“No One Size Fits All!”

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June 15, 2017
Multimodal Policies of All Shapes and Sizes

- Worked with 40+ WA Cities to implement multimodal LOS policies
- Policies can be simple or more complex
- Shaped to guide different capital budgets
- But, in all cases, expands the view from auto centric to all modes
Multi-Modal Level of Service

Balance and prioritize design to meet street’s purpose
LOS: In the Eye of the Beholder

To a driver: LOS A
To an economist: LOS F

To a driver: LOS F
To an economist: LOS A
Balancing Community Values

“What you measure is what you get.”

- Vehicle congestion
- Pedestrian safety & crossing comfort
- Property impacts
- Sustainability & Stormwater
Revising the Level of Service Policy

Key Questions:

▪ What is the community’s tolerance for congestion?

▪ How important is delay reduction vs. other objectives such as accommodating other modes, maintaining an urban form, or fiscal constraint?

▪ Is the objective to reduce delay at a certain intersection or to maintain reasonable travel times along a corridor?
What is Multimodal LOS?

- Is this a nice place to drive?
- Is this a nice place to bike?
- Is this a nice place to walk?
- Is transit convenient?
HCM 2010 Complexity

LOS Model Interactions

- Facility Design
- Facility Control
- Facility Maintenance
- Transit Service
- Mode Volumes

- Lane Geometry
- Bus Stops
- Bus Lane
- Sidewalk
- Trees
- Signal Timing
- Speed Limit
- Pavement
- Bus Headway
- Auto/Trucks
- Auto/Trucks Pass.
- Bikes
- Pedestrians
- Bike-Ped Conflicts
- Left Turn Lane
- Speeds
- Delay
- Bus Speed
- Bus Wait
- Bus Access

- Auto LOS
- Transit LOS
- Bike LOS
- Ped LOS
- Ped Density

- Bus Boarding Pass.
How do we Measure Multimodal LOS?

Traditional methodologies: density, delay

- Works pretty well for vehicles, but not for other modes

Newer Methodologies: Comfort, System Completion

- Built environment factors
- Layered networks
The Menu is Large!

Auto
V/C ratio
Intersection delay
Corridor travel time

Transit
Service present
Service quality
Corridor amenities

Bicycle
Network completeness
Connectivity
Perceptions of safety / Stress

Global Measures
Mode split
VMT
Person trips
Person delay
Mobility units

Pedestrian
Sidewalks
Connectivity
Block length
Whose LOS is more important?

Illustration of analysis by mode

Vehicle | Buses | Pedestrian | Bicycle | Average
--- | --- | --- | --- | ---
Option 5 | 28.7 | 29.8 | 64.2 | 15.1 | 28.1

PM Peak Hour Delay

HCM Intersection LOS = C

Source: Fehr & Peers
Supportive Land Uses

Urban Design Factors

ADA Features

Supporting Facilities
Different Streets can Have Different LOS

**Commuter/Mobility Corridor**
- Desired Overall Performance: D B C C C A

**Urban Activity Center**
- Desired Overall Performance: B C D E B

**Local Street**
- Desired Overall Performance: B B C F F
How the Pieces Fit Together

1. WHAT TO MEASURE?
   - Mode Share
   - Travel Time
   - Individual LOS
   - VMT
   - System Completeness
   - Congestion/Delay

2. SET A STANDARD
   - Data Requirements
   - Achievability
   - Consistent with City Vision
   - Simple to Administer and Evaluate

3. EVALUATE CONCURRENCEY
   Is there adequate transportation infrastructure to meet travel demand of new growth?

4. COLLECT IMPACT FEE

5. BUILD PROJECTS
## Multimodal Concurrency Options

<table>
<thead>
<tr>
<th>OPTION</th>
<th>WHO DOES THIS?</th>
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<tbody>
<tr>
<td>Mode Share</td>
<td>Seattle</td>
</tr>
<tr>
<td>Average Travel Time/Distance</td>
<td>Renton</td>
</tr>
<tr>
<td>Evaluate Conditions for Each Mode</td>
<td>Some Florida Cities, Ft. Collins Tukwila (tested)</td>
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<tr>
<td>Vehicle Miles of Travel</td>
<td>California Cities</td>
</tr>
<tr>
<td>System Completeness</td>
<td>Bellingham, Redmond, Kirkland, Kenmore</td>
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Questions?

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