TOD Version 2.0: Dreams and Realities

Research Presentation
Portland State University

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Presentation themes

- TOD in context
- TOD 1.0 > TOD 2.0
- TOD 2.0 opportunities
- TOD as a climate strategy
Transit-oriented development

• Transit-focused development
• Higher densities + mixed land uses
• Human scale design + interconnected streets and sidewalks

... the intersection of good transit planning and good community development planning...
A new frame for considering TOD

• AB 32: 1990 emissions by 2020
• SB 375: GHG emissions from vehicle miles traveled
  – MPO assigned targets
  – Coordinate transportation, land use, and housing
    • Sustainable Community Strategy
    • Link mandates
    • CEQA streamlining
California transportation emissions

Greenhouse Gas Emissions Inventory Summary [2000 - 2006]
Version 2, Last Updated on 03/13/2009
Main Sector: Transportation
Sub Sector Level 1: On Road
Sub Sector Level 2: Light-duty Vehicles

<table>
<thead>
<tr>
<th>Year</th>
<th>CH4</th>
<th>CO2</th>
<th>N2O</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>552</td>
<td></td>
<td></td>
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<tr>
<td>2001</td>
<td>552</td>
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<td>2005</td>
<td>552</td>
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<tr>
<td>2006</td>
<td>552</td>
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</tr>
</tbody>
</table>

CA total (2006) 552 mmt eCO2

All transport 42%

On-road 31%

Light duty 24%
AB 32 reduction targets

- Low Carbon Fuels: 15 MMT
- Personal Transportation: 56.2 MMT (32%)
- Vehicle Systems/Operations: 4.5 MMT
- VMT: 5 MMT (2.9%)
- Vehicle Efficiency: 31.7 MMT
<table>
<thead>
<tr>
<th>Traditions</th>
<th>Contemporary Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technocratic, simple goals, plans as blueprints</td>
<td>Values <em>and</em> facts in dispute; decision support</td>
</tr>
<tr>
<td>Dominance of Federal, state and local processes</td>
<td>Greater regional perspective, local funding</td>
</tr>
<tr>
<td>Cost effective mobility enhancement</td>
<td>Multi-modal access and mobility; co-benefits considered</td>
</tr>
</tbody>
</table>
Transportation planning methods and strategies

<table>
<thead>
<tr>
<th>Traditions</th>
<th>Contemporary Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methods for network scale capital improvements</td>
<td>Methods to assess operations, non-auto modes, pricing, land use</td>
</tr>
<tr>
<td>Facility performance and project level environmental mitigation</td>
<td>Multimodal performance measurement, impact assessment,</td>
</tr>
<tr>
<td>JTW as the foundation for transportation planning</td>
<td></td>
</tr>
<tr>
<td>Private sector driven land use</td>
<td>Collapse of land use separations</td>
</tr>
<tr>
<td></td>
<td>Growth management, smart growth, regional blueprint planning</td>
</tr>
</tbody>
</table>
California TOD, version 1.0

- On fixed rail
- On station property and within ¼ mile
- Vertical mixed use
Weaknesses of 1.0

- Using cheap ROW
- Dispersed O/D patterns
- Counter incentives
- Market support
The station area “donut hole”
California TOD studies

• Travel Characteristics of Transit-Oriented Development in California (2004)
  – Lund, Cervero and Willson
  – http://www.csupomona.edu/~rwwillson/
    • Light rail: San Diego Trolley, Los Angeles Blue Line, San Jose VTA, Sacramento
    • Heavy rail: Los Angeles Red Line, BART
    • Commuter rail: San Diego Coaster, LA Metrolink, Caltrain

• Pasadena Gold Line

• Current study: Riverside and San Bernardino (Inland Empire) bus and commuter rail TOD
Results from TOD residents...

Transit Commute Mode Share (Rail and Bus)

<table>
<thead>
<tr>
<th>Site Description</th>
<th>Surveyed Sites</th>
<th>Surrounding City</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Residential Sites</td>
<td>26.5</td>
<td>5.4</td>
</tr>
<tr>
<td>BART: Pleasant Hill</td>
<td>44.9</td>
<td>13.8</td>
</tr>
<tr>
<td>BART: S. Alameda Cnty</td>
<td>37.8</td>
<td>5.8</td>
</tr>
<tr>
<td>LA Metro: Long Beach</td>
<td>3.3</td>
<td>6.6</td>
</tr>
<tr>
<td>SD Trolley: Mission Valley</td>
<td>13</td>
<td>4.2</td>
</tr>
<tr>
<td>Caltrain Commuter</td>
<td>17.4</td>
<td>4.8</td>
</tr>
</tbody>
</table>

Total trips (%)

Surveyed Sites:  Blue bars
Surrounding City: Yellow bars
Results from TOD workers...

Transit Commute Mode Share (Rail and Transit)

- All Office Sites: 18.8%
- BART: Berkeley: 9.5%
- BART: Wlnt Crk/Fremont: 9.5%
- LA Red Line: Hollywood: 7.8%
- SD Trolley: Missn Valley: 4.7%
- Sacramento LRT: 29%
- Metrolink: Anaheim: 6.0%

Surveyed Sites vs. Surrounding Region
Tensions and contradictions

Self selection

Lack of attractive multi-family housing options

Success levels

Lack of transit/walk/bike friendly living environments

High rail ridership/low TOD

High TOD/low rail ridership
TOD 1.0 successes

- Mature systems; TOD networks
- Policy support
- Design integration
- Pent up housing demand
TOD Version 2.0

- Matching TOD to context
- TOD as VMT/climate strategy
Best practice - transit service

Brown and Thompson (2009):

• Multidestination vision
• Rail transit backbone with high quality bus
• Serve non-CBD travel, activity centers, non-work trips; ease transfers
Best practice - land use and community development

- Coordinated station area planning + vision
- Parking + multimodal access
- Brownfield redevelopment
- Service economy job dispersion
Supporting factors

• Coherent, multi-agency planning frameworks
• Demography
• Cultural changes
• Traffic congestion + energy price volatility
Hazards/impediments

• Economic pause
  – Amount of TOD
  – Land use mix

• Community backlash
  – Overpromising
  – Lesser impacts of suburban TOD

• Failure to reform plans and ordinances

“Planning process reveals Pasadena residents’ distaste for high-density building”

Pasadena Star News article on General plan update, 11/27/09
Opportunity #1: Design for TOD type
Opportunity 2: Widen TOD market area with access

- Walk/bike trips
- Subscription shuttles
- Neighborhood electric vehicles
- Reallocate roadway space
- Carshare
- Activity center initiatives
Opportunity 3A: Commuter rail TOD

Anaheim ARTIC terminal

• Transition from commuter rail to HSR
• Platinum Triangle TOD
• District-based shared parking
Opportunity #3B: Bus TOD

El Monte Transit Village

BTOD

• Design integration
• Federal HOT lane demonstration
• Shared parking/pricing
• Multi-agency agreements
Opportunity #4: Development on station property

- Replace commuter parking
- BART fiscal methodology
- MacArthur case – 600 to 300 commuter spaces
Opportunity #5: Supportive parking regulation, pricing, and management

- On-street parking management
- Workplaces (cash out/charges)
- Residences (unbundling/charges)
- Demand-based or zero requirements
Examples of flexibility...

• Eliminating minimums
• Minimums < demand
• District-based minimums
• Adjustments
• Parking demand model
• Performance-based requirements
The new frame: is TOD an effective climate strategy?

- Potential for VMT reduction strategies
- Role of TOD in VMT reduction
- TOD in the suburbs
- Potential for TOD + pricing
<table>
<thead>
<tr>
<th>Area</th>
<th>Metric tons per capita 2005</th>
<th>Change 2000-2005</th>
<th>2005 Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>New York-Northern New Jersey–Long Island</td>
<td>0.66</td>
<td>+12.5%</td>
<td>#1 (best)</td>
</tr>
<tr>
<td>Portland-Vancouver-Beaverton, OR-WA</td>
<td>0.86</td>
<td>-6.6%</td>
<td>#13</td>
</tr>
<tr>
<td>Los Angeles-Long Beach-Santa Ana</td>
<td>0.88</td>
<td>-1.0%</td>
<td>#17</td>
</tr>
<tr>
<td>Oxnard-Thousand Oaks</td>
<td>1.12</td>
<td>-5.3%</td>
<td>#54</td>
</tr>
<tr>
<td>Riverside-San Bernardino-Ontario</td>
<td>1.29</td>
<td>-10.7%</td>
<td>#92</td>
</tr>
<tr>
<td>Factor</td>
<td>2030 Scenario A</td>
<td>2030 Scenario B</td>
<td></td>
</tr>
<tr>
<td>--------------------------------------------</td>
<td>-----------------</td>
<td>-----------------</td>
<td></td>
</tr>
<tr>
<td>Share of growth in compact development</td>
<td>25%</td>
<td>75%</td>
<td></td>
</tr>
<tr>
<td>Density of compact development</td>
<td>Double</td>
<td>Double</td>
<td></td>
</tr>
<tr>
<td>VMT reduction in compact development</td>
<td>12%</td>
<td>25%</td>
<td></td>
</tr>
<tr>
<td>VMT and CO₂ reduction (versus baseline)</td>
<td>1%</td>
<td>8%</td>
<td></td>
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</tbody>
</table>
100 miles
TOD in the Inland Empire?

- Houses and logistics
- Epitome of auto orientation
- Transit - modest bus, JTW-oriented commuter rail
- Residential density, no vertical mixed use
- Local interest in TOD
- Brownfield sites around commuter rail
Conclusions on TOD as a VMT reduction strategy...

<table>
<thead>
<tr>
<th>Area</th>
<th>2030</th>
<th>2050</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>Yes – when economy recovers</td>
<td>Yes - land availability issues</td>
</tr>
<tr>
<td>Suburban</td>
<td>No, but fulfills other planning goals</td>
<td>Yes – brownfield redevelopment, densification</td>
</tr>
<tr>
<td>All areas</td>
<td>Adaptability to energy price volatility, changing preferences</td>
<td>Adaptability for carbon taxes or rationing</td>
</tr>
</tbody>
</table>
Conclusions on TOD as a climate adaptation strategy...

<table>
<thead>
<tr>
<th>Impact of warming in CA</th>
<th>TOD can provide…</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low moisture, stressed forests, associated wildfires</td>
<td>Reduced forest/urban edge interface</td>
</tr>
<tr>
<td>Reduced snowpack, less water</td>
<td>Less irrigated landscape area</td>
</tr>
<tr>
<td>Extreme heat events</td>
<td>Smaller building envelope, ease of cooling</td>
</tr>
</tbody>
</table>
Treatment/valuation of co-benefits

• Litman: large and convincing
• Pisarski: not convincing; technology change dominates response
• Wachs: role of mobility in poverty reduction
Realistic strategies for transit and TOD development phasing in suburban areas

• “Transit-ready” development
  – Design to allow phasing, reuse of parking
• Rapid bus/commuter rail/neighborhood electric vehicles
  – Last mile transportation
• Emergent walkable clusters
• Pricing