Challenges and Opportunities

Regional Approaches to Transportation Systems
Transportation Planning??
Transportation Planners
Transportation Planners
Public Frustration
Better Yet
How Americans Feel About Public Transit
CERTAIN DEATH
IF ENTERED
Best Practices
European Know-How
New Traffic Calming Strategies
Regional Approaches

- Challenges
- Opportunities
Challenges
Regional Approaches
Challenges

1. Preparing for the post-petroleum era
2. Deciding where the people should live
3. Providing for prosperity
Challenge 1.
Preparing for the Post-Petroleum Era
Regional Approaches
US Annual Petroleum Consumption

- Consumption
- Foreign Imports
- Domestic Production

Units: billion barrels

Year Range: 1950 - 2005
Colorado

Population & VMT

<table>
<thead>
<tr>
<th>Year</th>
<th>Pop. (millions)</th>
<th>VMT (millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1955</td>
<td>1.5</td>
<td>7</td>
</tr>
<tr>
<td>1980</td>
<td>2.9</td>
<td>22</td>
</tr>
<tr>
<td>2005</td>
<td>4.7</td>
<td>48</td>
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Population increased by 313% and VMT increased by 686%.
## Phoenix Valley Freeways

### TTI Data - 2007

<table>
<thead>
<tr>
<th></th>
<th>2000</th>
<th>2005</th>
<th>Change</th>
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<tbody>
<tr>
<td>Daily VMT</td>
<td>19.4</td>
<td>28.4</td>
<td>+ 46%</td>
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<tr>
<td>Lane Miles</td>
<td>1,030</td>
<td>1,405</td>
<td>+ 36%</td>
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</table>

New roads needed to avoid increase in congestion: 412 lane miles per year
Daily Miles of Travel Per Capita

Commute Trips

<table>
<thead>
<tr>
<th>Year</th>
<th>Miles of Travel</th>
<th>Change</th>
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<tbody>
<tr>
<td>1977</td>
<td>5.2</td>
<td>+2.5</td>
</tr>
<tr>
<td>1983</td>
<td>5.0</td>
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<tr>
<td>1990</td>
<td>6.5</td>
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<tr>
<td>1995</td>
<td>8.7</td>
<td></td>
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<td>2001</td>
<td>7.7</td>
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Discretionary Trips

<table>
<thead>
<tr>
<th>Year</th>
<th>Miles of Travel</th>
<th>Change</th>
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<tr>
<td>1977</td>
<td>20.8</td>
<td>+11.8</td>
</tr>
<tr>
<td>1983</td>
<td>20.1</td>
<td></td>
</tr>
<tr>
<td>1990</td>
<td>28.4</td>
<td></td>
</tr>
<tr>
<td>1995</td>
<td>30.0</td>
<td></td>
</tr>
<tr>
<td>2001</td>
<td>32.6</td>
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</table>

(NHTS)
Daily Trips/Person

Source: US 2001 NHTS

- Commute: 16%
- Family/Personal: 43%
- Social/Recreational: 27%
- Other: 4%
- School/Church: 10%
United States
Annual Rate of Change in VMT

<table>
<thead>
<tr>
<th>Period</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>1975-1985</td>
<td>3.35%</td>
</tr>
<tr>
<td>1985-1995</td>
<td>3.59%</td>
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<tr>
<td>1995-2005</td>
<td>2.39%</td>
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<tr>
<td>2005-2006</td>
<td>0.06%</td>
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<tr>
<td>2006-2007</td>
<td>0.03%</td>
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<tr>
<td>2007-2008</td>
<td>2.80%</td>
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</table>

June – July
Figure 1b. U.S. Vehicle Miles Traveled Per Capita, Annualized and Real Gasoline Pump Prices, January 1991–September 2008

Source: Traffic Volume Trends and Energy Information Administration
Monthly VMT Trend

Estimated Vehicle-Miles of Travel by Region - September 2008 - (in Billions)
Change in Traffic as compared to same month last year.

Source: United States Department of Transportation, Traffic Volume Trends, October 2008
Monthly VMT Trend

Estimated Vehicle-Miles of Travel by Region - December 2008 - (in Billions)
Change in Traffic as compared to same month last year.

Source: United States Department of Transportation, Traffic Volume Trends, December 2008
Why the VMT Trend Has Turned

- People do not believe the recent drop in oil prices is permanent
- Households have less money to spend and are hoarding cash
U.S. Greenhouse Gases

- **Transportation**: 28%
- **Utilities**: 33%
- **Agriculture**: 8%
- **Other**: 8%
- **Residential**: 5%
- **Commercial**: 6%
- **Industrial**: 19%

Total: 100%
Arizona

Transportation 39%

Electrical Generation 38%

Agriculture 5%

Waste Management 2%

Ind. Process/Fossil Fuel 5%

Industrial 6%

RCI 5%
Arizona Gross Greenhouse Gas Emissions
All Sources – Climate Action Plan

Governor’s Policy

- 80%

50% below 2000

Million Metric Tons

1990  66.0
2000  89.0
2020  160.3
2040

back to 2000 levels
Arizona Gross Greenhouse Gas Emissions
Transportation Sources

Governor’s Policy

1990: 25.3
2000: 35.0
2020: 58.6
2040: 82.2 - 80%

back to 2000 levels

50% below 2000 levels

Million Metric Tons
California’s Approach to Transportation GHG

Transp. GHG = Vehicle Technology, Fuels, Vehicle Use

- AB 1493 Regulation
- Low-Carbon Fuel Standard
- VMT
- SB 375

California ARB
Bottom Line:
Preparing for the Post-Petroleum Era

- The post-petroleum era IS NOT the post-car era, but VMT growth will abate
- Your traffic forecasts are wrong
- The VMT trend is being driven by household economics, not by policy
- Local & regional actions to reduce GHG emissions will be driven by economics & federal policy, not volunteerism
Challenge 2.
Deciding Where the People Should Live
Regional Approaches
They Are Coming

US Population

- 2005: 295 M
- 2030: 364 M (+23%)
Population Growth by States, 1990s

Figure 1. Percent Change in Resident Population for the 50 States, the District of Columbia, and Puerto Rico: 1990 to 2000

Percent Change
- Three Times U.S. Rate: 39.6 or more
- Two Times U.S. Rate: 26.4 to 39.5
- U.S. Rate (13.2): 13.2 to 26.3
- No Change: 0 to 13.1
- Less than 0

Prepared by Geography Division

Colorado State Demography Office
They Are Coming

Arizona Population

2005: 6.2 M
2030: 10.3 M (+66%)
5.1 Million People
14.1 Million People
Map Prepared by Maricopa Association of Governments
Source: MAG 2007 Projections Concentration Grid
April 2007

POPULATION CONCENTRATION 2005
Maricopa County, Arizona

Persons Per Square Mile
(Maricopa County Average = 399)
- Less than 250
- 250 to 2000
- 2000 to 4000
- 4000 to 6000
- 6000 to 8000
- More than 8000

Municipal Planning Area
Maricopa County
Freeways/Expressways
- Existing
- Planned
- Major Roads
Bottom Line:
Deciding Where the People Should Live

- Western states must absorb millions of new people within the next two decades
- Will we plan for them? Where?

Existing Cities
- TODs
- Other infill, refill

New Cities
- TODs
- Other

Sprawl
Challenge 3.
Providing for Prosperity

Regional Approaches
Household Expenditures

- Housing: 32.9%
- Transportation: 19.1%
- Food: 13.1%
- Personal insurance and pensions: 9.9%
- Healthcare: 5.9%
- Entertainment: 5.0%
- Apparel and services: 4.0%
- Cash contributions: 3.4%
- Education & Reading: 2.2%
- Miscellaneous: 1.5%
- Personal care products and services: 1.3%
- Alcoholic beverages: 1.0%
- Tobacco products and smoking supplies: 0.7%

% of Household Expenditures
# TYPICAL HOUSEHOLD BUDGET IN 28 METROPOLITAN AREAS

*(Expenses as a share of income)*

<table>
<thead>
<tr>
<th></th>
<th>All Households</th>
<th>Working Families Incomes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>$20,000 – $50,000</td>
</tr>
<tr>
<td>Housing</td>
<td>27.4%</td>
<td>27.7%</td>
</tr>
<tr>
<td>Transportation</td>
<td>20.2%</td>
<td>29.6%</td>
</tr>
<tr>
<td>Food</td>
<td>10.6%</td>
<td>15.1%</td>
</tr>
<tr>
<td>Healthcare</td>
<td>4.7%</td>
<td>7.7%</td>
</tr>
</tbody>
</table>

Source: A Heavy Load, Center for Neighborhood Technology
Share of Family Income Spent On Housing & Transportation

Family Income = $35,000 - $50,000

- Central City: 23% Housing, 16% Transportation, 39% Total
- Near Jobs: 26% Housing, 23% Transportation, 49% Total
- Away From Jobs: 25% Housing, 26% Transportation, 51% Total

Source: A Heavy Load, Center for Neighborhood Technology
Share of Family Income Spent On Housing & Transportation

Family Income = $20,000 - $35,000

- Central City: 32% (Housing) / 22% (Transportation) / 54% (Total)
- Near Jobs: 35% (Housing) / 31% (Transportation) / 66% (Total)
- Away From Jobs: 33% (Housing) / 37% (Transportation) / 70% (Total)

Source: A Heavy Load, Center for Neighborhood Technology

- Housing: +15.4%
- Transportation: +13.4%
- Income: +10.3%

Source: A Heavy Load, Center for Neighborhood Technology
Geographic Distribution of HOUSE PRICE RISK

LEGEND
- 0.0% to 10.0%
- 10.0% to 20.0%
- 20.0% to 40.0%
- 40.0% to 60.0%
- 60.0% to 100.0%
Bottom Line:
Providing for Prosperity

- Mobility is costing households & businesses too much
- If we are to have a large middle class, we must re-tool our jobs-housing relationships & our supporting transportation systems
- The market for exurban sprawl has shrunk... and may be gone entirely
- Cities are about to become very popular places to live
Opportunities

Regional Approaches
Opportunities

1. Cities that work
2. Intercity rail corridors
3. Regional scenario planning
4. Reinventing transportation finance

Regional Approaches to Transportation Systems
Opportunity 1. Cities that Work

Regional Approaches
Major metros aggregate fundamental drivers of national prosperity

- Land area: 12%
- Population: 65%
- Jobs: 69%
- Research universities: 70%
- Seaport tonnage: 75%
- Graduate degree holders: 75%
- Knowledge economy jobs: 77%
- Patents: 78%
- Air cargo: 79%
- NIH/NSF funding: 82%
- R&D employment: 83%
- Air passenger boardings: 92%
- Public transit passenger miles: 95%
- Venture capital funding: 96%

**Legend:**
- Population and economy
- Innovation
- Human capital
- Infrastructure
- National total
The 100 largest U.S. metros generate 75 percent of the nation's annual GDP

The size of each circle is proportional to each metro’s share of the nation’s gross domestic product (GDP)

- Light blue: The 100 largest metros
- Dark grey: All other metros

Source: Brookings analysis of Bureau of Economic Analysis data.
Well Designed Density, Mixed Use

It is not this:
Well Designed Density, Mixed Use
Well Designed Density, Mixed Use
Well Designed Density, Mixed Use
Well Designed Density, Mixed Use
Well Designed Density, Mixed Use
Well-Planned Access & Circulation Systems

Charlotte
Charlotte
Opportunity 2. Intercity Rail Corridors

Regional Approaches
50s – 70s: Interstate Highway System
70s – Today: Urban Rail Transit
Rail Cities in the United States (as of 1971)
Rail Cities in the United States (as of 2006)
Interstate 40 corridor and supporting routes truck freight flow (tons per year)
Multi-axle trucks as a % of total traffic:

≥ 20% in many arterial corridors

≥ 40% on most of the rural interstate system
21st Century: Intercity Rail System
Amtrak Routes
Criteria for High Speed Rail

- Portal-to-portal distance
  - > 100 miles to compete with auto
  - < 600 miles to compete with air
- Major airports at or near capacity
- Sufficient population in centers
- Potential to operate @ 90 – 150 mph
California HSR
Intercity Rail Corridors

- Connect the economies of city pairs
- Operate @ 65 – 90 mph
- Serve double duty as commuter rail corridors
New Mexico
Arizona
Southwest Rail Corridor

Southwest Rail Corridor

Surf Corridor

Santa Barbara
Los Angeles
Oceanside
San Diego

Los Angeles
San Bernardino
Palm Springs
Phoenix
Avondale/Buckeye
Mesa

Phoenix
Tempe

Yuma
Coolidge
Tucson
Nogales

to points East

Connecting Rail Services

June 2005
Colorado Rail Corridor Study
Many western city pairs fall into feasible HSR range (100 – 600 m)
Opportunity 3.
Regional Scenario Planning

Regional Approaches
Current Transportation Planning Structure

Federal Government – DOT Agencies
(FHWA, FTA, FRA, FAA, NHTSA, etc.)

State DOTs

MPOs
(Metropolitan Planning Organizations)

Transit Agencies

Districts
Regions
Cities
Counties
The 100 largest metros are located in every region of the country
PROJECTS

STREETS PLAN

BICYCLE PLAN

TRANSIT PLAN

TRANSPORTATION ELEMENT

AREA & NEIGHBORHOOD PLANS

LOCAL COMP PLAN

LOCAL LAW & POLICY

STATE LAW & POLICY

FEDERAL LAW & POLICY

FEDERAL FUNDING

STATE FUNDING

LOCAL FUNDING

TIP

CIP

STREETS PLAN

BICYCLE PLAN

TRANSIT PLAN

TRENDS – ECONOMIC, DEMOGRAPHIC, TRAVEL BEHAVIOR

PUBLIC OPINION
Arizona Sun Corridor
A New Era of “Regional” Planning

- Imperative for city pairs to collaborate on transportation & land use planning
- Need for cities in adjacent states (and state DOTs) to collaborate
- Moving beyond MPOs to megaregions
- Scenario planning (incl. California Blueprint Planning)
Old School Transportation Planning

Population & Land Use Forecasts (negotiations) → Modeling of Future Traffic → Alternative 1, Alternative 2, Alternative 3
Scenario Planning

COMMUNITY VISION

- Land Use Scenario 1
- Land Use Scenario 2
- Land Use Scenario 3

Modeling, analysis of multiple factors, including traffic

- Transportation Scenario 1
- Transportation Scenario 2
- Transportation Scenario 3
Scenario Planning Projects
Key to the Map

- light yellow: areas of existing and future development
- dark green: green areas (e.g., open space, parks, wetlands, vernal pools, stream corridors, hardwood stands)
- light brown: agriculture and other undeveloped lands
- light blue: rivers, streams and lakes
- dark brown: city boundaries
- dark gray: highways
- light brown: county boundaries

Note: Some vernal pools in Yuba, Sutter and southwest Placer counties are preserved, but are not shown on these maps.

Note: El Dorado County elected not to directly participate in this phase of the Blueprint process due to ongoing issues associated with their General Plan.

For detailed information

To view the complete land use maps, including where industry, homes, shopping and other uses would be located in the region, please go to www.sacregion-blueprint.org and click on “The Project” tab at the top of the page. There you may view maps for each city and major county area in the region and a variety of statistical and narrative information about the scenarios.
- **Scenario B**
  - Created by Individual Counties
  - Increased residential densities
  - Limits agricultural and environmental impacts

* Represents new growth ONLY

<table>
<thead>
<tr>
<th>% of Density</th>
</tr>
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<tbody>
<tr>
<td>100%</td>
</tr>
<tr>
<td>90%</td>
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<td>20%</td>
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<tr>
<td>10%</td>
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<td>0%</td>
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Legend:
- New Growth
- Existing Urban
- Spheres of Influence
- Special Planning Areas
- Public and Conservation Lands
Opportunity 4. Reinventing Transportation Finance Regional Approaches
Single Purpose Spending

Transportation

Housing

Public Health

Environment

Energy
Integrated, Strategic Investment

- Public Health
- Housing
- Transportation
- Energy
- Environment
Thanking You

www.charlier.org