Tysons Corner, Urban Centers and Travel Behavior

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8 Unique Districts
Center Classifications and Projections
Comparing the Scenarios

Base Case - plan
- 73m sq ft
- 120% more housing than today
- 37% more growth than today
- Work trips on transit 20%
- 24,000 hours of congestion

Scenario A - pushing
- 135m sq ft
- 450% more housing than today
- 83% more growth than base case
- Work trips on transit 24.1%
- 63% more congestion than base case
Average Job Density 2005 & 2030 by Center Type

- Job densities at Employment Centers, which include Tysons, are in the mid-range.
- In *Pushing the Envelope* for Tysons, they jump well beyond all other Centers.
Growth Centers Strategy in the Puget Sound Region... significantly influences key outcomes

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Difference for Preferred vs. No Action Scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impervious Sq. Mi.</td>
<td>-16%</td>
</tr>
<tr>
<td>Total transit usage</td>
<td>6%</td>
</tr>
<tr>
<td>Total VMT</td>
<td>-10%</td>
</tr>
<tr>
<td>Total VHT</td>
<td>-18%</td>
</tr>
<tr>
<td>Total Delay</td>
<td>-42%</td>
</tr>
<tr>
<td>Av. Time Commute</td>
<td>-9%</td>
</tr>
</tbody>
</table>

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Shifting Housing and Jobs: Urban Form Study – Boise

<table>
<thead>
<tr>
<th></th>
<th>2000</th>
<th>2020 Compass</th>
<th>2020 TVF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metro</td>
<td>84%</td>
<td>83%</td>
<td>60%</td>
</tr>
<tr>
<td>Small Cities</td>
<td>5%</td>
<td>4%</td>
<td>7%</td>
</tr>
<tr>
<td>Rural Counties</td>
<td>11%</td>
<td>12%</td>
<td>33%</td>
</tr>
</tbody>
</table>
METROPOLITAN DEVELOPMENT TRENDS
LOCATION OF CORES RELATIVE TO FAVORED QUARTER

“Edgeless City” — Older Town — Concentration of Executive Housing — 3rd Gen Core — 2nd Gen Core

“Edgeless City” — 3rd Gen Core — 3rd Gen Core — Freeways

Favored Quarter — Location of Local Minority Housing
Trends to Watch: Edgeless vs. Edgeless Cities (Office Space)

Source: Lang, Edgeless Cities Brookings, October 2003
Trends in Office Space for 13 Major Metropolitan Areas

Source: Lang, 2003, Edgeless Cities
Job Core Areas, Or “Centers”

The Building Blocks Of Regions

- Employment Centers drive the development pattern
- Regions grow around multi-dimensional regional centers
- Employment, education, civic, and recreation combine to serve the region’s population and economic activity
- 35% to 40% of regional employment locates in defined employment core
Defining Job Cores for the Sample Analyzed

• For Regions with more than 1 Million Jobs
  – Minimum Core Size (Total Jobs): 15,000
  – Average Core Size (Total Jobs): 50,900
  – Minimum # of Jobs per Acre (exceptions include airports, catalysts and universities with lots of open space): 2
  – Average # of Jobs per Acre: 15.3

• For Regions with less than 1 Million Jobs
  – Minimum Core Size (Total Jobs): 5,000
  – Average Core Size (Total Jobs): 22,400
  – Minimum # of Jobs per Acre (exceptions include airports, catalysts and universities with lots of open space): 2
  – Average # of Jobs per Acre: 7.4

Source: RCLCo
Key Jobs Need Cores In Which To Locate

Job Core Areas Drive Growth Pattern

Number of Employment Cores Relative to Total Employment
Selected Metropolitan Areas

Source: RCLCO; SANDAG; Moody’s Economy.com; BLS
A Predictive Relationship for How Many Cores?

Total MSA Employment Vs. Number of Cores

$R^2 = 0.81$

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The Distribution of Centers by Size within a Metro seem to Follow the Rank/Size Rule

<table>
<thead>
<tr>
<th>Metropolitan Area</th>
<th>≥ 10,000 (Predicted/Actual)</th>
<th>≥ 8,000 (Predicted/Actual)</th>
<th>≥ 6,000 (Predicted/Actual)</th>
<th>≥ 4,000 (Predicted/Actual)</th>
<th>≥ 2,000 (Predicted/Actual)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cleveland</td>
<td>8/9</td>
<td>9/12</td>
<td>12/15</td>
<td>16/19</td>
<td>29/13</td>
</tr>
<tr>
<td>Indianapolis</td>
<td>11/11</td>
<td>14/12</td>
<td>19/16</td>
<td>29/18</td>
<td>62/22</td>
</tr>
<tr>
<td>Portland</td>
<td>10/11</td>
<td>12/11</td>
<td>15/16</td>
<td>20/21</td>
<td>34/35</td>
</tr>
<tr>
<td>St. Louis</td>
<td>10/10</td>
<td>12/10</td>
<td>15/13</td>
<td>20/18</td>
<td>34/28</td>
</tr>
</tbody>
</table>

Source: Bogart (2006)
### Average % of Uses by Core Type (based on 8 Metro Areas)

<table>
<thead>
<tr>
<th>Core Type</th>
<th>Total Av. Emp</th>
<th>Office</th>
<th>Ind/Flex</th>
<th>Retail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industrial/Flex N=37</td>
<td>50,500</td>
<td>14%</td>
<td>73%</td>
<td>13%</td>
</tr>
<tr>
<td>Office N=21</td>
<td>48,900</td>
<td>60%</td>
<td>15%</td>
<td>25%</td>
</tr>
<tr>
<td>Urban Core N=10</td>
<td>77,900</td>
<td>79%</td>
<td>8%</td>
<td>13%</td>
</tr>
<tr>
<td>Historic Satellite n=7</td>
<td>40,200</td>
<td>22%</td>
<td>43%</td>
<td>35%</td>
</tr>
<tr>
<td>Retail N=6</td>
<td>24,000</td>
<td>25%</td>
<td>12%</td>
<td>63%</td>
</tr>
</tbody>
</table>

RCLCo, 2011
Planning For New Cores

• Existing cores densify over time – there is still the need to add more
• Understanding the potential for particular real estate driven in part by where it is in relation to a center
• Growth of centers follows similar trajectory (e.g. next office cores after 5,000 jobs)
• Transportation network can support/drive where they go – but not all transportation routes support or grow centers

Source: RCLCO
Land Use-Transportation Scenarios, Density and VMT

Source: Bartholomew and Ewing, Land Use-Transportation Scenarios and Future Vehicle Travel and Land Consumption, JAPA Winter 2009
Effects of Jobs-Housing Balance on Trip Lengths

San Diego region

15% higher
Matching Land Use Changes with Network Changes – Montgomery Co.

Differences in Jobs/Housing Ratio in 2050 and Changes in VMT

MASTER PLAN SCENARIO

BALANCED LU SCENARIO
Modifying Transportation Networks – Montgomery Co. MD

2050 Road-Emphasis Network  2050 Transit-Emphasis Network

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Survey Analysis of MXDs (2009)

- Sample of 239 MXDs in 6 metro areas
- Av. Size - 211 acres
- Trips captured within the site: 18% (range from 16% to 31%)
- Walking trips offsite: 6% (range from 5% to 21%)
- Transit trips: 6% (range from 3% to 10%)
- In total, 30% of trip ends generated put no strain on external street network

Source: Bartholomew, Ewing etc., 2010
New ITE Methodology Pending (2011)

1. Calculate standard ITE trip generation for site components
2. Define LUs & distances between each
3. Estimate unconstrained internal capture rates for all LU pairs on site
4. Calculate balanced internal trips between LU pairs
5. Calculate overall internal capture for site

| Table E1. Unconstrained Percent Internal Capture for Origin Land Uses – PM Peak Period (Apply to Outbound Trips) |
|--------------------------------------------------------|-------------------------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Origin Land Use                        | Office | Retail | Restaurant | Residential | Cinema | Hotel |
| Office                                 | NA     | 5      | 7           | 5            | 2      | 2     |
| Retail                                 | 4      | NA     | 17          | 15           | 8      | 1     |
| Restaurant                             | 3      | 34     | NA          | 6            | 10     | 10    |
| Residential                            | 2      | 23     | 25          | NA           | 2      | 2     |
| Cinema                                 | 0      | 17     | 25          | 12           | NA     | 0     |
| Hotel                                  | 2      | 29     | 10          | 5            | 2      | NA    |
Guidance on Auto Trip Reductions in MXD and Infill Projects

Notes: MXD large is more than 300K sf of non-res. uses; MXD medium is 100-300K sf of non-res. MXD small is less than 100K sf of non-res. Ranges reflect daily capture; peak capture, especially PM, are higher

Source: PB based on research review, 2009
Use higher ends of range if

- Retail, Office, Restaurant and Residential Uses present; lower if have 2 or 3 of these; hotels and cinemas a plus
- Walk distances between primary uses is between 600 and 1000 feet
- Project is large
- Project is isolated (limited competition)
- Ratio of Office plus Commercial Uses increases over 80 sf/hh
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