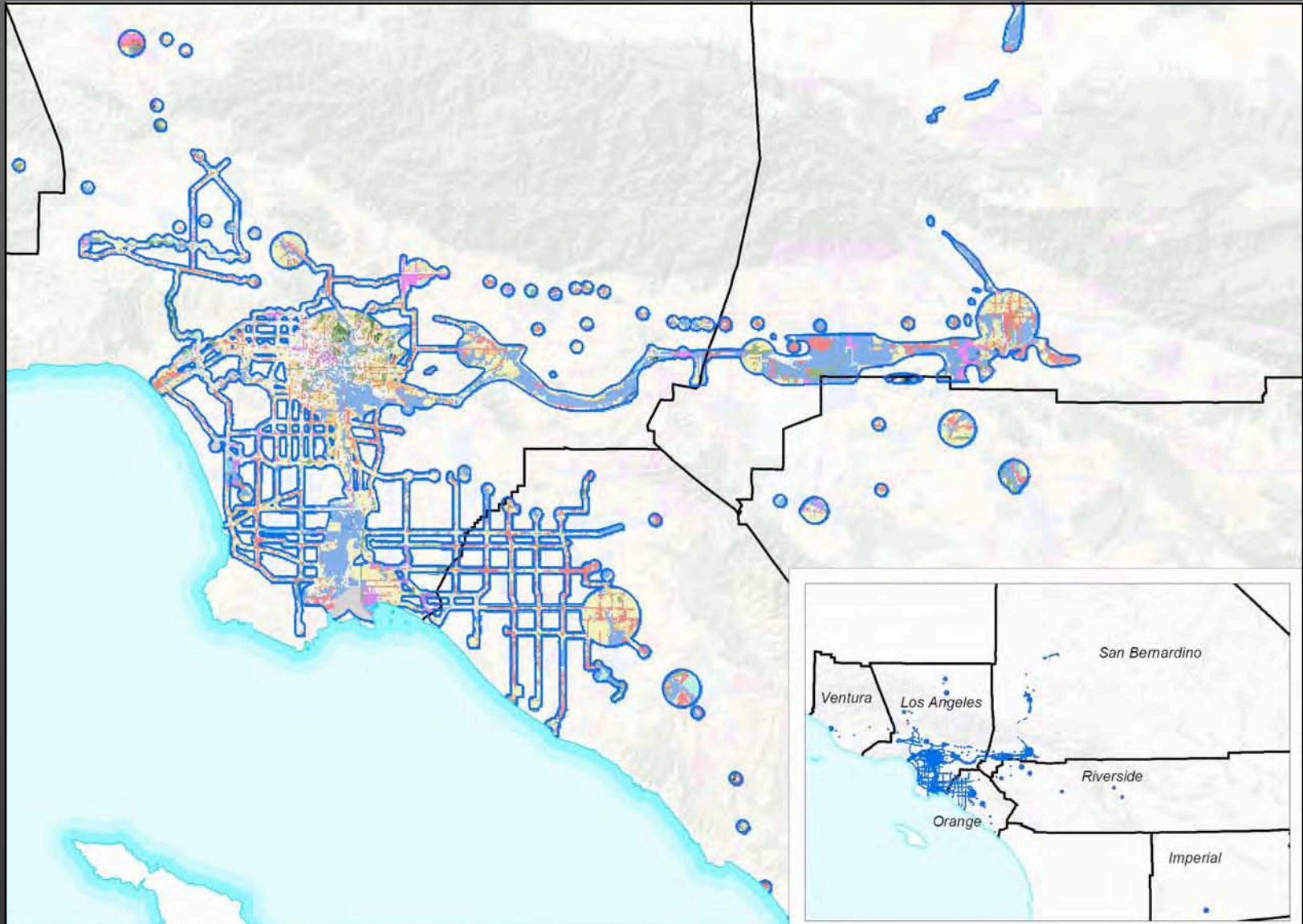


# All Rail and Rapid Bus Transit





# COMPASS Opportunity Areas



# Growth that Supports Transit





# High-Intensity Corridor

Wilshire Boulevard



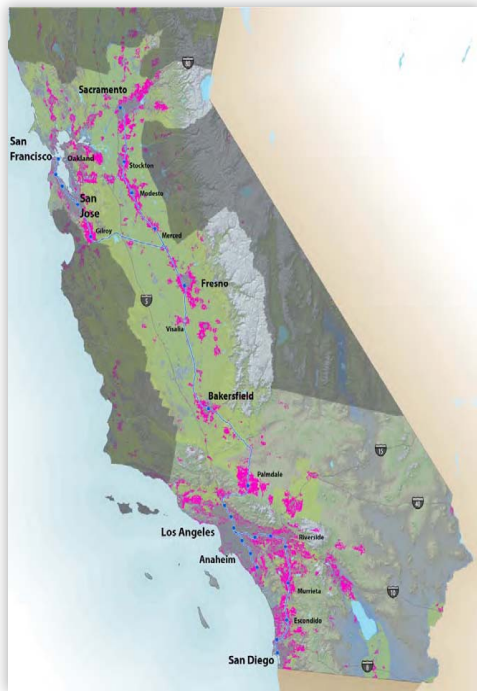
# Medium-Intensity Corridor

Ventura Boulevard





# Vision California

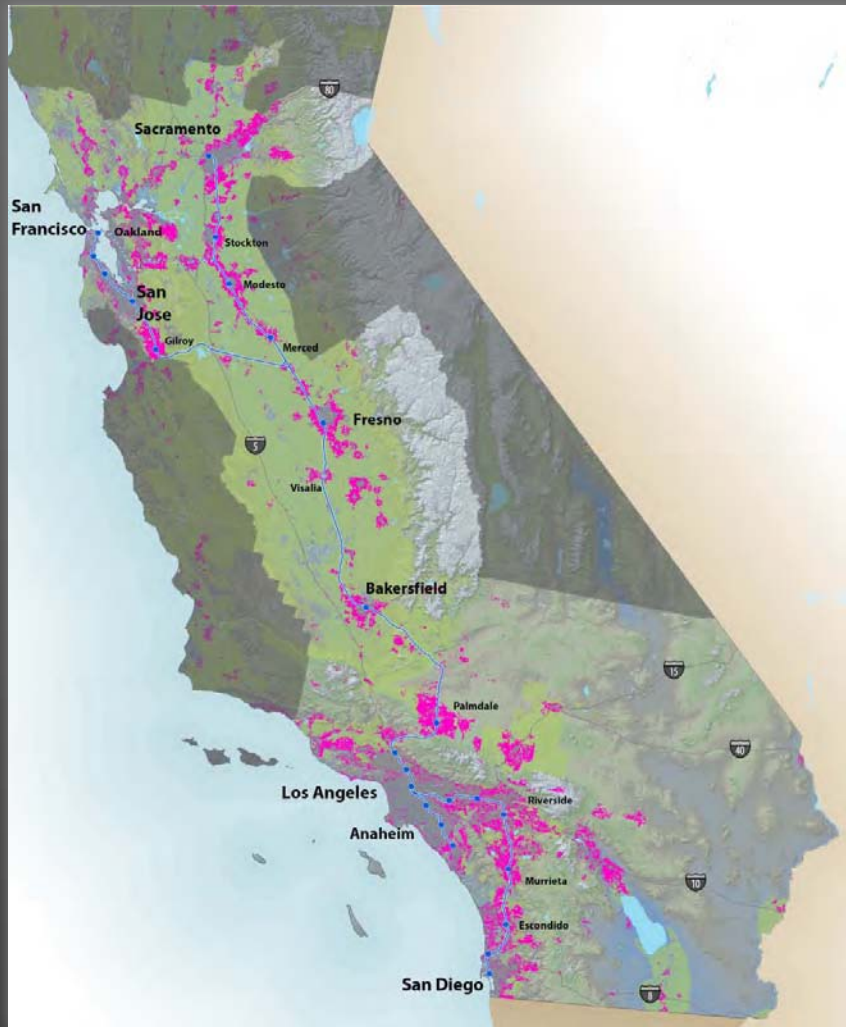


- California High Speed Rail Authority
- California Strategic Growth Council
- Natural Resources Defense Council
- California League of Conservation Voters
- American Farmland Trust
- TransForm
- Local Government Commission
- UC Davis

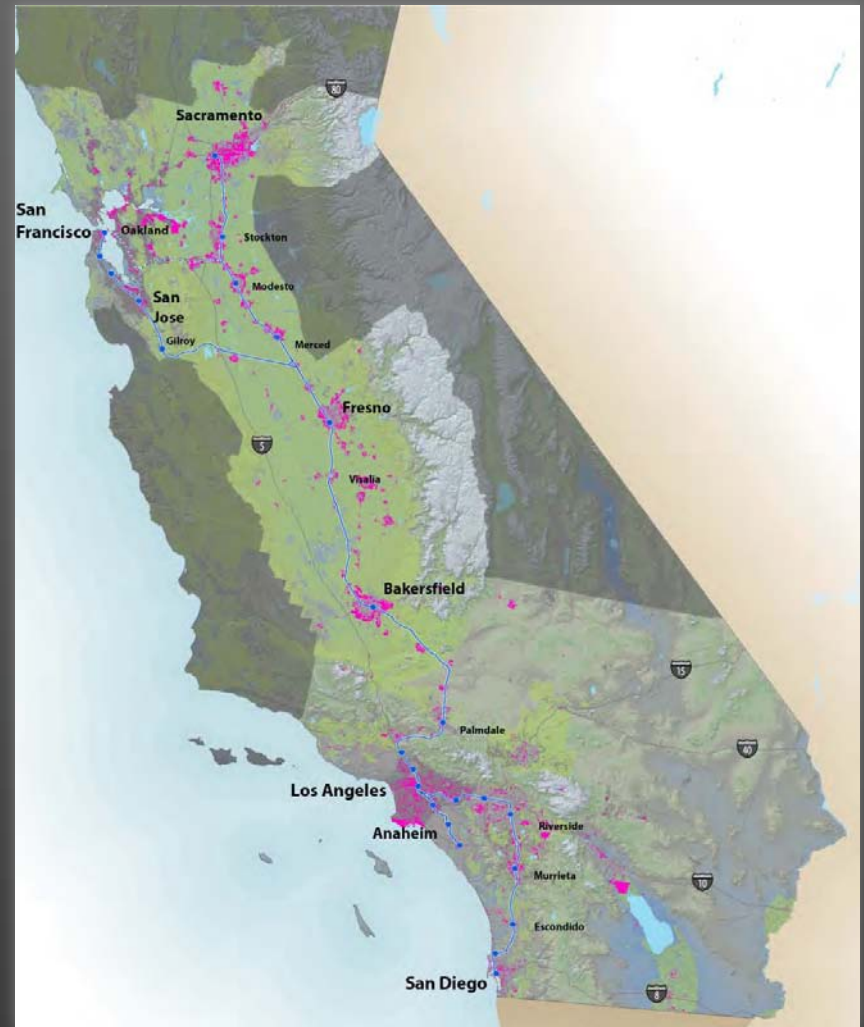
# The High Speed Rail/Smart Growth Connection



# Scenario Alternates

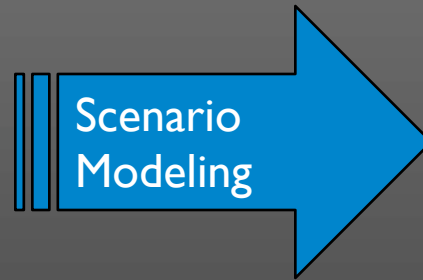


Trend



Blueprints

# Metrics and Impacts of Scenarios



## Environmental

Greenhouse Gas Emissions  
Air Pollution  
Water and Energy Consumption

## Transportation

Vehicle Miles Traveled  
Transit, Walk, Bike Mode share  
Vehicle Emissions

## Fiscal

State and Regional Infrastructure Cost  
Household/Business Costs for Energy & Water

## Social

Housing Diversity & Affordability  
Access to Jobs and Services  
Public Health Impacts  
Cost of Living and Household Costs



# Carbon Emission Sectors

## World

| Sector                       | MtCO2           | %    |
|------------------------------|-----------------|------|
| Energy                       | 28,407.4        | 75.2 |
| Electricity & Heat           | 12,307.2        | 32.6 |
| Manufacturing & Construction | 5,184.0         | 13.7 |
| Transportation               | 5,378.0         | 14.2 |
| Other Fuel Combustion        | 3,790.7         | 10.0 |
| Fugitive Emissions [1]       | 1,747.4         | 4.6  |
| Industrial Processes         | 1,865.6         | 4.9  |
| Agriculture                  | 6,075.2         | 16.1 |
| Waste                        | 1,418.7         | 3.8  |
| <b>Total</b>                 | <b>37,766.8</b> |      |



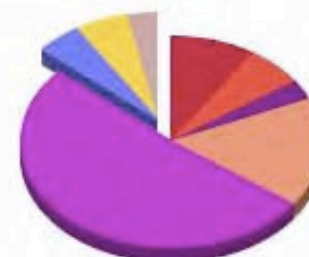
## United States

| Sector                | MtCO2          | %    |
|-----------------------|----------------|------|
| Energy                | 6,083.6        | 87.8 |
| Electric Utilities    | 2,354.3        | 34.0 |
| Residential           | 368.9          | 5.3  |
| Commercial            | 226.1          | 3.3  |
| Industrial            | 1,035.1        | 14.9 |
| Transportation        | 2,042.4        | 29.5 |
| Fugitive Emissions    | 56.7           | 0.8  |
| Industrial Processes  | 280.2          | 4.0  |
| Agriculture           | 434.3          | 6.3  |
| Waste                 | 130.7          | 1.9  |
| International Bunkers | 0.3            | 0.0  |
| <b>Total</b>          | <b>6,929.0</b> |      |

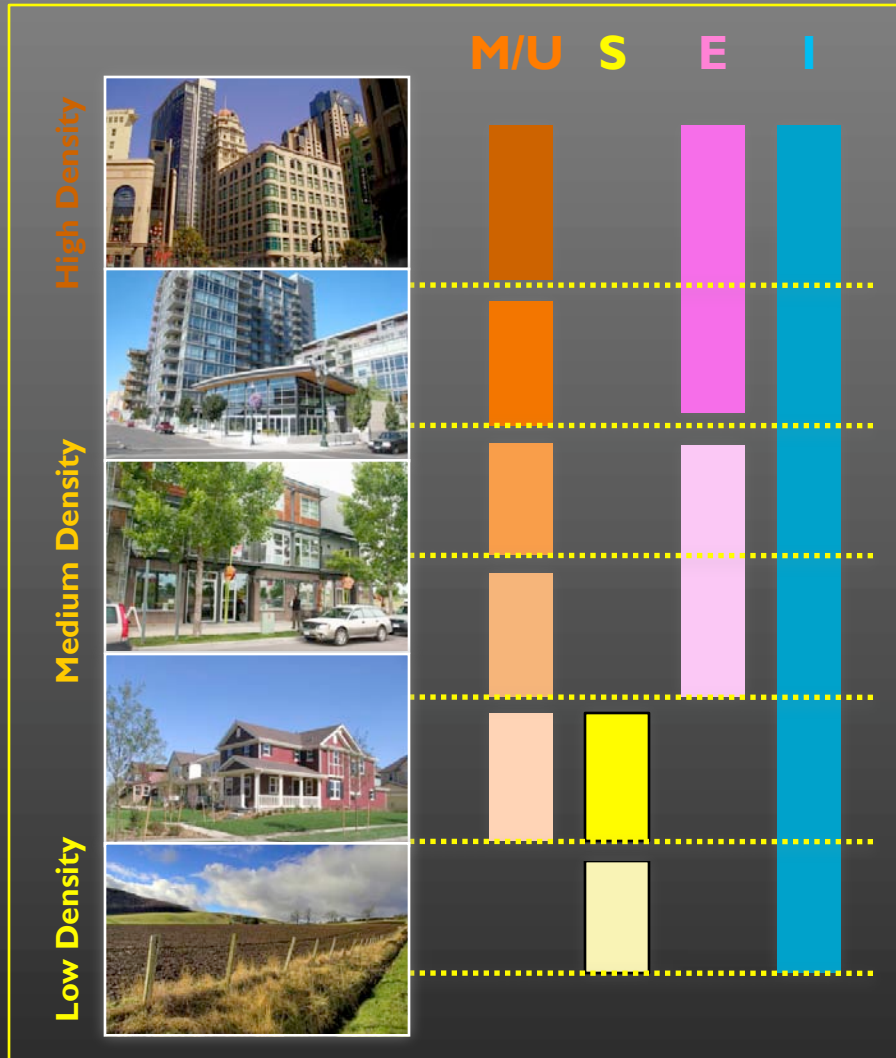


## California

| Sector                | MtCO2        | %    |
|-----------------------|--------------|------|
| Energy                | 396.4        | 86.4 |
| Electric Utilities    | 42.1         | 9.2  |
| Residential           | 28.6         | 6.2  |
| Commercial            | 14.0         | 3.0  |
| Industrial            | 76.5         | 16.7 |
| Transportation        | 235.3        | 51.3 |
| Fugitive Emissions    | --           | --   |
| Industrial Processes  | 21.5         | 4.7  |
| Agriculture           | 26.4         | 5.8  |
| Waste                 | 14.6         | 3.2  |
| International Bunkers | 0.1          | 0.0  |
| <b>Total</b>          | <b>459.0</b> |      |

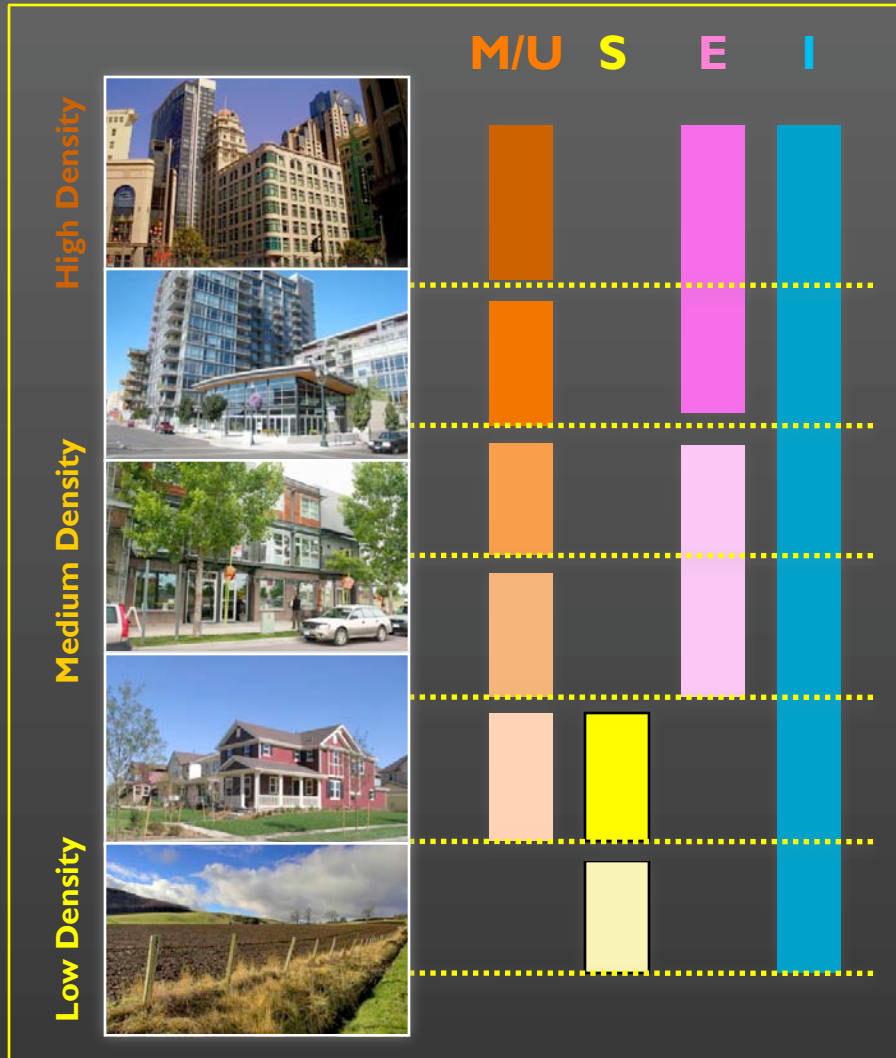


# Vision California Place Types



- Mixed Use Centers & Corridors
  - Urban
  - City
  - Town
  - Village
- Suburban
  - Commercial/Mixed
  - Residential Single-Use
- Employment Areas
  - Hi/Mid Intensity
  - Low Intensity
- Institutional
  - Campus/University
  - Other Institutional

# Map Place Types

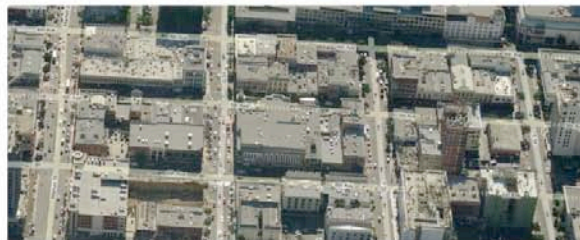


## The Eight D's:

1. Density
2. Diversity
3. Design
4. Destinations
5. Distance to Transit
6. Development Scale
7. Demographics
8. Demand Management



# Vision California – Place Type Studies



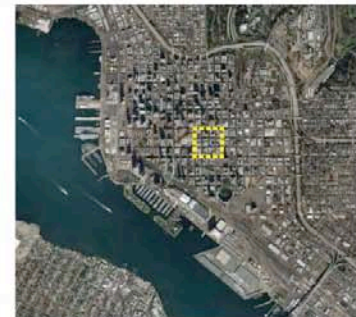
## Downtown San Diego (Gaslamp District) San Diego, California

**Location:** Bounded by E St., 8th Ave., Market St., and 4th Ave.

**Planner:** (incremental)

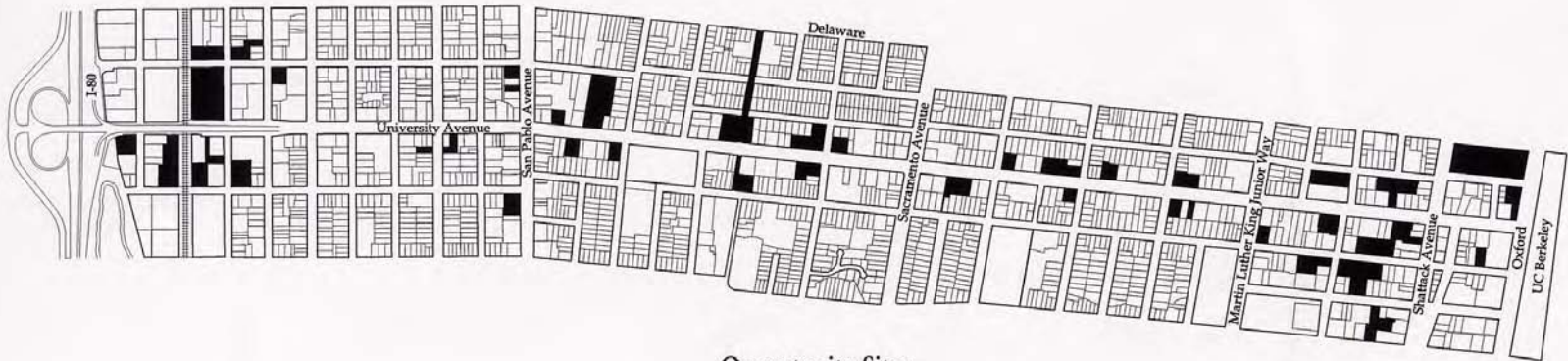
### Site Statistics:

- |                        |             |
|------------------------|-------------|
| • Site Size (gross)    | 30 acres    |
| • Site Size (net)      | 16.6 acres  |
| • Block Size (average) | 200' x 320' |
| • Density (gross)      | 28 du/ac    |
| • Density (net)        | 51 du/ac    |
| • FAR (gross)          | 1.61        |





# University Avenue



Opportunity Sites









# Oakland Uptown



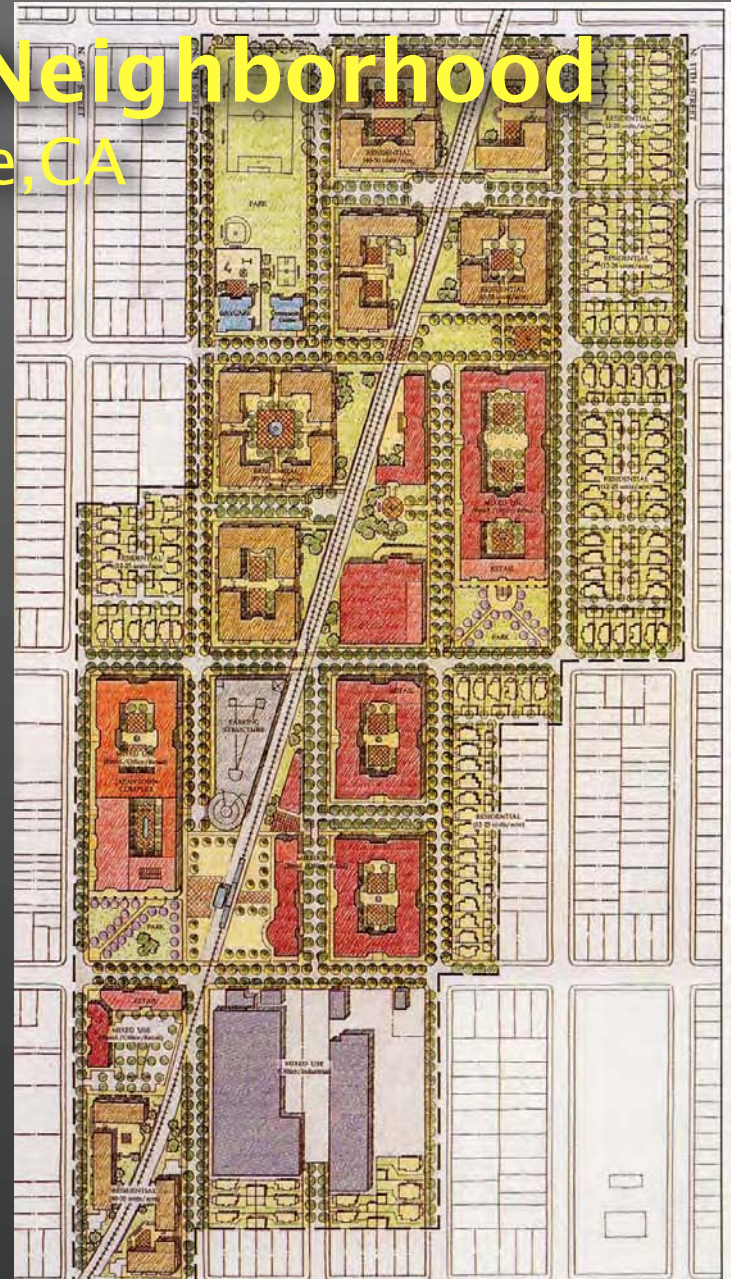
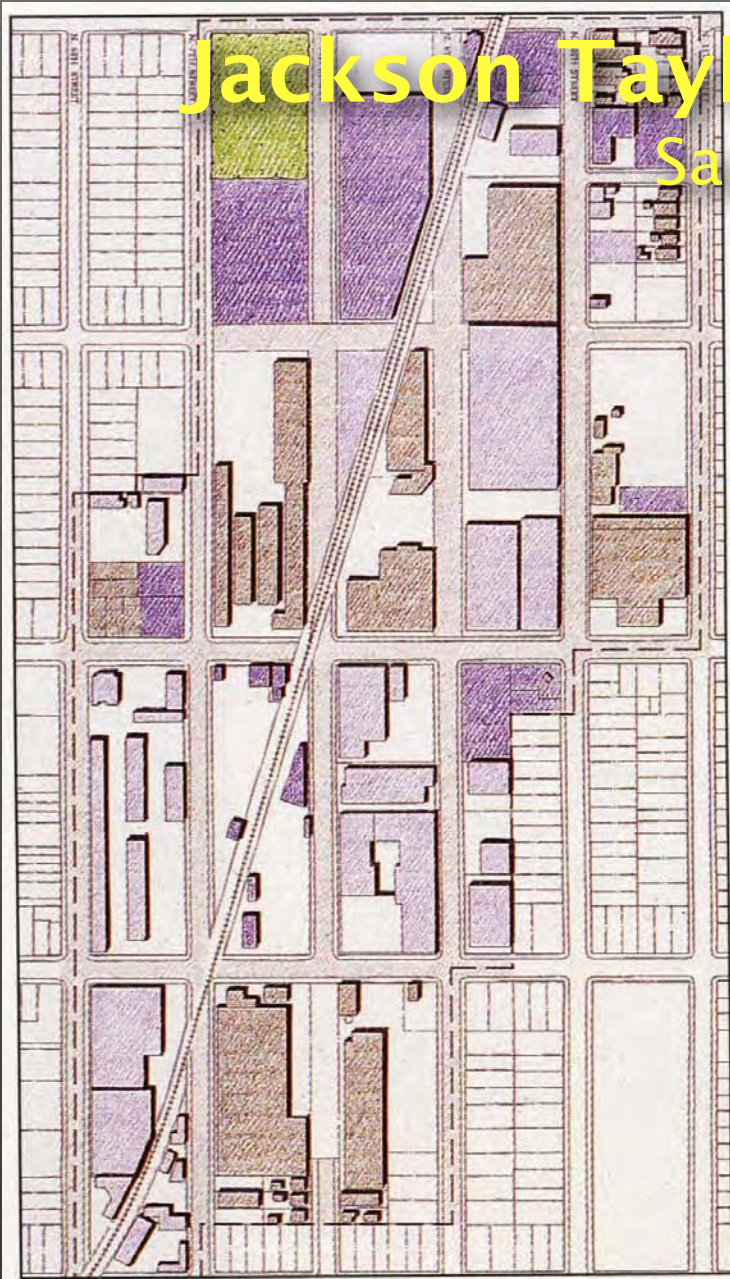






# Jackson Taylor Neighborhood

San Jose, CA

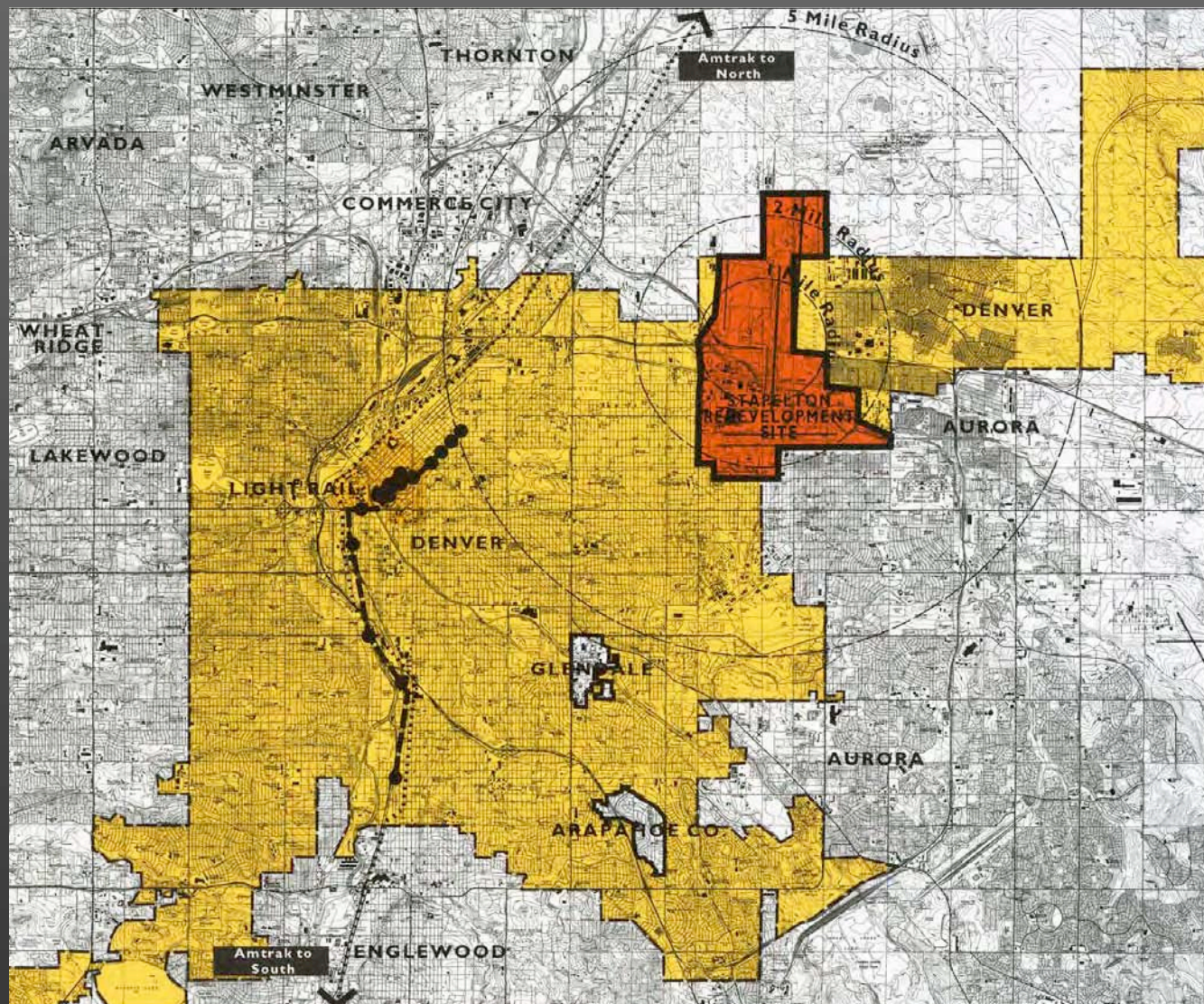




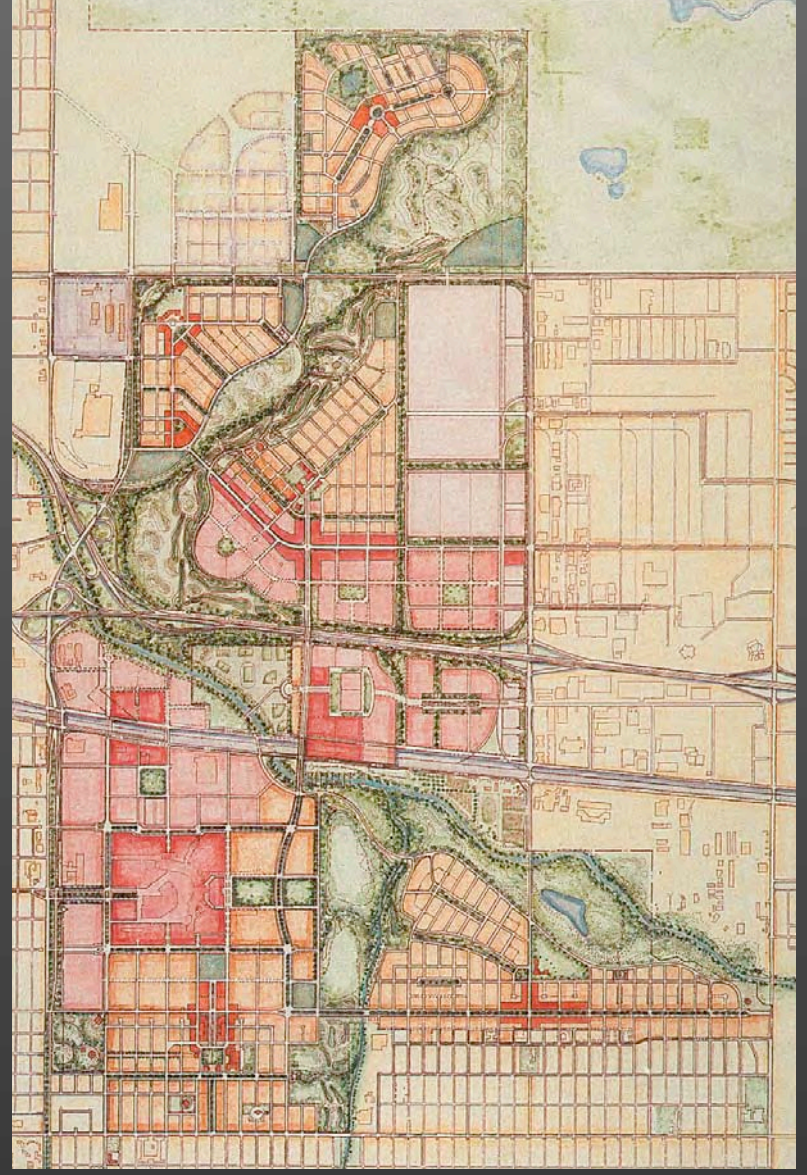




# Stapleton





















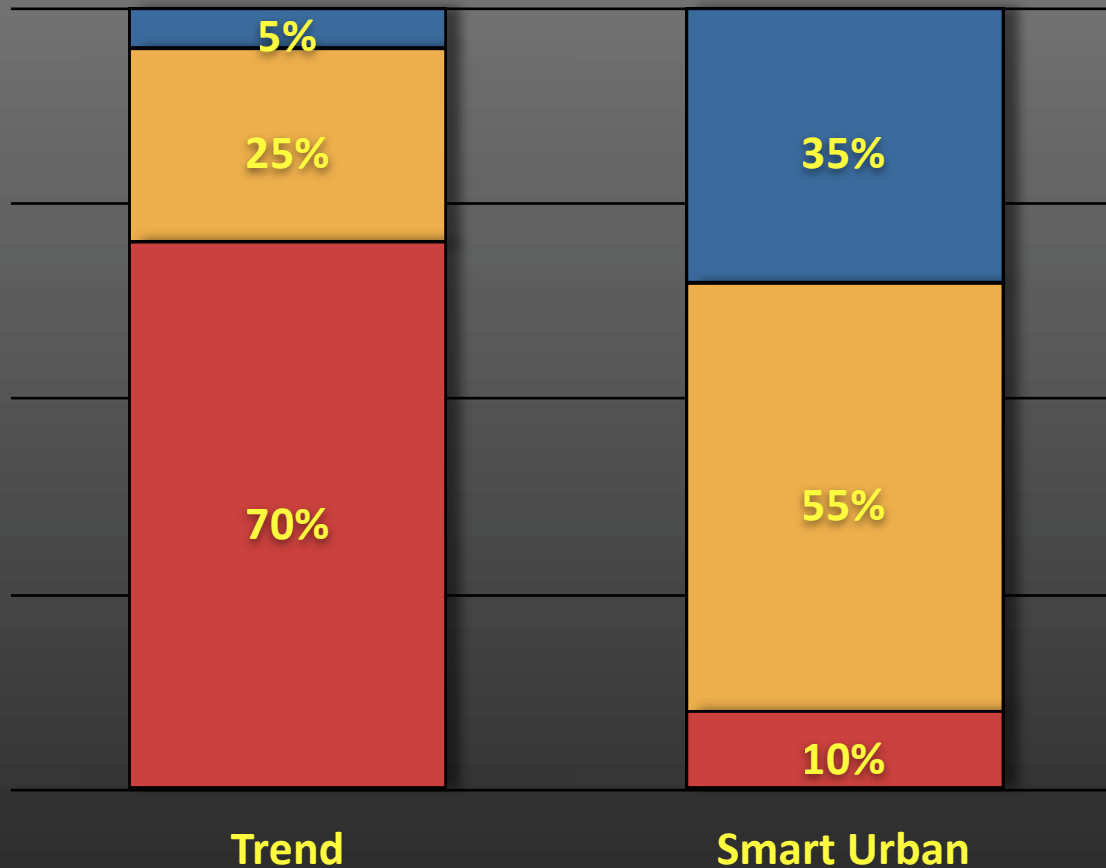




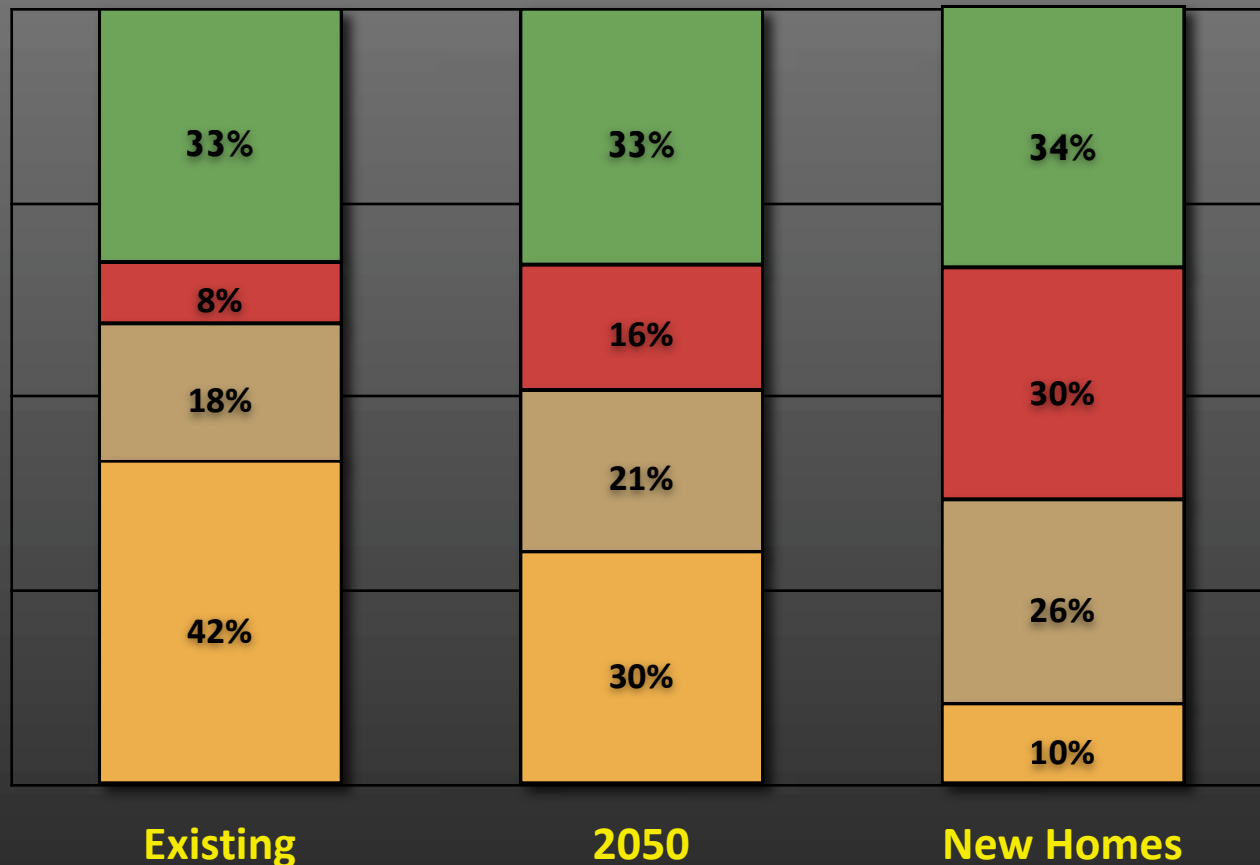
# California Rapid Fire Scenarios

## 7 million New Households

■ Sprawl    ■ Compact    ■ Urban

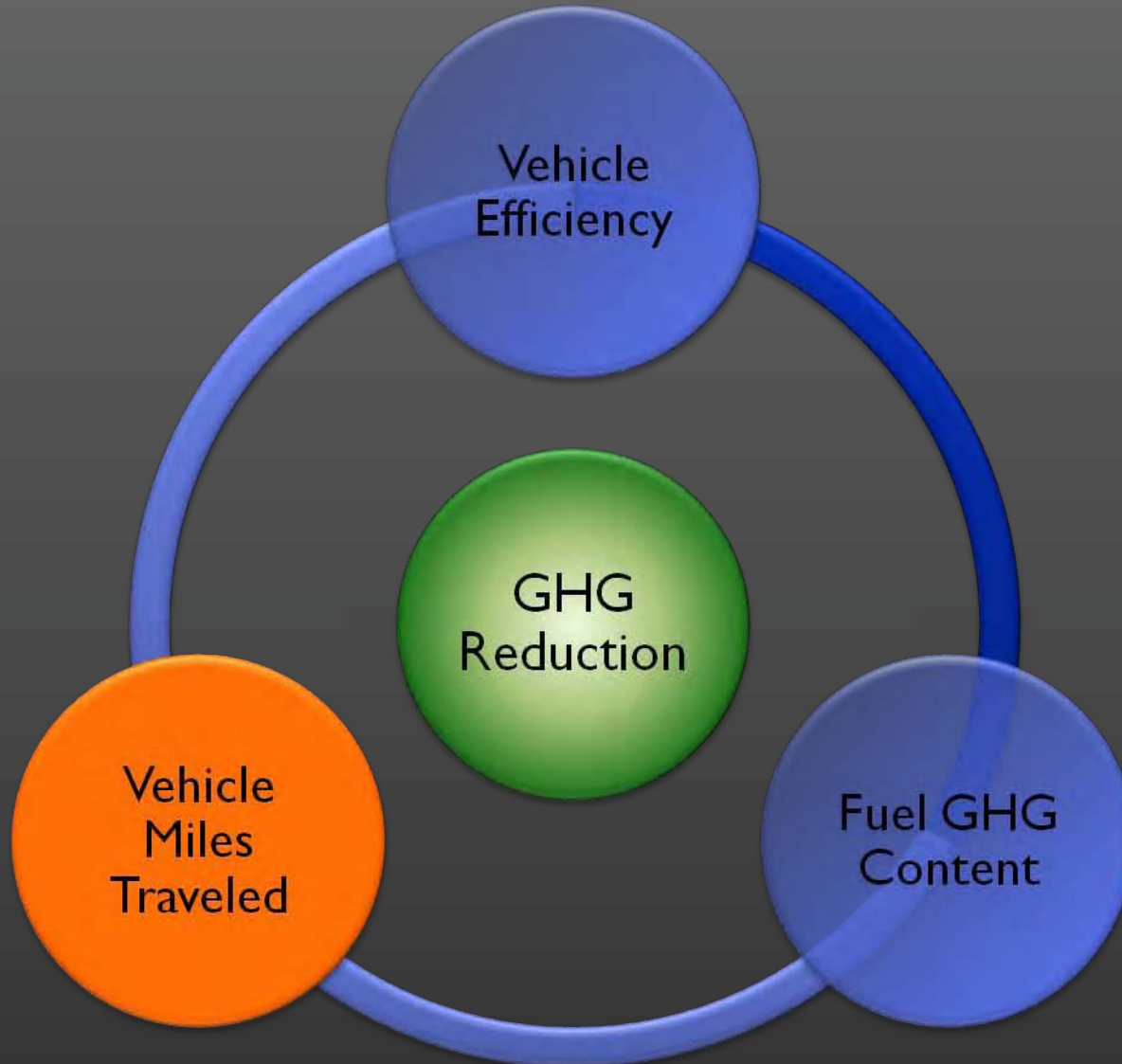


# Cumulative Product Mix Scenario

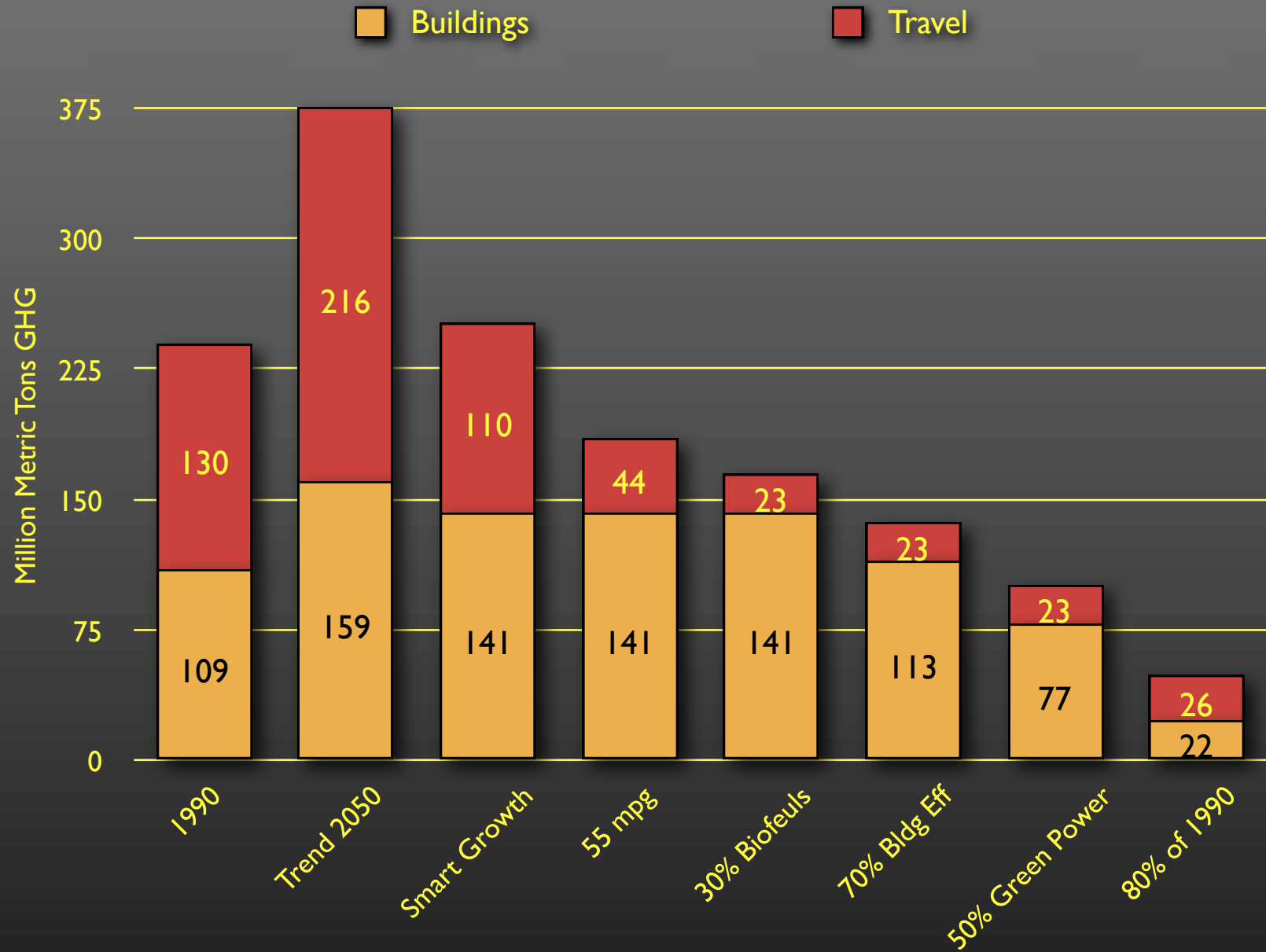




# Transportation Carbon Emissions a 3-Leg Stool



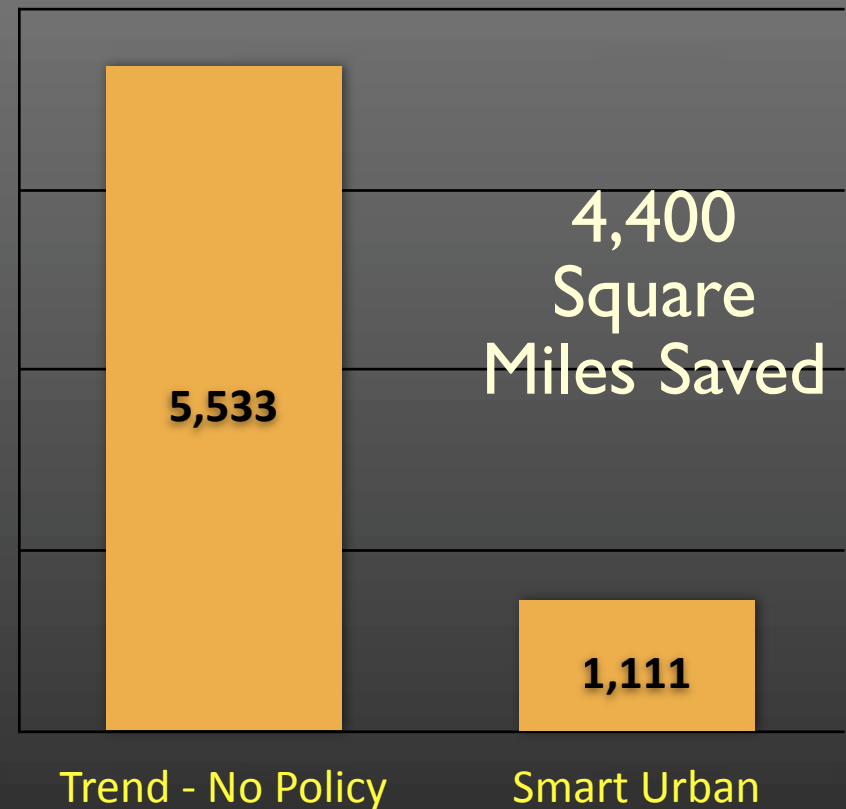
# California 2050 GHG Emissions





# Total Land Consumed

More land than Delaware and Rhode Island combined



# Cumulative Vehicle Miles Traveled

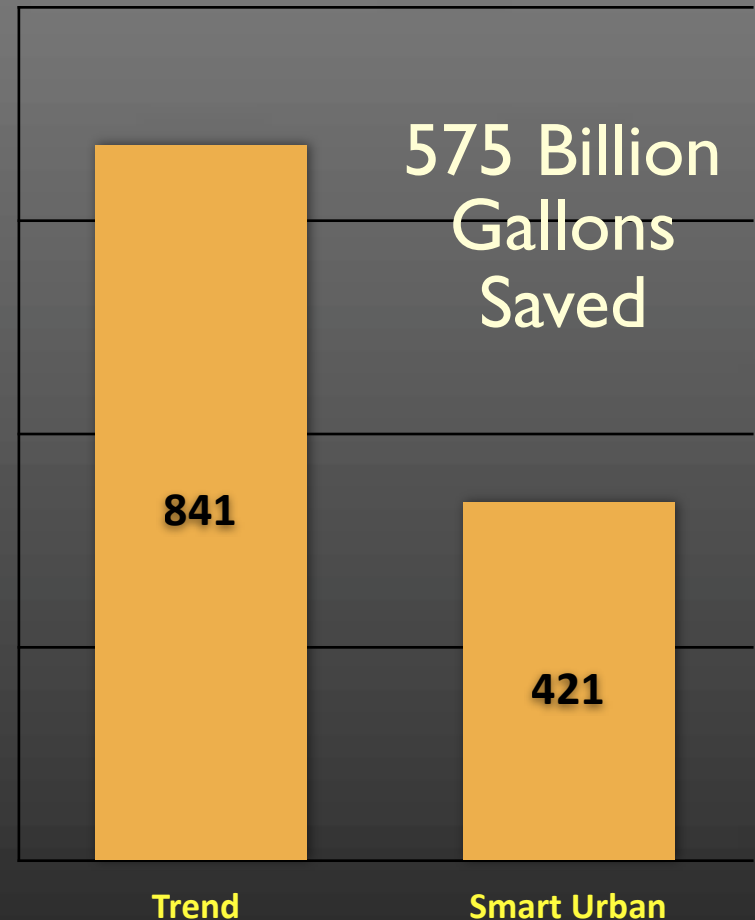
**ALL cars off California's roads for 20 years**





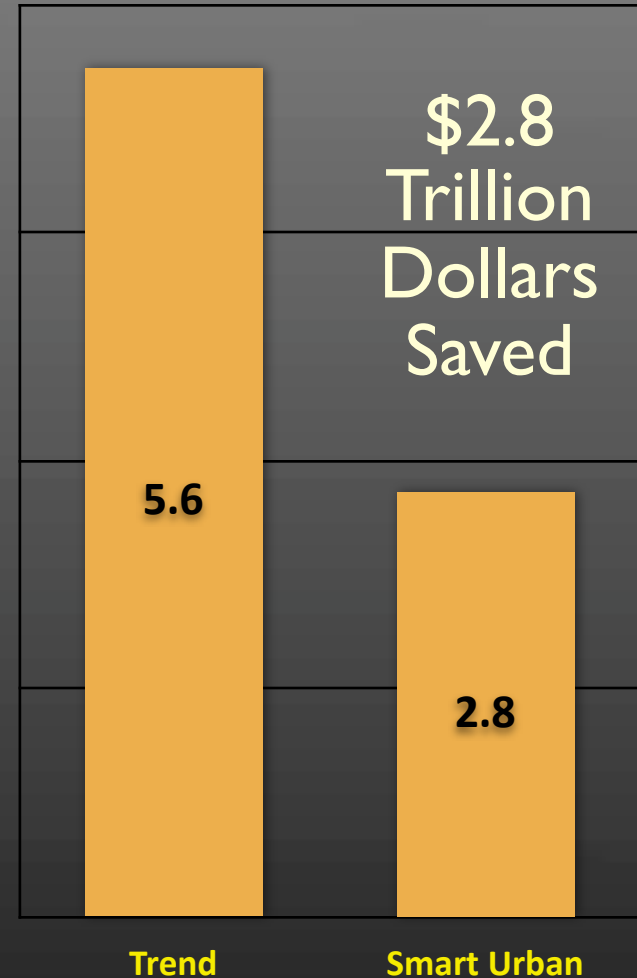
# Cumulative Fuel Consumed

Equivalent to 6 years of oil imports to the US



# Auto Fuel Cost

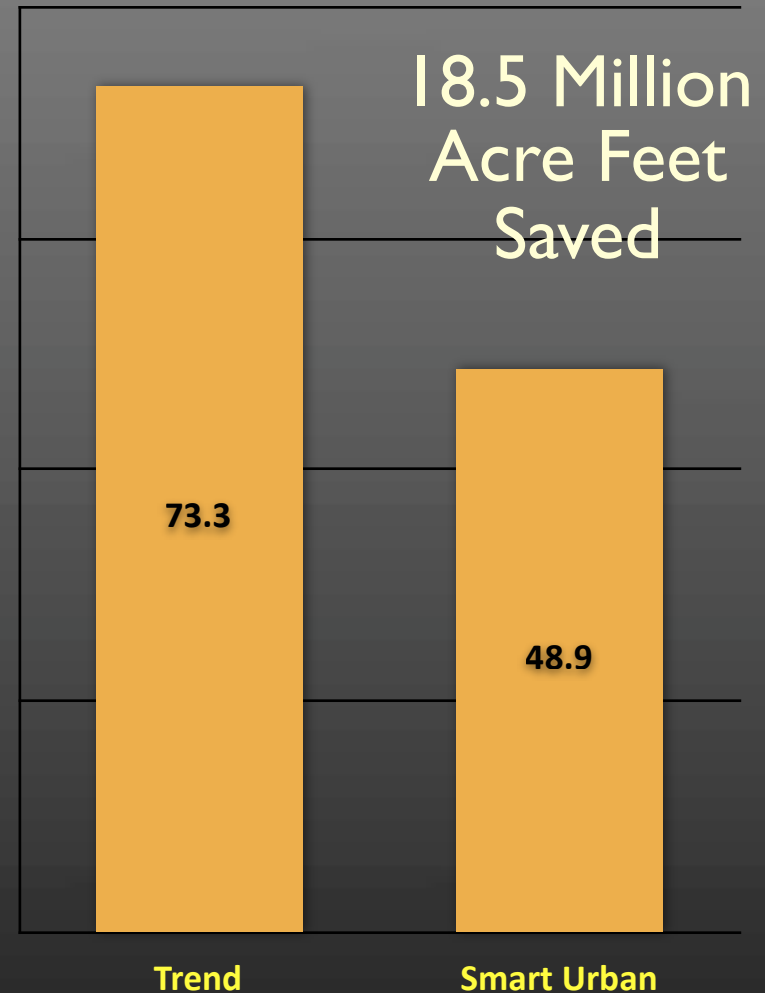
You could build 65,000 miles of High Speed Rail





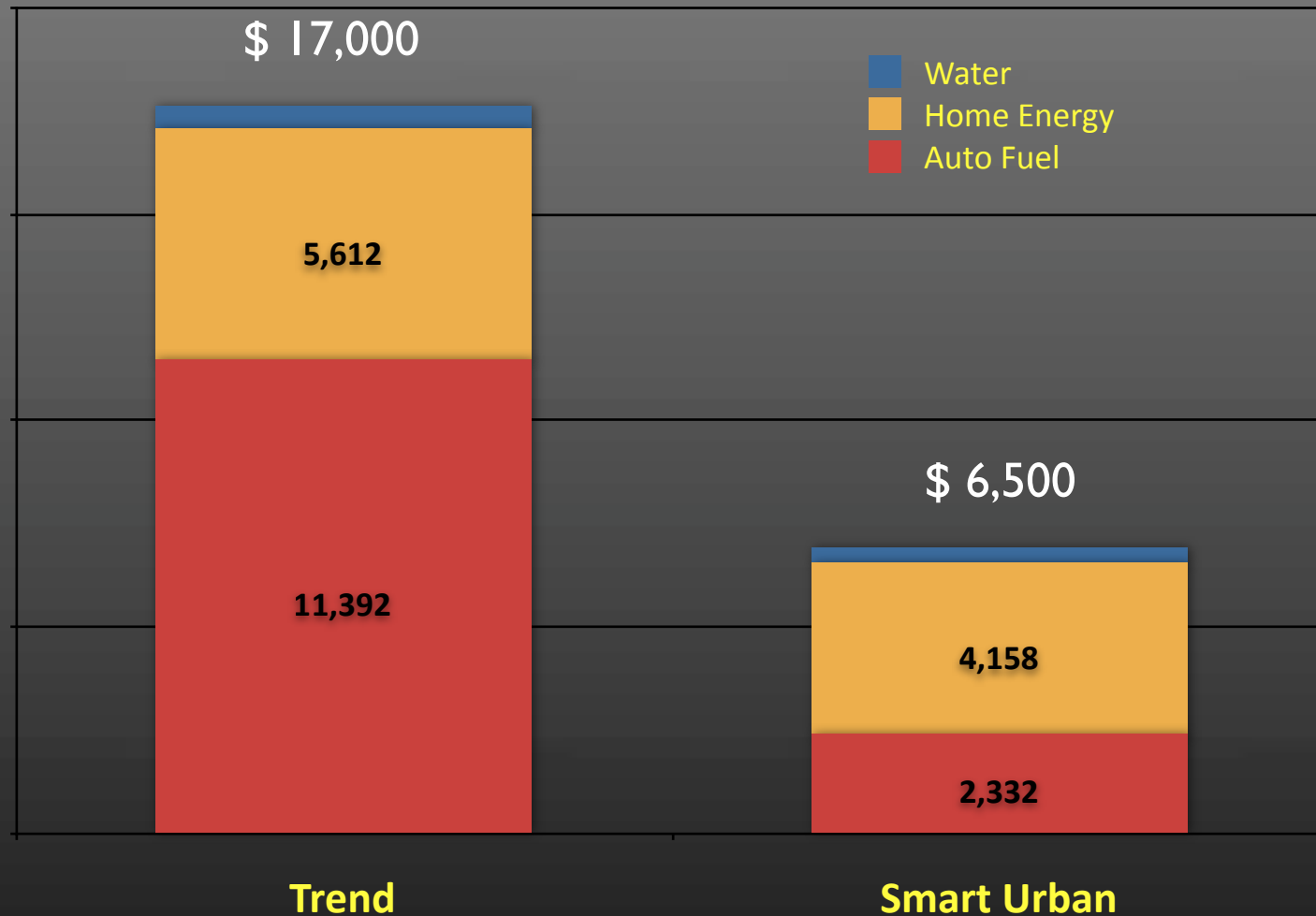
# Total Residential Water Use

More water than Crater Lake, Lake Shasta, the San Francisco Bay and Hetch Hetchy Reservoir, combined.



# Annual Household Costs

Over \$11,000 Savings Per Household Per Year

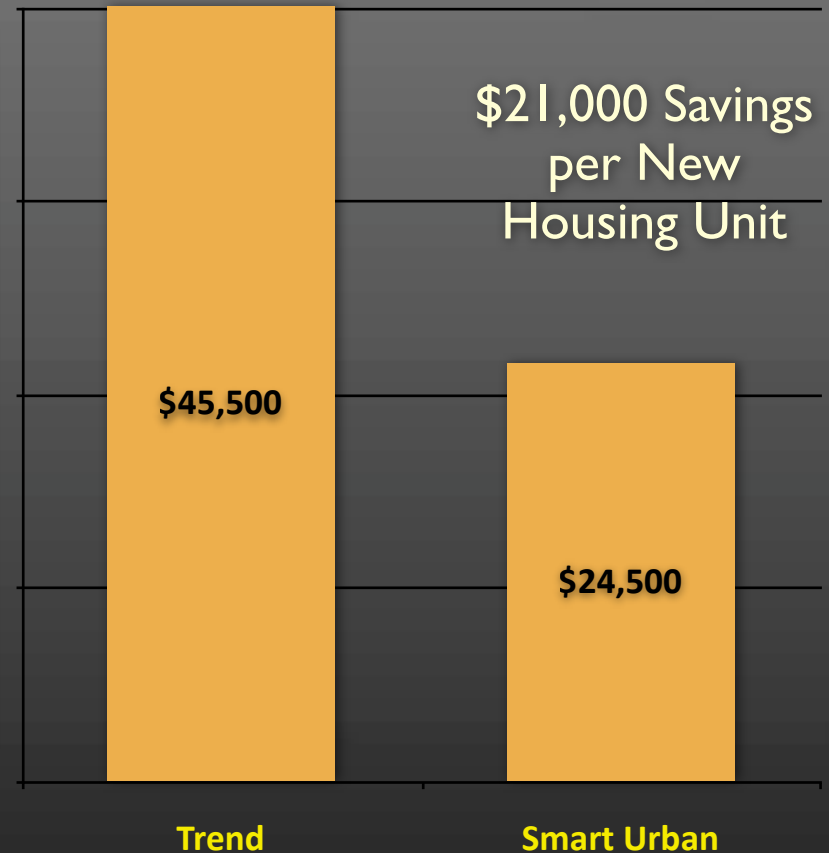




# Infrastructure Cost Per New Unit

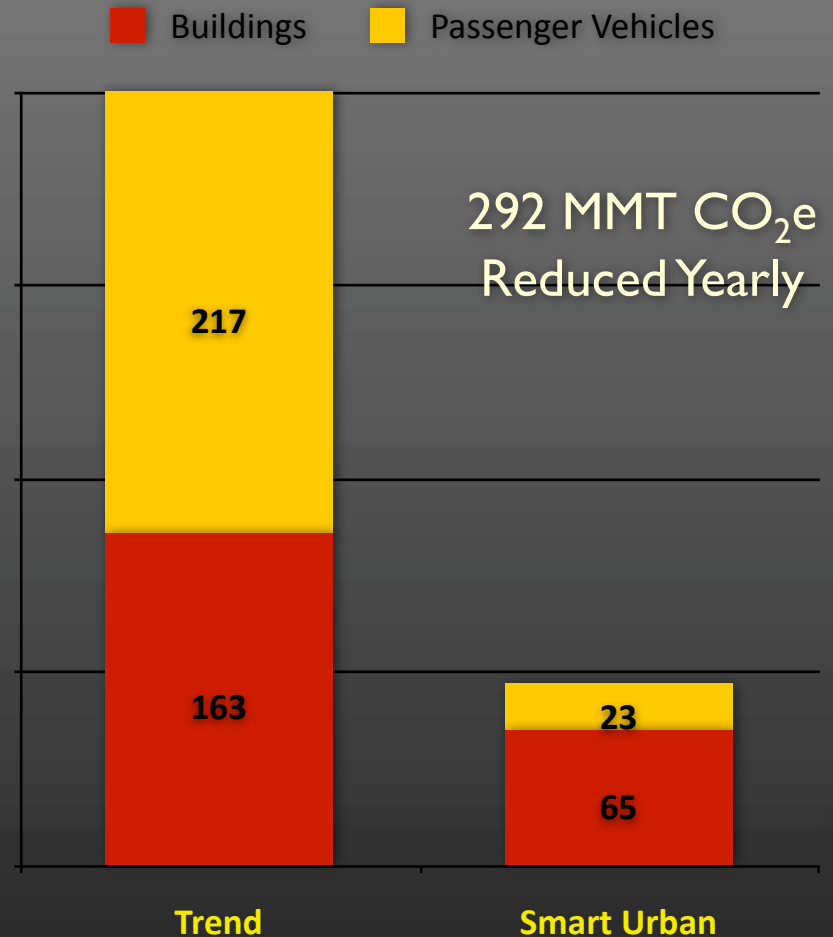
**Savings Total Over \$167 Billion or \$3.7 Billion Annually**

■ Cost



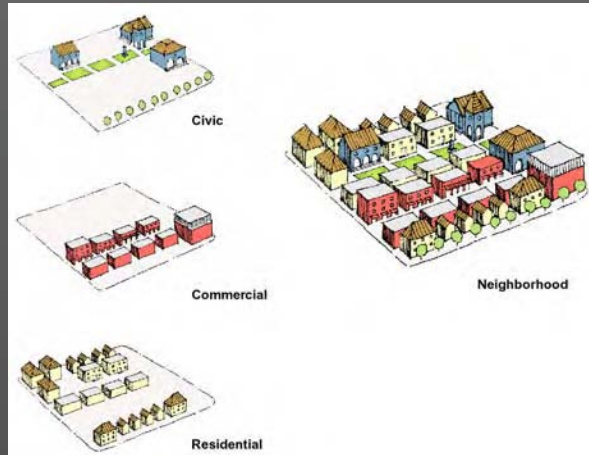
# Greenhouse Gas Emissions

Emissions offset over 186,000 acres of trees -  
larger than California





# Principles of Urbanism

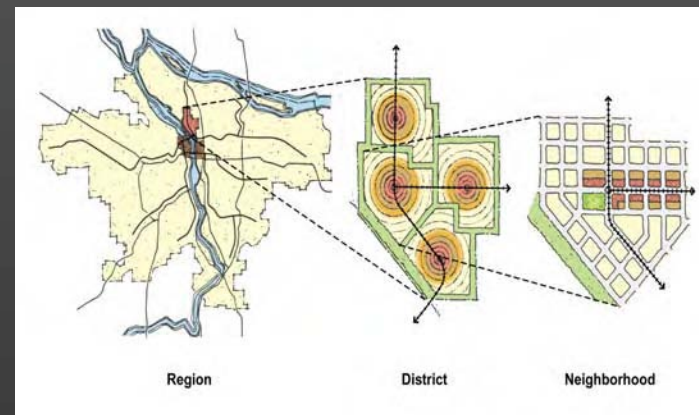


## Diversity & Balance



## Conservation & Restoration

## Human & Pedestrian Scale



## Connections & Interdependence