Providing for Arizona’s Future Mobility

3 Challenges, 3 Opportunities
My Proposal to You

- States Compete for Economic Growth
  [Some will thrive, others will suffer]

- But Economies are Local & Regional
  [Cities = Economies]

- Arizona’s Future is in Her Cities

- Small Differences Have Big Effects
  [Outcomes are decided at the margin]
Three Challenges

1. Petroleum Dependency
2. Climate Change
3. Location Efficiency
US Oil Consumption (million barrels per day)

EIA, Annual Energy Outlook 2001; "Potential Oil Production from the Coastal Plain of ANWR," - EIA Reserves & Production Division
OGJ, 9 Feb 2004 (Jan-Nov 2003)
Growth by World Region

India and China will double their demand for petroleum by 2030

Worldwide Growth in Demand

Transportation = 74% of increase in U.S. petroleum consumption

Figure 28. World Liquids Consumption by Sector, 2005-2030

We have not “run out of” oil
The stone age did not end...
...because we ran out of stones
We are at the end of the age of...

...cheap oil...

...and the beginning of the Post-Petroleum era.
Worldwide supply of oil

42 years

1.3 trillion barrels
Daily production capacity

Wholesale price/barrel

Daily demand
“Peak Oil”

- We are not “out of oil”
- But world-wide production capacity of petroleum-based fuels has peaked
- Demand will continue to rise
- Prices will rise and will be unstable
Remaining Oil Reserves by Country

- Saudi Arabia: 20%
- Canada: 14%
- Iran: 10%
- Iraq: 9%
- Kuwait: 8%
- U.A.E: 7%
- Venezuela: 6%
- Russia: 5%
- Libya: 3%
- Nigeria: 3%
- Kazakhstan: 2%
- Qatar: 1%
- China: 1%
- Others: 10%
- U.S.: 1%

STABILITY OF U.S. RELATIONS

- HIGH: 15%
- MODERATE: 32%
- LOW: 53%

Source: Oil & Gas Journal
Production Cost – Sources of Oil

Production Cost Per Barrel of Oil - 2007

- Oil Shale: $57
- Liquefied Coal: $35
- Synfuel: $26
- Tar Sands/Heavy Oil: $23
- Enhanced Recovery: $16
- Conventional Oil: $9

Source: Brandt & Farrell, UC Berkeley
Az’s Financial Drain - Energy

2006 ENERGY DOLLAR FLOW ANALYSIS for the State of Arizona

Dollars Exported
68%

Dollars Retained
32%

$9.9 Billion
Az’s Financial Drain - Petroleum

2003

- Dollars Exported: 79%
- Dollars Retained: 21%
- Dollars: $3.5 B

2006

- Dollars Exported: 86%
- Dollars Retained: 14%
- Dollars: $5.9 B

Increase: + 68%
Petroleum Dependency

- **Bottom Line:**
  1. Carbon-based energy will be more expensive & prices will fluctuate
  2. Carbon-dependent economies will be at a disadvantage
  3. Arizona has a carbon-dependent economy
Three Challenges

1. Petroleum Dependency
2. Climate Change
3. Location Efficiency
Potential Responses to Climate Change

- Ignore
- Mitigate
- Adapt
U.S. Greenhouse Gases

- Transportation: 28%
- Utilities: 33%
- Industrial: 19%
- Agriculture: 8%
- Commercial: 6%
- Residential: 5%
- Other: 1%
Transportation: 24%
Industrial: 18%
Electrical Generation: 37%
Agriculture: 8%
Ind. Process/Fossil Fuel: 9%
Waste Management: 2%
Industrial: 2%
California

- Transportation: 41%
- Residential: 6%
- Commercial: 3%
- Industrial: 23%
- Agriculture: 8%
- Electrical Generation: 20%
Figure 4. Contributions to Emissions Growth, 1990-2020: Reference Case Projections (MMTCO2e)

- Electricity Use
- Direct Fuel Use (RCI)
- On-road Diesel
- On-road Gasoline
- Jet Fuel Use
- ODS Substitutes (HFCs)
- Ag, Waste, & Ind Processes

Legend:
- 1990-2005
- 2005-2020
Arizona Gross Greenhouse Gas Emissions

All Sources

AZ Climate Action Plan

- 80% below 2000 levels

1990: 66.0
2000: 89.0
2020: 160.3
2040: - 80% levels

Million Metric Tons

back to 2000 levels

50% below 2000
Reducing Emissions at the Tailpipe Will Not Be Enough

Sources: VMT: EIA with 10% rebound, MPG & Fuel: Trend Extrapolation
California’s Approach to Transportation GHG

Transp. GHG = \frac{GHG}{Mile} + \frac{GHG}{Gallon} + VMT

Vehicle Technology

Fuels

Vehicle Use

AB 1493 Regulation

Low-Carbon Fuel Standard

SB 375

California ARB
Potential Responses to Climate Change

- Ignore
- Mitigate
- Adapt
Figure 3. The Interior West: Epicenter of Warming in the Contiguous U.S. (2000 - 2007 Average Temperatures Compared to 20th Century Averages)
Ambient Temperature Change
1980 – 2007 (° F)

- World: + 1.0°
- Western US: + 1.7°
- Arizona: + 2.2°
<table>
<thead>
<tr>
<th>Year</th>
<th>Percentage of Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>62%</td>
</tr>
<tr>
<td>2001</td>
<td>59%</td>
</tr>
<tr>
<td>2002</td>
<td>25%</td>
</tr>
<tr>
<td>2003</td>
<td>51%</td>
</tr>
<tr>
<td>2004</td>
<td>49%</td>
</tr>
<tr>
<td>2005</td>
<td>105%</td>
</tr>
<tr>
<td>2006</td>
<td>73%</td>
</tr>
<tr>
<td>2007</td>
<td>68%</td>
</tr>
</tbody>
</table>
White "bathtub rings" show the pre-drought water level of Lake Powell.
What Does “Adapt” Mean?
Strategic Building Massing and Orientation

Credit: ASU and City of Phoenix
Urban Streets As Linear Parks

Credit: ASU and City of Phoenix
Climate Change

Bottom Line:

1. Az Must Mitigate GHG Emissions
   [this will be driven by regulations]
2. Az Must Adapt to Climate Change
   [this will be driven by politics]
3. A Late Start is a Bad Idea
   [the magnitude of these issues will be exponential over time]
Three Challenges

1. Petroleum Dependency
2. Climate Change
3. Location Efficiency
def. “Location Efficiency”

The intrinsic accessibility and mobility performance of a given land development pattern, measured in unavoidable transportation costs (incl. time) and associated secondary impacts of non-productive travel volumes.
Phoenix Valley Freeways

TTI Data - 2007

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

Source: Texas Transportation Institute
But... what about gas prices?

Source: Traffic Volume Trends and Energy Information Administration
Daily Trips/Person

- Social/Recreational: 27%
- School/Church: 10%
- Other: 4%
- Commute: 16%
- Family/Personal: 43%

Source: US 2001 NHTS
Daily Miles of Travel Per Capita

Commute Trips

<table>
<thead>
<tr>
<th>Year</th>
<th>Value</th>
</tr>
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<tbody>
<tr>
<td>1977</td>
<td>5.2</td>
</tr>
<tr>
<td>1983</td>
<td>5.0</td>
</tr>
<tr>
<td>1990</td>
<td>6.5</td>
</tr>
<tr>
<td>1995</td>
<td>8.7</td>
</tr>
<tr>
<td>2001</td>
<td>7.7</td>
</tr>
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</table>

Discretionary Trips

<table>
<thead>
<tr>
<th>Year</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1977</td>
<td>20.8</td>
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<tr>
<td>1983</td>
<td>20.1</td>
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<tr>
<td>1990</td>
<td>28.4</td>
</tr>
<tr>
<td>1995</td>
<td>30.0</td>
</tr>
<tr>
<td>2001</td>
<td>32.6</td>
</tr>
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</table>

(NHTS)
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, September 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.

December - December

Source: United States Department of Transportation, Traffic Volume Trends, December 2008
### Per Capita Use of Highway Fuels 2007

<table>
<thead>
<tr>
<th>State</th>
<th>Per Capita Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arizona</td>
<td>598</td>
</tr>
<tr>
<td>Colorado</td>
<td>556</td>
</tr>
<tr>
<td>Texas</td>
<td>665</td>
</tr>
<tr>
<td>California</td>
<td>513</td>
</tr>
<tr>
<td>Washington</td>
<td>518</td>
</tr>
<tr>
<td>Ohio</td>
<td>573</td>
</tr>
<tr>
<td>Michigan</td>
<td>556</td>
</tr>
<tr>
<td>Illinois</td>
<td>512</td>
</tr>
<tr>
<td>US Average</td>
<td>585</td>
</tr>
</tbody>
</table>
VMT to Employment Index
2007

<table>
<thead>
<tr>
<th>State</th>
<th>Index</th>
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</thead>
<tbody>
<tr>
<td>Arizona</td>
<td>1.07</td>
</tr>
<tr>
<td>Colorado</td>
<td>0.96</td>
</tr>
<tr>
<td>Texas</td>
<td>1.09</td>
</tr>
<tr>
<td>California</td>
<td>0.97</td>
</tr>
<tr>
<td>Washington</td>
<td>0.91</td>
</tr>
<tr>
<td>Ohio</td>
<td>0.93</td>
</tr>
<tr>
<td>Michigan</td>
<td>1.11</td>
</tr>
<tr>
<td>Illinois</td>
<td>0.82</td>
</tr>
<tr>
<td>US Average</td>
<td>1.00</td>
</tr>
</tbody>
</table>
# 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**
  - Housing: 23%
  - Transportation: 16%
  - Total: 39%

- **Near Jobs**
  - Housing: 26%
  - Transportation: 23%
  - Total: 49%

- **Away From Jobs**
  - Housing: 25%
  - Transportation: 26%
  - Total: 51%

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

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

Central City
- Housing: 32%
- Transportation: 22%
- Total: 54%

Near Jobs
- Housing: 35%
- Transportation: 31%
- Total: 66%

Away From Jobs
- Housing: 33%
- Transportation: 37%
- Total: 70%

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
### Emerging Trend

**Table: The Effect of Centrality on Housing Price Changes**

<table>
<thead>
<tr>
<th>Metro Area</th>
<th>Region-wide Average</th>
<th>Close-In Neighborhoods</th>
<th>Distant Neighborhoods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chicago</td>
<td>-4%</td>
<td>0%</td>
<td>-4%</td>
</tr>
<tr>
<td>Los Angeles</td>
<td>-11%</td>
<td>-6%</td>
<td>-10%</td>
</tr>
<tr>
<td>Pittsburgh</td>
<td>0%</td>
<td>2%</td>
<td>-5%</td>
</tr>
<tr>
<td>Portland</td>
<td>-1%</td>
<td>3%</td>
<td>-5%</td>
</tr>
<tr>
<td>Tampa</td>
<td>-13%</td>
<td>-9%</td>
<td>-14%</td>
</tr>
</tbody>
</table>

**Source**: Driven to the Brink: How the Gas Price Spike Popped the Housing Bubble and Devalued the Suburbs, Joe Cortright, May 2008. CEOs for Cities.
Transportation Spending by Neighborhood

Housing + Transport Index
by Block Group Model Data
Transportation Costs as Percent of Income

- Data not available
- 0 to 15%
- 15 to 18%
- 18 to 20%
- 20 to 28%
- Greater than or equal to 28%

Maps Copyright (C) Center for Neighborhood Technology, 2008. Used with permission.

Foreclosures by County, March 2008

Source: RealtyTrac.com
Fringe Values Eroding: Phoenix

Average Annual Appreciation 2004-2006

Appreciation 2006-07

Source: Arthur C. Nelson, Metropolitan Institute at Virginia Tech, based in Zillow analysis by Ceylan Oner.
Density Reduces Vehicle Miles Traveled

Source: Driven to the Brink: How the Gas Price Spike Popped the Housing Bubble and Devalued the Suburbs, Joe Cortright, May 2008. CEOs for Cities.
The crash of 2008 continues to reverberate loudly nationwide—destroying jobs, bankrupting businesses, and displacing homeowners. But already, it has damaged some places much more severely than others. On the other side of the crisis, America’s economic landscape will look very different than it does today. What fate will the coming years hold for New York, Charlotte, Detroit, Las Vegas? Will the suburbs be ineffably changed? Which cities and regions can come back strong? And which will never come back at all?

**BY RICHARD FLORIDA**

How the Crash Will Reshape America

*Image Credit: Sean McCabe*

This article has been corrected since it was published in the print magazine.

Y FATHER WAS a child of the Great Depression. Born in Newark, New Jersey, in 1921 to Italian immigrants
Reinventing America’s Cities: The Time Is Now

By NICOLAI OUROUSSOFF

THE country has fallen on hard times, but those of us who love cities know we have been living in the dark ages for a while now. We know that turning things around will take more than just pouring money into shovel-ready projects, regardless of how they might boost the economy. Windmills won’t do it either. We long for a bold urban vision.

With their crowded neighborhoods and web of public services, cities are not only invaluable cultural incubators; they are also vastly more efficient than suburbs. But for years they have been neglected, and in many cases forcibly harmed, by policies that favored sprawl over density and conformity over difference.

Such policies have caused many of our urban centers to devolve into generic theme parks and others, like Detroit, to decay into ghost towns. They have also sparked the rise of ecologically unsustainable gated communities and reinforced economic disparities by building walls between racial, ethnic and class groups.

Correcting this imbalance will require a radical adjustment in how we think of cities and government’s role in them. At times it will mean destruction rather than repair. And it demands listening to people who have spent the last decades imagining and in many cases planning for more sustainable, livable, and socially just...
Bottom Line:
1. Location Efficiency Shapes AZ Economy
   [excess transportation expenditures do not generate growth]
2. Cities are the New Game
   [housing and employment markets have already changed]
3. Every State Must Address This
   [Arizona has unique opportunities]
Three Opportunities

1. The Economic Engine of In-Migration
2. Shaping Urban Arizona with Transit
3. Connecting the Western Megapolitans
US Population

- 2005: 295 M
- 2030: 364 M (+23%)
- 2050: 392 M (+33%)

Source: US Census Bureau, 12/08
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

Prepared by Geography Division

Colorado State Demography Office
Arizona Population

- 2005: 6.2 M
- 2030: 10.7 M (+ 73%)
- 2050: 12.8 M (+ 106%)

Source: US Census Bureau, 12/08
Source of AZ Population Growth

Based on US Census Bureau data, 2000 - 2007

- Net In-Migration: 79%
- Births: 21%
Source of AZ In-Migration

Other States 81%

Other Nations 19%

Based on US Census Bureau data, 2000 - 2007
## In-Migration – Ages 65 +

<table>
<thead>
<tr>
<th>State</th>
<th>Net In-Migration per 1,000 Population &gt; 65</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nevada</td>
<td>114.2</td>
</tr>
<tr>
<td>Arizona</td>
<td>87.4</td>
</tr>
<tr>
<td>Florida</td>
<td>56.9</td>
</tr>
<tr>
<td>South Carolina</td>
<td>33.6</td>
</tr>
<tr>
<td>Delaware</td>
<td>27.2</td>
</tr>
<tr>
<td>North Carolina</td>
<td>22.1</td>
</tr>
<tr>
<td>Idaho</td>
<td>19.6</td>
</tr>
<tr>
<td>Georgia</td>
<td>18.1</td>
</tr>
<tr>
<td>Tennessee</td>
<td>15.2</td>
</tr>
<tr>
<td>New Mexico</td>
<td>12.0</td>
</tr>
<tr>
<td>Ohio</td>
<td>-12.2</td>
</tr>
<tr>
<td>North Dakota</td>
<td>-16.1</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>-16.6</td>
</tr>
<tr>
<td>Michigan</td>
<td>-17.7</td>
</tr>
<tr>
<td>Connecticut</td>
<td>-20.0</td>
</tr>
<tr>
<td>New Jersey</td>
<td>-20.6</td>
</tr>
<tr>
<td>Illinois</td>
<td>-28.1</td>
</tr>
<tr>
<td>Alaska</td>
<td>-39.4</td>
</tr>
<tr>
<td>New York</td>
<td>-45.0</td>
</tr>
<tr>
<td>District of Columbia</td>
<td>-69.5</td>
</tr>
</tbody>
</table>
People Turning 65 Each Year

Figure 4.
Net Migration Rates for the Population 65 Years and Over: 1995 to 2000

(Data based on a sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see www.census.gov/prod/cen2000/doc/sf3.pdf)

Source: U.S. Census Bureau, Census 2000.
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

Map Prepared by Maricopa Association of Governments
Source: MAG 2007 Projections Concentration Grid
April 2007
12.8 Million
Economic Engine of In-Migration

Bottom Line:

1. Key Choices Must Be Made
   [State & municipal policies could guide development of urban AZ]

2. Changes in Development Patterns are Urgently Needed
   [Arizona cannot afford more sprawl]

3. Development Will Continue to Propel AZ Economy
   [less than ½ of future AZ is built]
Three Opportunities

1. The Economic Engine of In-Migration
2. Shaping Urban Arizona with Transit
3. Connecting the Western Megapolitans
US Households

Source: Dr. Arthur Nelson, University of Utah
US Households - % of Growth

2000 - 2040

Source: Dr. Arthur Nelson, University of Utah
### Housing Preferences

<table>
<thead>
<tr>
<th>Unit Type</th>
<th>Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attached</td>
<td>38%</td>
</tr>
<tr>
<td>Apartments</td>
<td>14%</td>
</tr>
<tr>
<td>Condos, Coops</td>
<td>9%*</td>
</tr>
<tr>
<td>Townhouses</td>
<td>15%</td>
</tr>
<tr>
<td>Detached</td>
<td>62%</td>
</tr>
<tr>
<td>Small Lot (&lt;7,000 sf)</td>
<td>37%</td>
</tr>
<tr>
<td>Large Lot (&gt;7,000 sf)</td>
<td>25%</td>
</tr>
</tbody>
</table>

US Dwelling Units

Demand to 2025

Attached: +17
Small Lot: +18
Large Lot: -1

Source: Dr. Arthur Nelson, University of Utah, JAPA 72.4
US Households

- 2007 Actual: 116
- 2030 Market: 140
- Net Demand: 26

Source: Dr. Arthur Nelson, University of Utah
Retirement Preferences

- Urban: 51%
- Suburban: 19%
- Rural: 30%

Source: National Association of Realtors and Smart Growth America American Preference Survey 2004
Growth goes urban

Denver trails only Douglas County in metro-area population gains

By Burt Hubbard The Denver Post

Forget suburbia. Denver is the new growth hot spot in the metro area.

A U.S. Census Bureau report released today shows Denver grew faster last year than all but one of its surrounding suburban counties.

"That is amazing. It doesn't surprise me (it grew), but I didn't realize it was at such a fast rate," said Denver City Councilman Michael Hancock.

Denver wasn't the only growth superstar in Colorado, according to the report. The Greeley metro area, consisting of Weld County, was the fourth-fastest growing metro area in the nation since 2000.

And five Western Slope counties, led by energy-rich Garfield County, ranked in the top 10 in population gains in Colorado in the 12 months ending in July 2008.

The report showed Denver's population grew 4.7 percent in the 12 months ending July 2008, adding about 16,000 people since July 2007 and falling just short of 600,000.

Only Douglas County, at 3.5 percent, grew faster in the seven-county metro area. It's the first time this decade that Denver has grown faster than most of its suburbs.

Jeff Romine, chief economist for the Denver Office of Economic Development, said a resurgence

Source: U.S. Census Bureau
## Residential Resale Indicators

<table>
<thead>
<tr>
<th>Year</th>
<th>SF+TH</th>
<th>Condo/Coop</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>$221,900</td>
<td>$221,900</td>
</tr>
<tr>
<td>2007</td>
<td>$217,900</td>
<td>$226,300</td>
</tr>
<tr>
<td>2008</td>
<td>$180,800</td>
<td>$185,400</td>
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</tbody>
</table>

*Source: Arthur C. Nelson, Presidential Professor & Director of Metropolitan Research, University of Utah, adapted from National Association of Realtors monthly resale data accessed December 14, 2008. Figures are median resale prices; November 2008 used for 2008.*
70s – Today: Urban Rail Transit
Rail Cities in the United States (by 2021)
### Shaping Cities with Transit

Dallas

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Announced Value</td>
<td>$4,902,800,000</td>
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<tr>
<td>Announced Value Attributable to DART</td>
<td>$4,255,700,000</td>
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<tr>
<td><strong>Cities</strong></td>
<td></td>
</tr>
<tr>
<td>Taxable Property Value</td>
<td>$2,843,779,000</td>
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<tr>
<td>Property Tax Revenues</td>
<td>$16,785,000</td>
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<tr>
<td>Taxable Retail Sales</td>
<td>$665,552,000</td>
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<td>Sales Tax Revenues</td>
<td>$6,656,000</td>
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<tr>
<td><strong>Counties</strong></td>
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<tr>
<td>Taxable Property Value</td>
<td>$842,259,000</td>
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<tr>
<td>Property Tax Revenues</td>
<td>$6,593,000</td>
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<tr>
<td><strong>School Districts</strong></td>
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<tr>
<td>Taxable Property Value</td>
<td>$904,207,000</td>
</tr>
<tr>
<td>Property Tax Revenues</td>
<td>$46,380,000</td>
</tr>
<tr>
<td><strong>Community Colleges</strong></td>
<td></td>
</tr>
<tr>
<td>Taxable Property Value</td>
<td>$2,736,047,000</td>
</tr>
<tr>
<td>Property Tax Revenues</td>
<td>$2,306,000</td>
</tr>
<tr>
<td><strong>Hospital District</strong></td>
<td></td>
</tr>
<tr>
<td>Taxable Property Value</td>
<td>$2,633,261,000</td>
</tr>
<tr>
<td>Property Tax Revenues</td>
<td>$6,688,000</td>
</tr>
<tr>
<td><strong>State of Texas</strong></td>
<td></td>
</tr>
<tr>
<td>Sales Tax Revenues</td>
<td>$41,597,000</td>
</tr>
<tr>
<td><strong>Total State and Local Tax Revenues</strong></td>
<td>$127,095,000</td>
</tr>
</tbody>
</table>

**$4.9 Billion**
Effect of Transit on Density

Before Transit:

- Townhome
- 4 Stories over Podium
- “Dallas Donut”
- 6 Stories +

Expected Profit per SF Land vs. Units per Acre

Strategic Economics
Effect of Transit on Density

After Transit:

- Townhome
- 4 Stories over Podium
- "Dallas Donut"
- 6 Stories +

Expected Profit per SF Land vs. Units per Acre

Strategic Economics
Portland Streetcar Brief History

- 1992 – City secures $900,000 federal HUD grant
- 1992 – City matches with local funds
- 1995 May – City issues RFP to design, build, operate, maintain
- 1999 May – Construction begins on 1st segment
- 2001 January – Project Substantial Completion
- 2001 July – Begin passenger service
- 2005 March – Begin service to RiverPlace
- 2006 October – Begin service to South Waterfront & Portland Aerial Tram Connection
- 2006 – Loop Extension alignment selected
- 2007 August – Begin service to South Waterfront
Leveraging: Portland Streetcar

- System Cost: $103 million
- Private sector investment (within 2 blocks of line)
  - Value: $3.5 billion
  - 10,212 new dwelling units
  - 5.4 million sf commercial space
  - Lower parking ratios, higher profits
Leveraging: Portland Streetcar

% FAR Realized Based Upon Distance from Streetcar

% of CBD Development Based Upon Distance from Streetcar
Please note: SW Moody & Gibbs to SW Lowell in the South Waterfront District does not open until Fall 2007.

Cost Estimate:
$127 million Federal Project:

- Federal Transit Administration: $75 million
- Local Improvement District: $15 million
- Portland Development Commission: $27 million
- Regional Funds: $4 million
- System Development Charge: $6 million

TOTAL FEDERAL PROJECT: $127 Million

VEHICLES FROM STATE OF OREGON: $20 Million

TOTAL PROJECT: $147 Million
Shaping Urban Arizona with Transit

- **Bottom Line:**
  1. Residential Markets Have Changed (the City is in, the Suburb is out)
  2. Arizona is in a Position to Benefit (½ of urban AZ has yet to be built)
  3. Cities Must Move Quickly (LA lesson: retrofits are expensive)
Three Opportunities

1. The Economic Engine of In-Migration
2. Shaping Urban Arizona with Transit
3. Connecting the Western Megapolitans
50s – 70s: Interstate Highway System
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
The 20th Century Strategy
21st Century Strategy: Intercity Rail System
Criteria for High Speed Rail

- **Portal-to-portal distance**
  - > 100 miles to compete with auto
  - < 500 miles to compete with air
- **Major airports at or near capacity**
- **Sufficient population in centers**
- **Potential to operate @ 90 – 150 mph**
Intercity Rail Corridors

- Connect city pair economies
- Connect cities within megas
- Operate @ 65 – 90 mph
- Serve double duty as commuter rail corridors
California HSR
Colorado Rail Corridor Study
The Missing Interstate Link
Criteria for New Highways

- Connect major cities or regions (pop > 1M) – link economies & drive economic synergies
- No significant damage to fragile or unique environments, communities, neighborhoods or other unique resources (historical, cultural, etc.)
- Chartered with absolute control of access, limiting future connections to existing regional or interstate freeways (i.e. could only be freeways)
- Fully funded as a toll road – all maintenance & capital money from revenues & bonding
Connecting the Western Megapolitans

- **Bottom Line:**
  1. City Economies Thrive on Synergy
     [city pairs and megapolitan areas]
  2. Arizona is Getting a Late Start
     [but you have advantages to exploit]
  3. The State Needs Your Support
     [you are late to the game]
Wrapping Up

Providing for Arizona’s Future Mobility
Three Challenges

1. Petroleum Dependency
2. Climate Change
3. Location Efficiency
Three Opportunities

1. The Economic Engine of In-Migration
2. Shaping Urban Arizona with Transit
3. Connecting the Western Megapolitans
Resources

- **Energy**
  - Arizona energy data, including dollar flow analysis [http://apps1.eere.energy.gov/state_energy_program/publications_by_state.cfm/state=AZ](http://apps1.eere.energy.gov/state_energy_program/publications_by_state.cfm/state=AZ)

- **Climate Change**
  - Growing Cooler: The Evidence on Urban Development and Climate Change; Ewing, Keith Bartholomew, Winkelman, Walters, Chen – early versions available on the web; hardcover available on Amazon

- **VMT Trends**

- **Economics**
  - Household cost of travel: A Heavy Load - [http://www.nhc.org/index/heavyload](http://www.nhc.org/index/heavyload)
  - Driven to the Brink: How the Gas Price Spike Popped the Housing Bubble and Devalued the Suburbs, Joe Cortright, May 2008. CEOs for Cities. [www.ceosforcities.org/newsroom](http://www.ceosforcities.org/newsroom)
  - Spending the federal ARRA stimulus funds: [http://stimulus.smartgrowthamerica.org/](http://stimulus.smartgrowthamerica.org/)
  - Susan Handy – trends in support for development types - [http://www.informaworld.com/smpp/content~content=a792286419~db=all~jumptype=rss](http://www.informaworld.com/smpp/content~content=a792286419~db=all~jumptype=rss)
  - Arthur Nelson – trends in demographics and implications for real estate development - [http://www.informaworld.com/smpp/content~content=a787405757~db=all~order=page](http://www.informaworld.com/smpp/content~content=a787405757~db=all~order=page)

- **Arizona and Transit**
Thank You

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