Smart Growth & CO²

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Presentation to:
Rail~Volution
Boston, MA
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Transportation
CO₂

Vehicles
Fuels
VMT
GHG Reductions from Transportation

- Vehicles
- Fuels
- VMT
- Vehicle/System Operations
Effects of Vehicle Efficiency & Alternate Fuel Goals Alone
(assuming no increase in driving)

Source: S. Winkelman based on EIA AEO 2008 (revised), HR6 and sources cited in Growing Cooler.
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Effects of Vehicle Efficiency & Alternate Fuel Goals
(with expected increases in driving)

Source: S. Winkelman based on EIA AEO 2008 (revised), HR6 and sources cited in Growing Cooler.
Growth: 1982-2003

- Urban VMT
- Vehicle Miles Traveled
- Developed Land
- Households
- Population

Percent Change vs. 1982:
- 100.21%
- 81.53%
- 48.29%
- 33.60%
- 25.73%
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Possible VMT Reduction from Compact Development

- To what degree does compact development reduce VMT?
- How much compact development might occur?
<table>
<thead>
<tr>
<th></th>
<th>Vehicle Trips (VT)</th>
<th>Vehicle Miles Traveled (VMT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local density</td>
<td>–.05</td>
<td>–.05</td>
</tr>
<tr>
<td>Local diversity (mix)</td>
<td>–.03</td>
<td>–.05</td>
</tr>
<tr>
<td>Local design</td>
<td>–.05</td>
<td>–.03</td>
</tr>
<tr>
<td>Regional accessibility</td>
<td>.00</td>
<td>–.20</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>coefficient</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>difference in density (% above trend)</td>
<td>-0.074</td>
<td>-1.48</td>
<td>0.15</td>
</tr>
<tr>
<td>development centralized</td>
<td>-1.50</td>
<td>-2.13</td>
<td>0.037</td>
</tr>
<tr>
<td>land uses mixed</td>
<td>-4.64</td>
<td>-2.15</td>
<td>0.036</td>
</tr>
<tr>
<td>population growth increment (% over base)</td>
<td>-0.068</td>
<td>-2.02</td>
<td>0.056</td>
</tr>
<tr>
<td>transportation coordinated</td>
<td>-2.12</td>
<td>-1.01</td>
<td>0.33</td>
</tr>
</tbody>
</table>
Estimates of Possible VMT Reduction

- Aggregate travel studies: 35%
- Disaggregate travel studies: 40%
- Regional simulation studies: 26%
- Project simulation studies: 35%
Possible VMT Reduction from Compact Development

- To what degree does compact development reduce VMT?
- How much compact development might occur?
How Much Compact Development?

Year


Number of People Turning 65

US Statistics
How Much Compact Development?

- Average number turning 65 each year:
  - between 1996 and 2006: 300,000
  - between 2015 and 2025: 1,700,000
- Families without children in 2025: 72%
- Single person households in 2025: 28%
- 61% would prefer to live in smart growth communities
- Decline in housing value farther from regional center
- Annual gasoline real price increase 20% since 1998, 40% since 2007

US Statistics
Utah Age Structure: 1870


# Important Elements in the Ideal Wasatch Community

<table>
<thead>
<tr>
<th>Element</th>
<th>Walking Distance</th>
<th>&lt; 10 min</th>
<th>10 – 20 min</th>
<th>20 – 30 min</th>
<th>&gt; 30 min</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access to public transportation*</td>
<td>56%</td>
<td>25%</td>
<td>13%</td>
<td>3%</td>
<td>2%</td>
</tr>
<tr>
<td>Parks and recreational fields</td>
<td>43%</td>
<td>31%</td>
<td>20%</td>
<td>5%</td>
<td>1%</td>
</tr>
<tr>
<td>Elementary, middle and high schools</td>
<td>39%</td>
<td>37%</td>
<td>17%</td>
<td>3%</td>
<td>4%</td>
</tr>
<tr>
<td>Light rail or TRAX station*</td>
<td>34%</td>
<td>34%</td>
<td>22%</td>
<td>5%</td>
<td>6%</td>
</tr>
<tr>
<td>Grocery stores/gas stations</td>
<td>22%</td>
<td>63%</td>
<td>13%</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>Library</td>
<td>24%</td>
<td>41%</td>
<td>27%</td>
<td>7%</td>
<td>1%</td>
</tr>
<tr>
<td>Open spaces or natural lands</td>
<td>24%</td>
<td>20%</td>
<td>24%</td>
<td>22%</td>
<td>9%</td>
</tr>
<tr>
<td>Community Center (pool, fitness center, business center etc.)</td>
<td>21%</td>
<td>40%</td>
<td>28%</td>
<td>7%</td>
<td>5%</td>
</tr>
<tr>
<td>Entertainment and Restaurants</td>
<td>10%</td>
<td>40%</td>
<td>38%</td>
<td>10%</td>
<td>3%</td>
</tr>
<tr>
<td>Your place of work</td>
<td>9%</td>
<td>25%</td>
<td>40%</td>
<td>22%</td>
<td>4%</td>
</tr>
<tr>
<td>Farm, ranch or other agricultural lands</td>
<td>9%</td>
<td>20%</td>
<td>27%</td>
<td>23%</td>
<td>21%</td>
</tr>
<tr>
<td>Senior Center</td>
<td>8%</td>
<td>29%</td>
<td>36%</td>
<td>15%</td>
<td>12%</td>
</tr>
<tr>
<td>Downtown Salt Lake*</td>
<td>5%</td>
<td>15%</td>
<td>28%</td>
<td>23%</td>
<td>34%</td>
</tr>
<tr>
<td>Hospital</td>
<td>4%</td>
<td>55%</td>
<td>34%</td>
<td>6%</td>
<td>*</td>
</tr>
<tr>
<td>Shopping malls</td>
<td>4%</td>
<td>23%</td>
<td>48%</td>
<td>16%</td>
<td>8%</td>
</tr>
<tr>
<td>Performing arts center</td>
<td>4%</td>
<td>21%</td>
<td>43%</td>
<td>22%</td>
<td>11%</td>
</tr>
<tr>
<td>Access to highways</td>
<td>3%</td>
<td>63%</td>
<td>30%</td>
<td>4%</td>
<td>*</td>
</tr>
<tr>
<td>Doctor/Dentist offices</td>
<td>3%</td>
<td>35%</td>
<td>49%</td>
<td>12%</td>
<td>1%</td>
</tr>
<tr>
<td>Universities/Technical colleges</td>
<td>3%</td>
<td>15%</td>
<td>43%</td>
<td>28%</td>
<td>12%</td>
</tr>
<tr>
<td>Airport*</td>
<td>1%</td>
<td>7%</td>
<td>29%</td>
<td>31%</td>
<td>33%</td>
</tr>
</tbody>
</table>

Source: Harris Interactive, 2007
Potential 2050 VMT Reduction due to Compact Development

60-90% Compact
x
67% New Development
x
30% VMT Reduction
=
12-18% Reduction in Metropolitan VMT
Effects of Vehicle Efficiency + Alternate Fuels + Compact Development

Source: S. Winkelman based on EIA AEO 2008 (revised), HR6 and sources cited in Growing Cooler.
Fitting into Federal Law

The Current Options

Long-Range Systems Planning

SAFETEA-LU

- supportive planning factors,
- but unenforceable

Clean Air Act

- transportation plans must conform to air quality plans
- land use assumptions must be consistent with transportation
- “bite” might be felt if the air gets bad enough
Fitting into Federal Law

The Current Options

Project-Level Planning (NEPA)

Alternatives Analysis

- land use alternatives now w/l “rule of reason,“
- but are expensive for NGOs

Indirect Impacts Analysis

- requires consistency between land use and transportation assumptions,
- but state of practice low and courts deferential
Fitting into Federal Law

New Directions

Goal-Based Planning Requirements
(e.g., California SB 375 & Oregon HB 2001)

• Each MPO with a required GHG reduction target
• Sustainable Communities/Alternative Planning Strategies to achieve target
• Oversight agency to monitor compliance

Possible Federal Vehicles

• Green-TEA/Clean TEA
• Climate Legislation
  - revenue from carbon credit auctions
  - Smart Growth as an offset
• Energy Legislation
• Compliance with Massachusetts v. EPA - conformity for GHGs