



Downtown Transportation Plan Update

**TRANSPORTATION COMMISSION
NOVEMBER 10, 2011**

COMMUNITY OUTREACH

MEASURES OF EFFECTIVENESS

Community Outreach

Open House: November 1

Downtown Walking Audit: December 1 and 3

November 1, 2011 Open House

50-60 in attendance

About 50% Downtown residents

View and comment on displays

- Pedestrians
- Bicycles
- Transit
- Roadways
- Signal Operations



December 1 & 3, 2011 Walking Audits

Downtown transportation from a pedestrian's perspective

MID-DAY WALKING ERRANDS

- Thursday, December 1, 11:45 – 1:15 pm
- Staging area TBD
- Route will cover much of central Downtown

WEEKEND STROLLS

- Saturday, December 3, 9:00 – 10:30 am
- Staging area Top Pot Doughnuts
- Route will cover much of north Downtown



MEASURES OF EFFECTIVENESS

Discussion Outline

- Downtown Bellevue Context
- Purpose of Measures of Effectiveness
- Recommended Framework Approach and Measures of Effectiveness

Downtown Bellevue Context

Measures of Effectiveness Must Consider

- Employment Characteristics
- Residential Characteristics
- Adopted Plans and Policies
 - 2003 Bellevue Transit Plan
 - 2004 Downtown Subarea Plan
 - 2009 Pedestrian and Bicycle Transportation Plan
- 2030 Land Use Forecast
- Regional Transportation Environment
 - Sound Transit
 - King County Metro
 - WSDOT

Employment Characteristics

Downtown Employment

- 2010 Actual: 103 employees per acre
- 2030 Forecast: 171 employees per acre

2010 Comparisons

- Seattle South Lake Union: 83 employees/acre
- Seattle Westlake: 203 employees/acre
- Downtown Minneapolis: 130 employees/acre
- Boston Back Bay: 138 employees/acre
- East Downtown Portland: 174 employees/acre

Residential Characteristics

Downtown Bellevue Residents

- 2010 Actual: 18 residents/acre
- 2030 Forecast: 49 residents/acre

2010 Comparisons

- Vancouver West End: 18 residents/acre
- San Francisco: 27 residents/acre
- Seattle Westlake Area: 31 residents/acre
- Boston Back Bay: 51 residents/acre
- Manhattan: 105 residents/acre

Downtown Mobility

Transportation modes

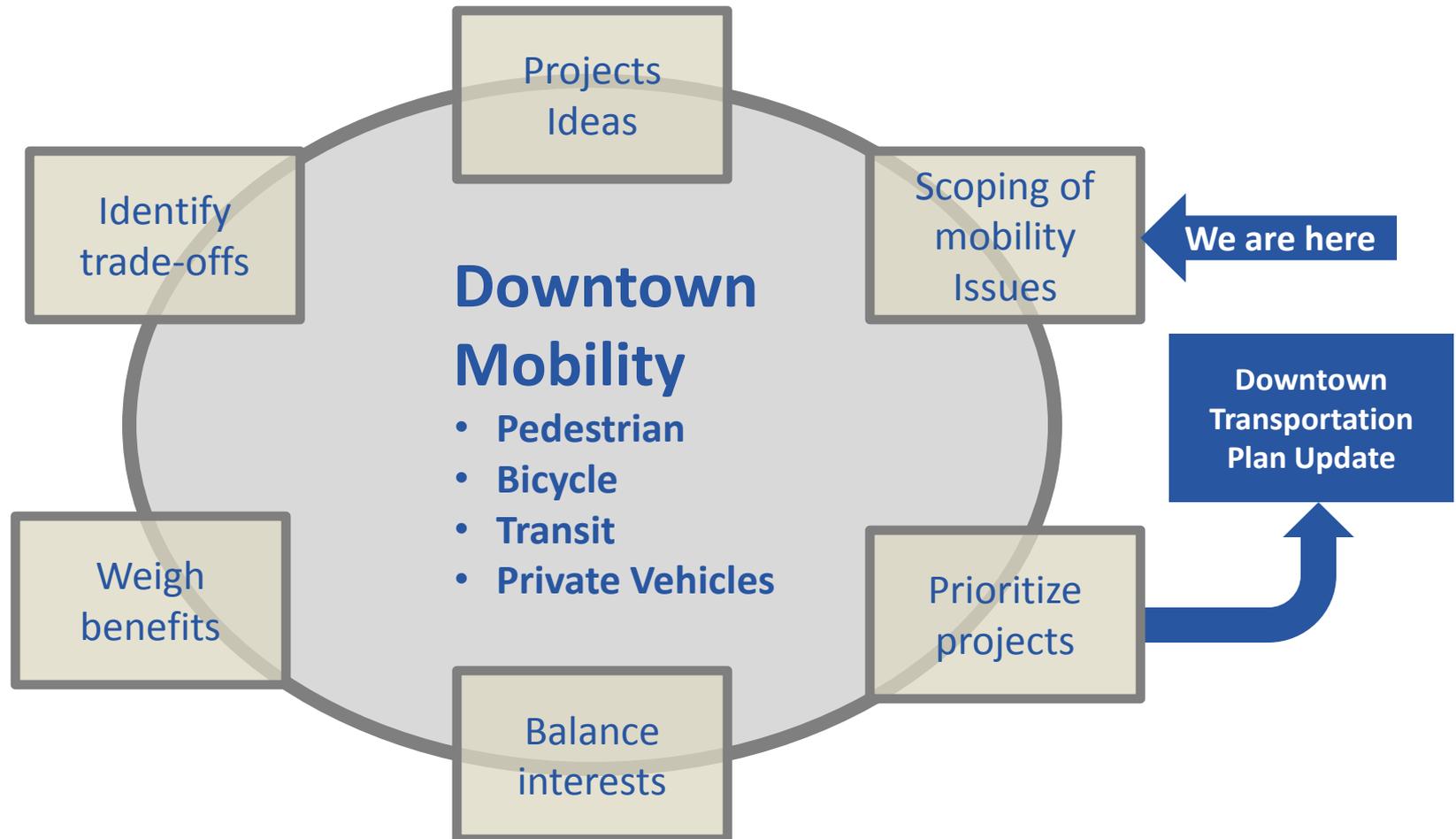
- Private Vehicles
- Pedestrians
- Bicycles
- Transit

Multiple transportation options

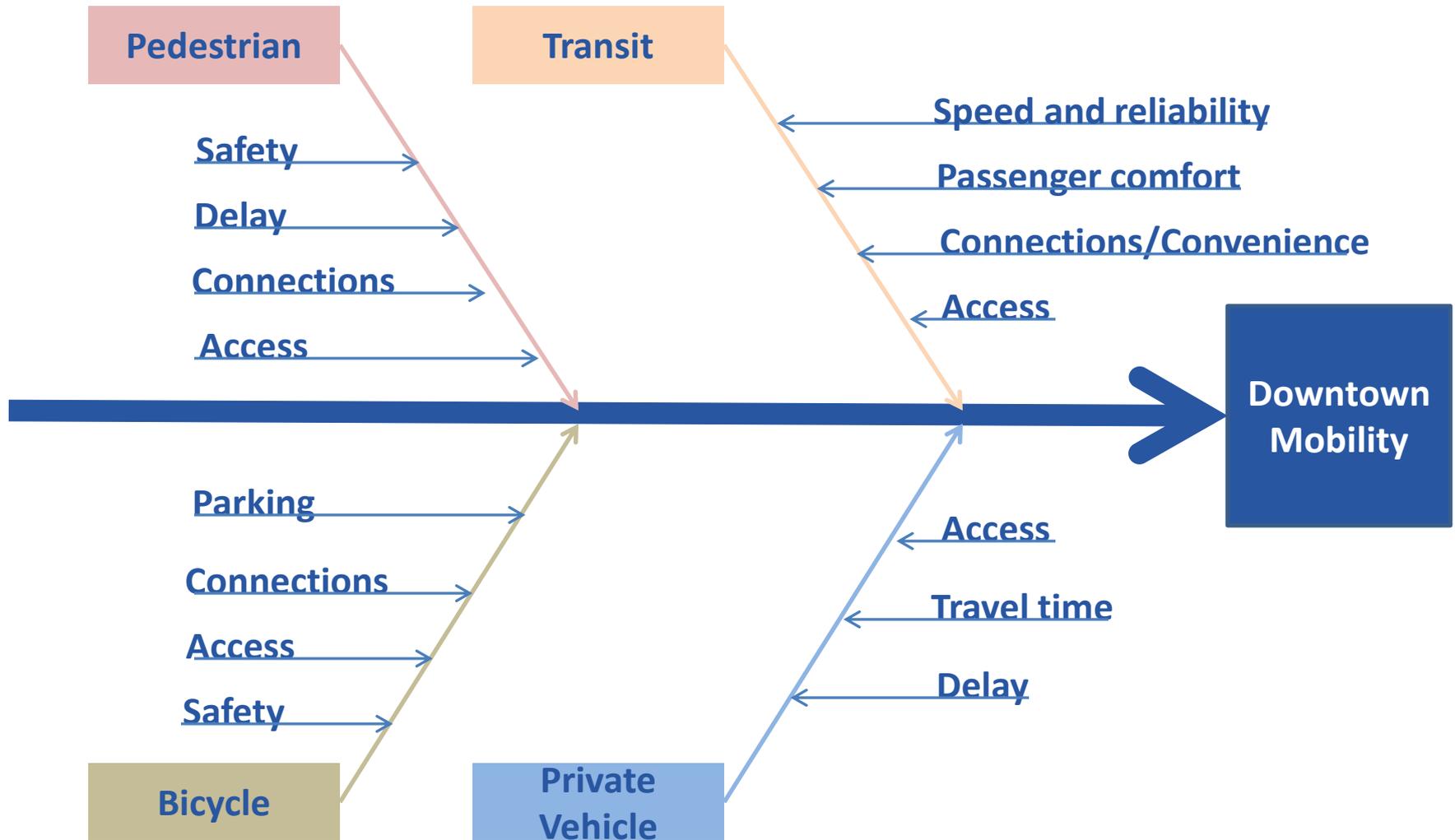
- Within Downtown
- To and from Downtown

Measures of Effectiveness

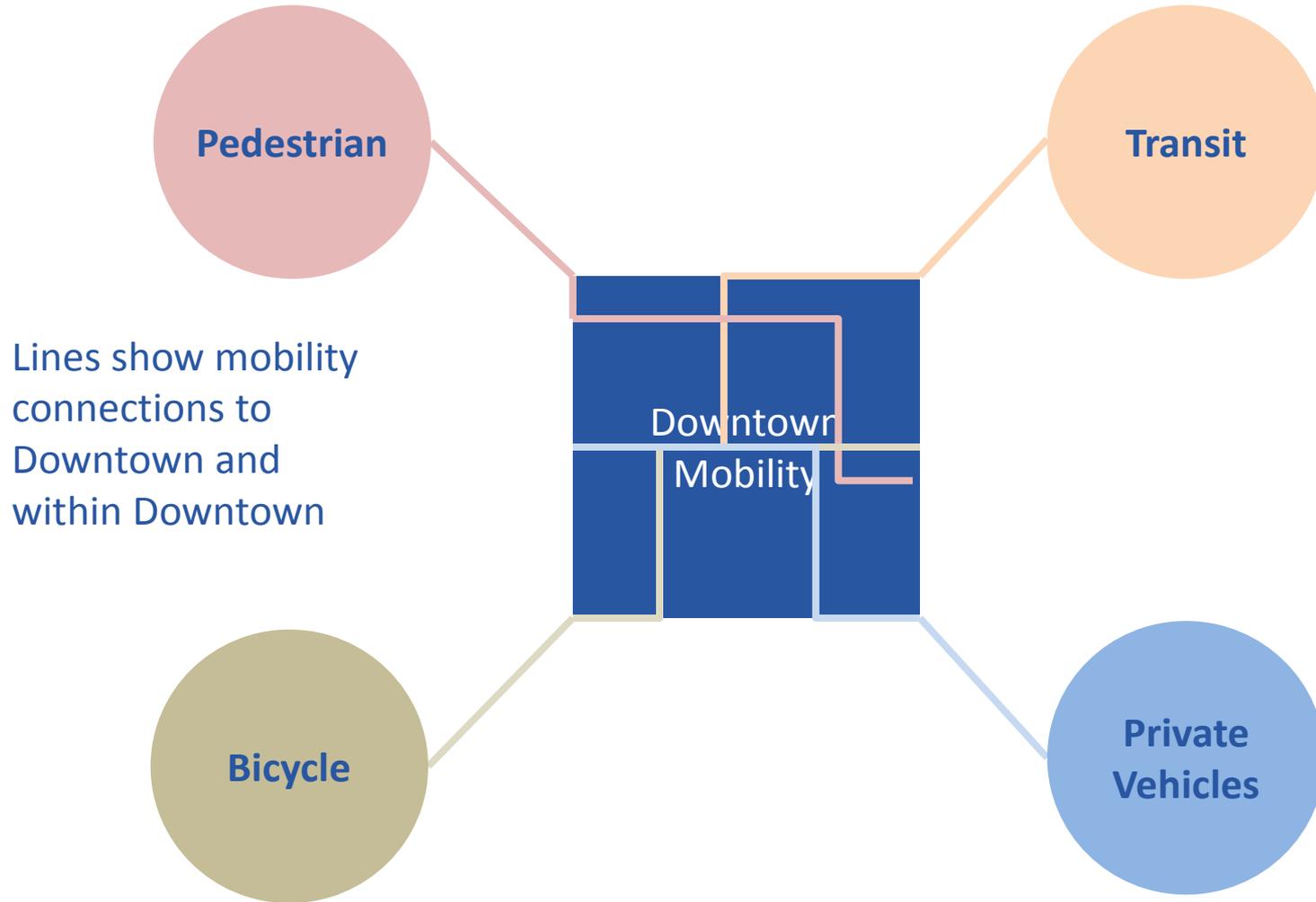
Address mobility issues for each mode of travel and achieve overall Downtown mobility



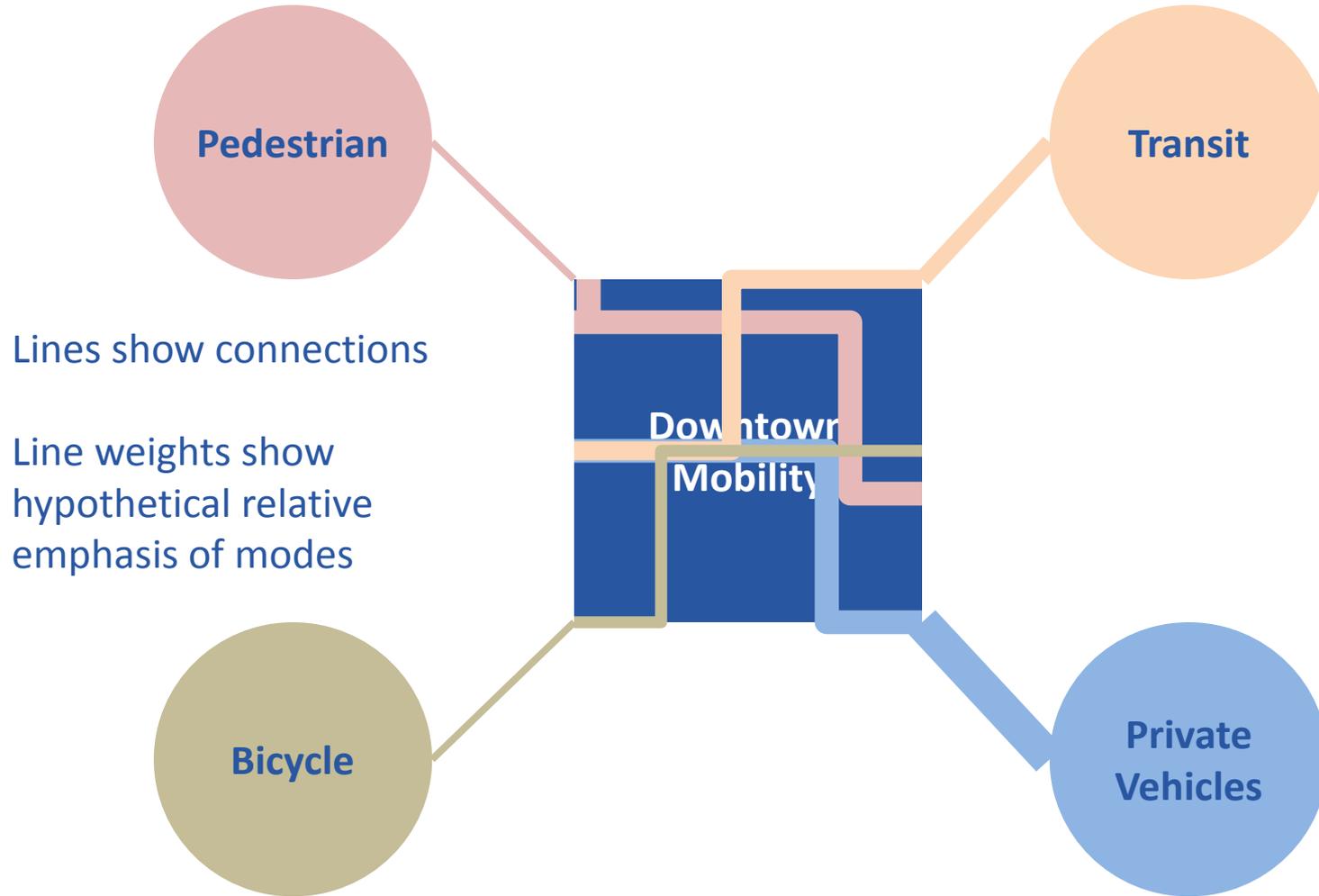
Downtown Mobility Issues



Downtown Mobility Network



Downtown Mobility Emphasis



Measures of Effectiveness

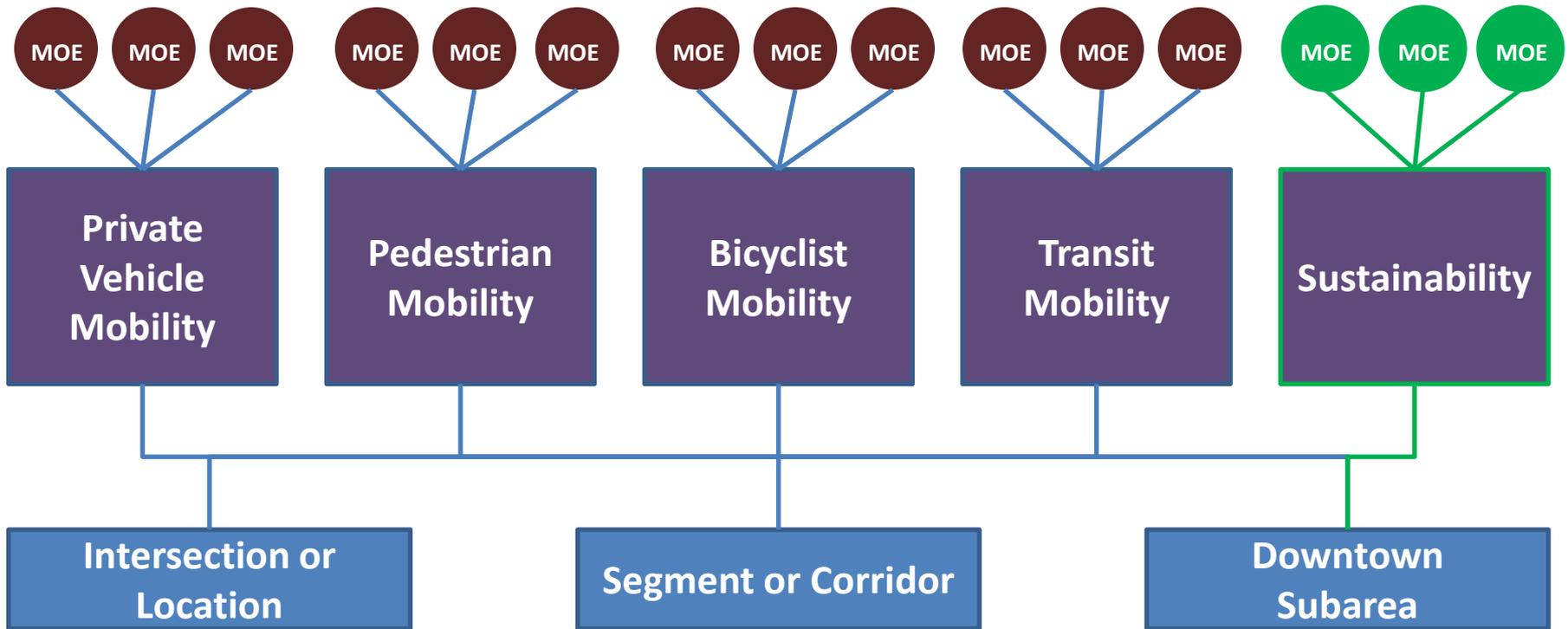
Mobility Measures

- Private Vehicle Mobility
- Pedestrian Mobility
- Bicycle Mobility
- Transit Mobility

Sustainability Measures

- Mode share
- Vehicle miles traveled
- Greenhouse gas emissions

Measures of Effectiveness: Tiered Framework



- Describe the performance of each mode
- Inform trade-offs for projects
- Identify priorities
- Package complementary projects for implementation
- Combine measures to achieve an aggregate performance for Downtown

Private Vehicle Mobility Measures: Intersections

Level of Service (LOS) Measures

- Volume-to-Capacity ratio (V/C)
 - Evaluated for each vehicle movement
 - Evaluated for entire intersection
- Automobile Delay (seconds)
 - Evaluated for each vehicle movement
 - Evaluated for entire intersection



Private Vehicle Mobility Measures: Segment/Corridor

Mobility Measure

- Travel speed for through vehicles along a corridor
- Stop rate for through vehicles along a corridor
 - Average number of full stops

Private Vehicle Mobility Measures

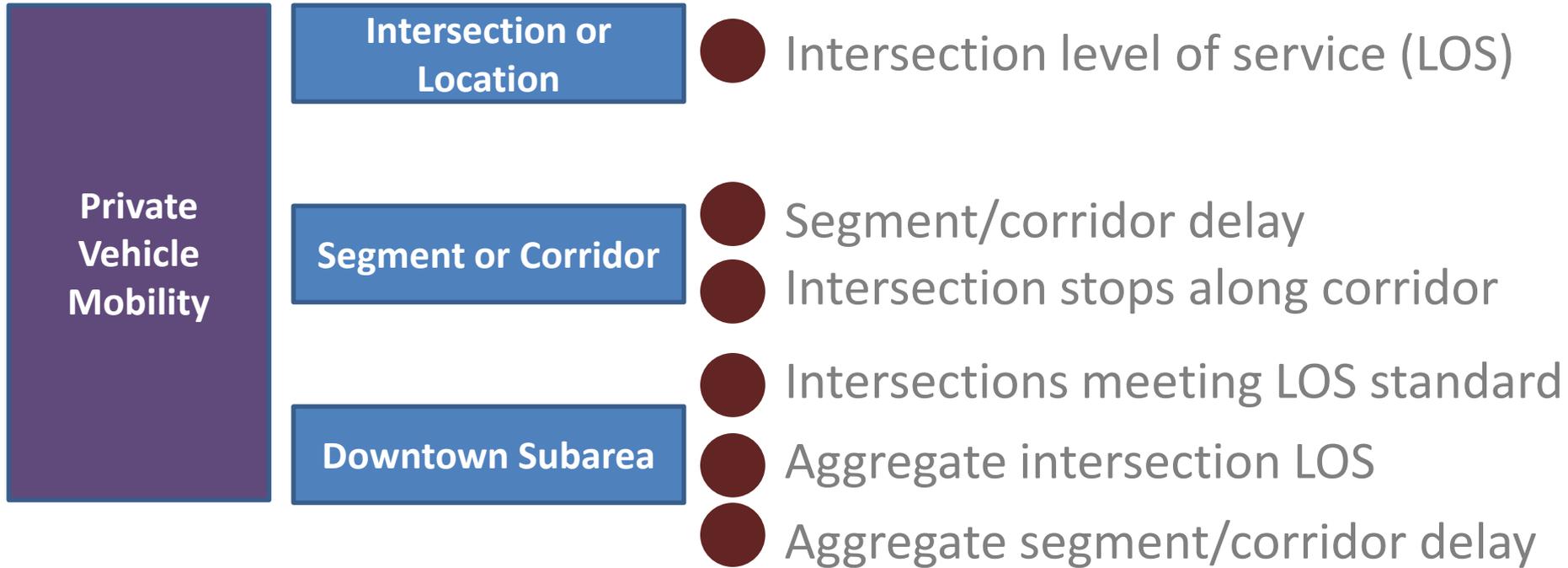
Personal Mobility

- Delay change relative to cost of improvement
 - Intersection Level of Service
 - Segment/Corridor

Aggregate Mobility

- Delay change relative to cost of improvement
 - Downtown Subarea
 - Intersection Level of Service
 - Segment/Corridor

Private Vehicle Mobility Measures



Pedestrian Mobility Measures

Crosswalks

- Pedestrian Level of Service (LOS) components
 - Wait time
 - Crossing time
 - Other considerations

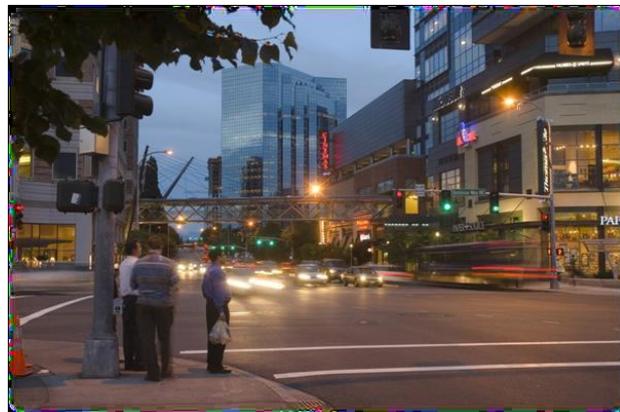
Walkways

- Pedestrian Level of Service (LOS) components
 - Space and crowding
- Other considerations

Pedestrian Mobility Measures: Crosswalks

Level of Service (LOS) Components

- Pedestrian delay
- Length and width of crosswalk
- Number of traffic lanes to be crossed
- Volume and speed of vehicles



Other Considerations

- ADA accessibility – compliance with standards
- Usability
 - Pavement/ramp condition
 - Lighting
- Traffic signals
 - Countdown signals
 - Audible signals



Pedestrian Delay at Crosswalks

Pedestrian delay components

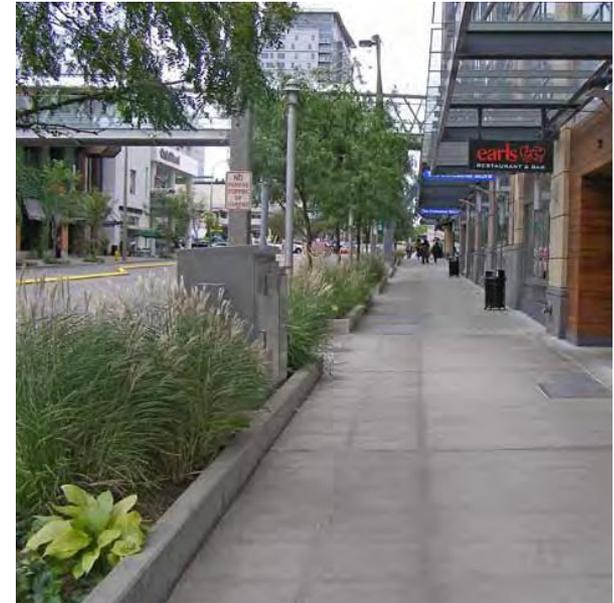
- Wait time factors
 - Pedestrian walk is automatic part of signal cycle
 - Each cycle gets a “walk”
 - Push button actuated pedestrian walk signal
 - Missing the cycle results in long waits
- Length of time “walk” is displayed
- Length of “don’t walk” crossing time
 - Median refuge
 - No-median refuge



Pedestrian Mobility Measures: Walkways

Level of Service (LOS) components

- Adjacent roadway factors
 - Number of through lanes
 - Volume and speed of vehicles
 - Width of adjacent through lane
 - On-street parking occupancy
- Sidewalk buffering factors
 - Width of buffer between travel lane and sidewalk
 - Bicycle lane, paved shoulder, parking lane, landscape strip



Pedestrian Mobility Measures: Walkways

Other considerations

- Walkway surface quality
- Wayfinding
- Weather protection
- Security and safety
 - Brightness of nighttime illumination (lumens)
 - Site distance (buildings, signs, posts)
 - Visibility (vegetation)
- Directness of travel
 - Crossings
 - Connectivity



Pedestrian Mobility Measures

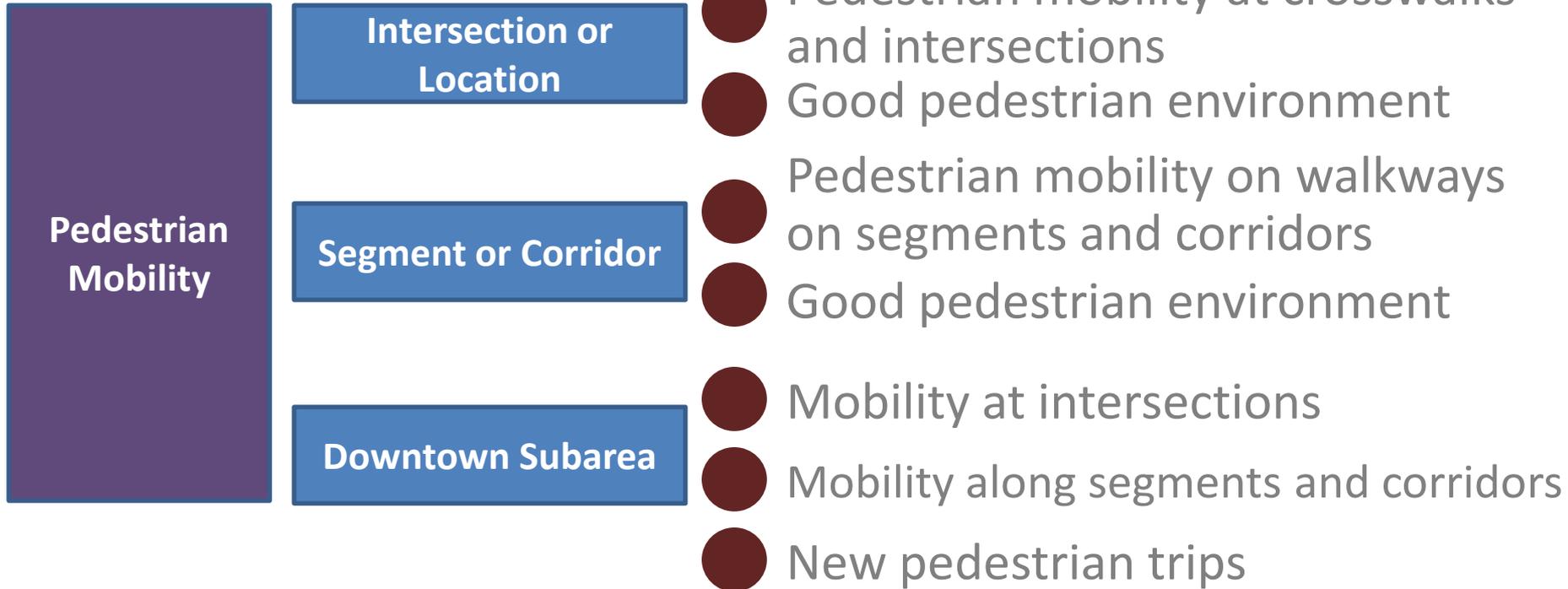
Personal Mobility

- Number of benefitted pedestrians relative to cost of improvement
- Quality of the pedestrian environment

Aggregate Mobility

- Saving of pedestrian minutes (annual) relative to cost of improvement
- Pedestrian system completeness

Pedestrian Mobility Measures



Bicycle Mobility Measures

Bicycle Level of Service
Other Considerations



Bicycle Mobility Measures

Bicycle Level of Service (LOS)

- Roadway factors
 - Width of cross street at intersections
 - Width of outside through lane
 - On-street parking: presence and occupancy
 - Number of vehicle lanes
 - Volume and speed of through and turning vehicles
 - Presence and width of on-street bicycle facility

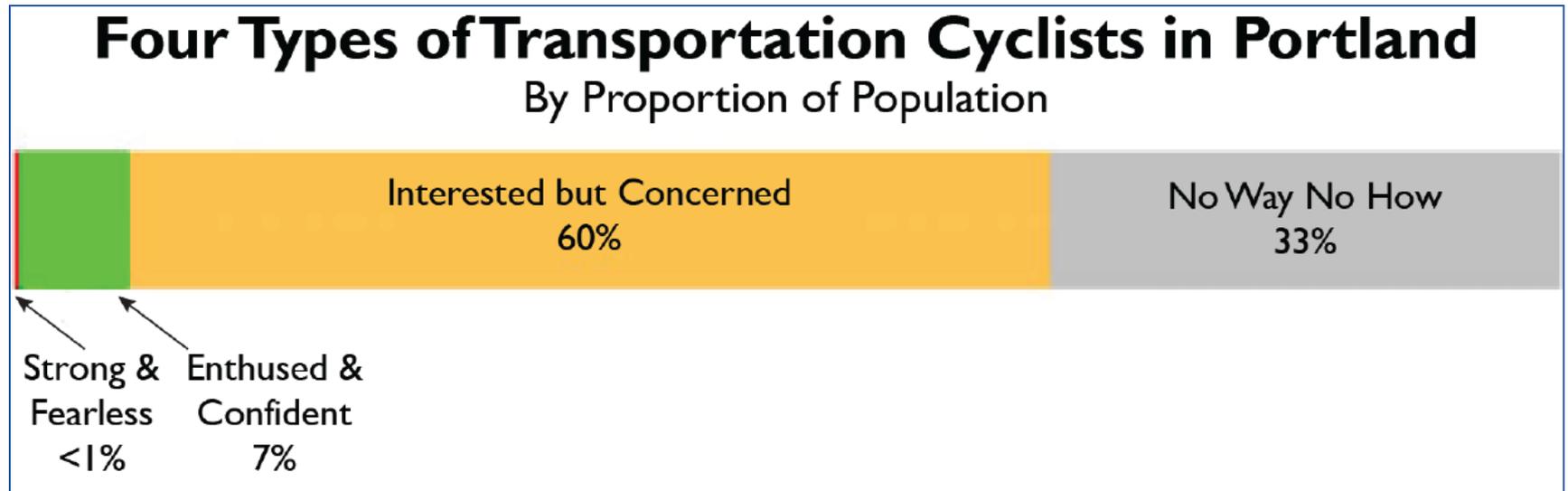


Bicycle Mobility Measures

Other considerations

Factors to encourage a wider range of people to consider using a bicycle for recreation and commuting

- Attract the “Interested but Concerned” to bicycling
- Provide facilities that create a safe and comfortable bicycling environment



Bicycle Mobility Measures

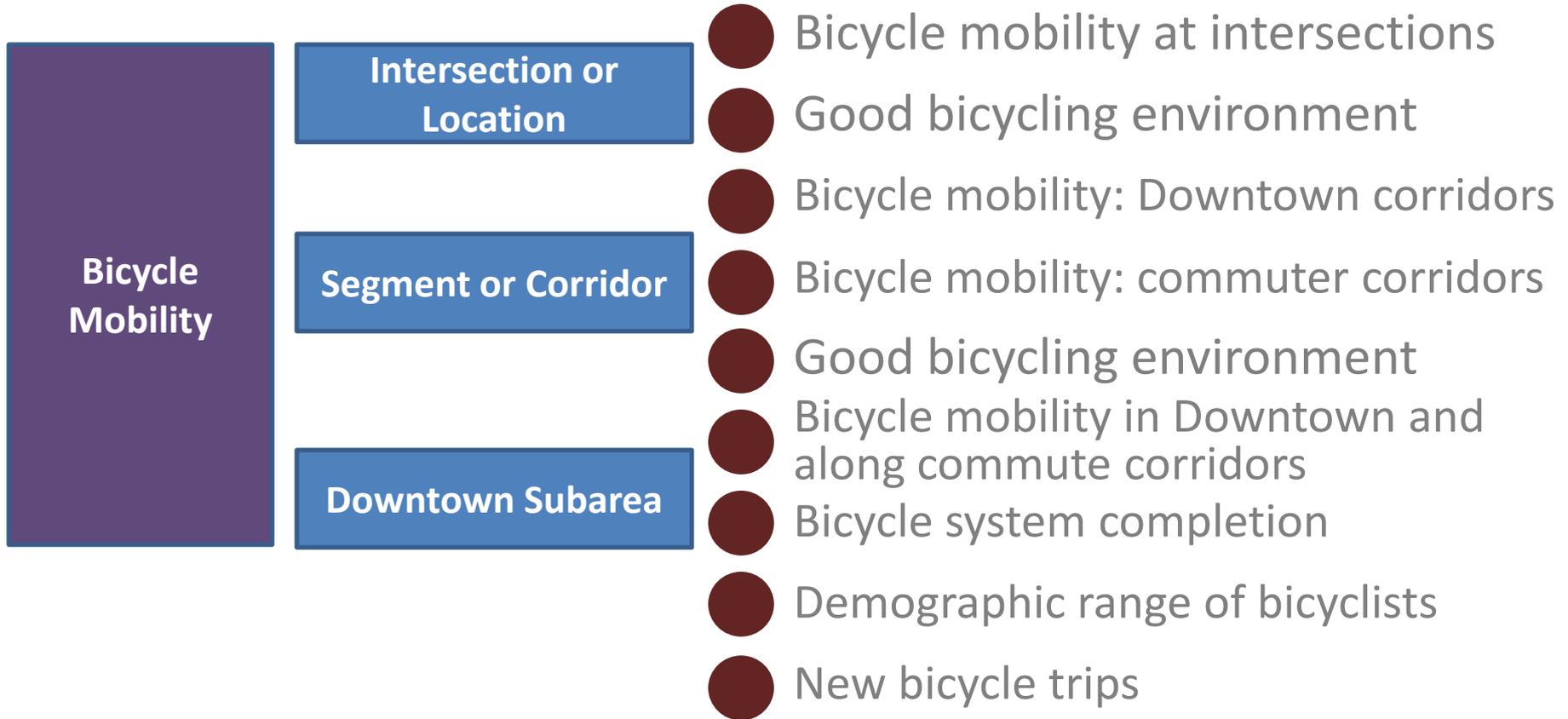
Personal Mobility

- Number of benefitted bicyclists relative to cost of improvement
 - Intersections
 - Segments and Corridors
 - Bicycle Facilities
- Quality of the bicycling environment

Aggregate Mobility

- Bicycle system completeness
- New bicycle riders
- Improved demographic range of bicycle riders for recreation and commuting

Bicycle Mobility Measures



Transit Mobility Measures

Transit system components that affect ridership and mode choice and over which Bellevue has some control

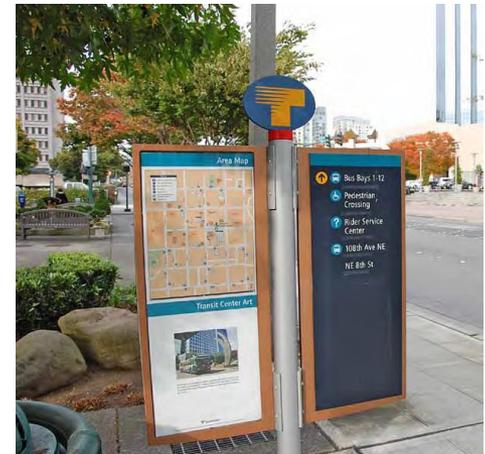
- Transit speed and reliability
- Transit rider facilities
- Access to transit



Transit Mobility Measures

Transit Rider Facilities

- Bus stops
 - Size
 - Seating availability
 - Lighting
 - Weather protection
 - Information for transit riders
- Access to transit
 - Ease of access (sidewalks and crosswalks)
 - Distance from origin/destination
 - ADA compliance of pedestrian connections
 - Wayfinding
 - Bicycle parking



Transit Mobility Measures

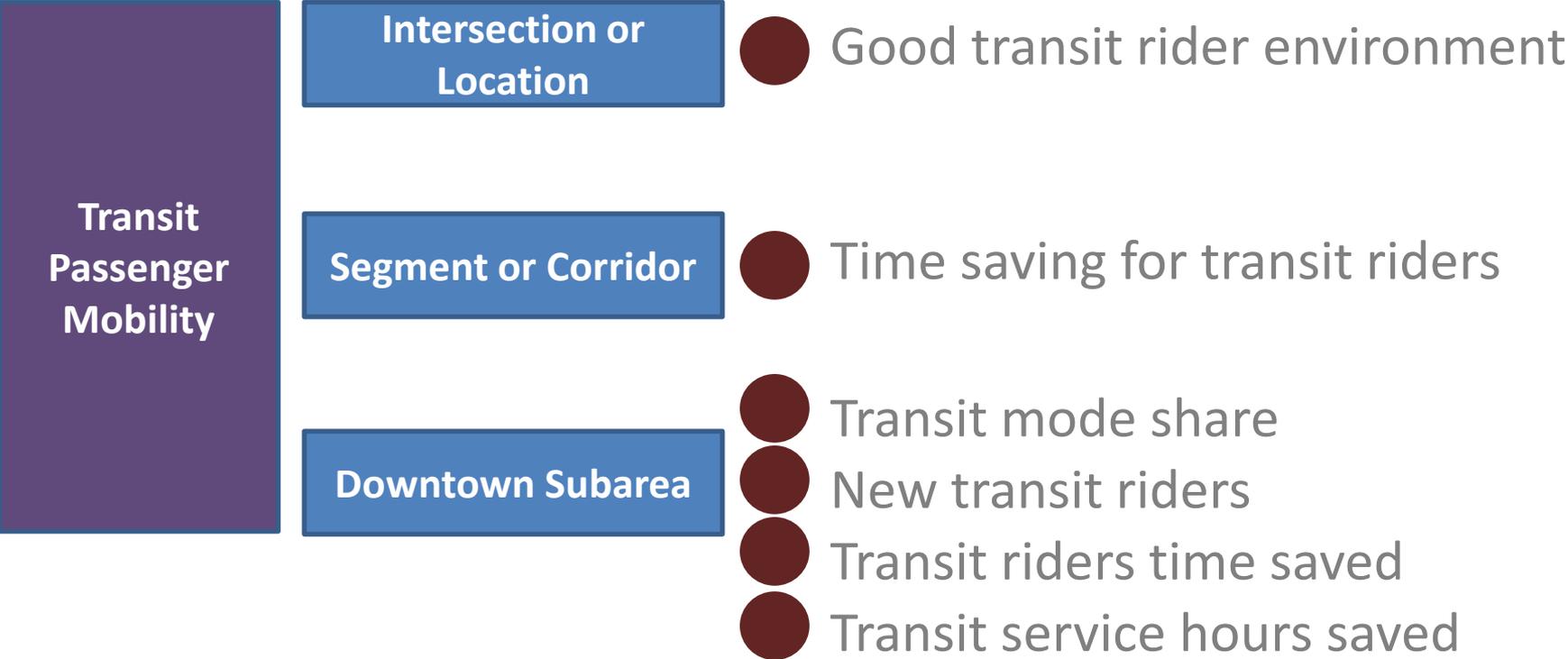
Personal Mobility

- Number of benefitted transit riders relative to cost of improvement
- Time saving of transit rider relative to cost of improvement

Aggregate Mobility

- Time saving of transit riders relative to cost of improvement
- Transit annual service hours saved relative to cost of improvements
- Transit mode share attained
- New transit riders

Transit Mobility Measures



Sustainability Measures

Non-SOV Mode Share

- Measures to reduce single-occupant vehicle use
 - Percent work trips made by SOV drivers
 - Percent all trips made by SOV drivers
- Measures for system capacity
 - Total peak hour private vehicle SOV trips
 - Total daily private vehicle SOV trips

Sustainability Measures

Vehicle Miles Traveled (VMT)

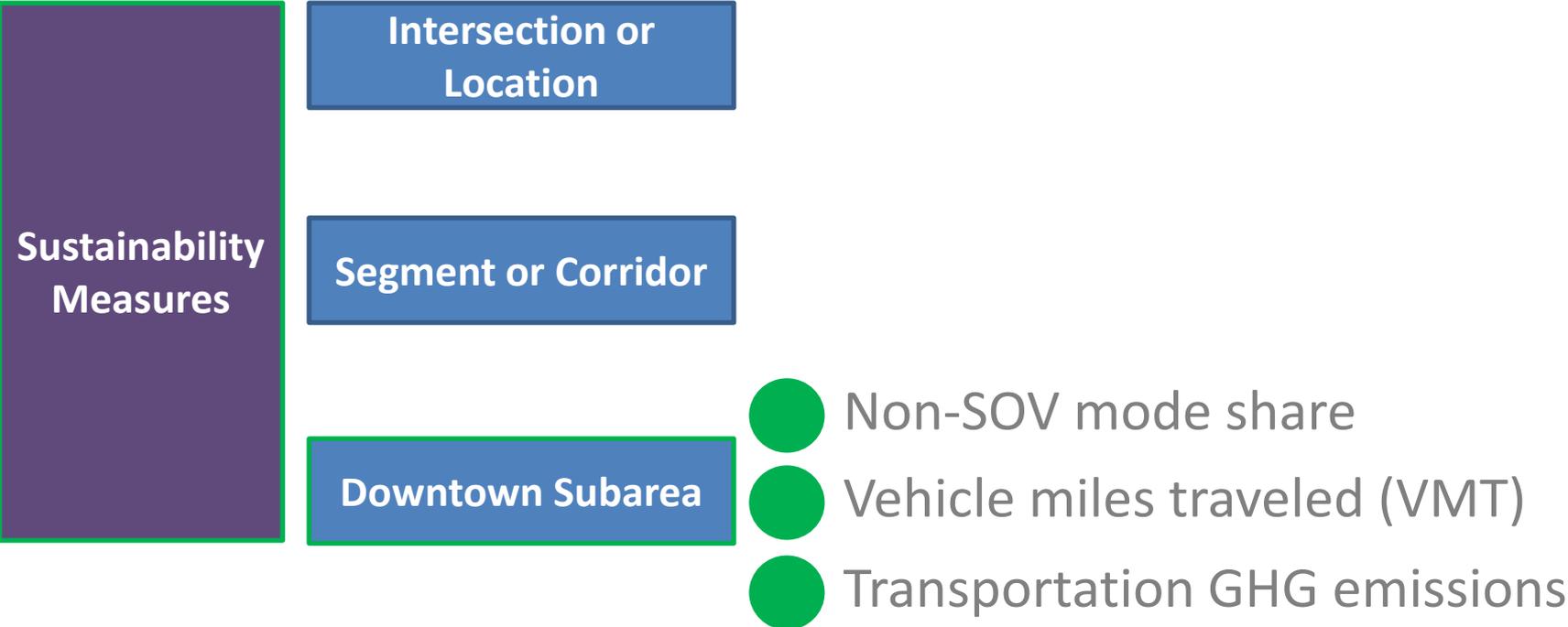
- VMT in Downtown Bellevue as a whole
- VMT per capita Downtown resident
- VMT per Downtown employee

Sustainability Measures

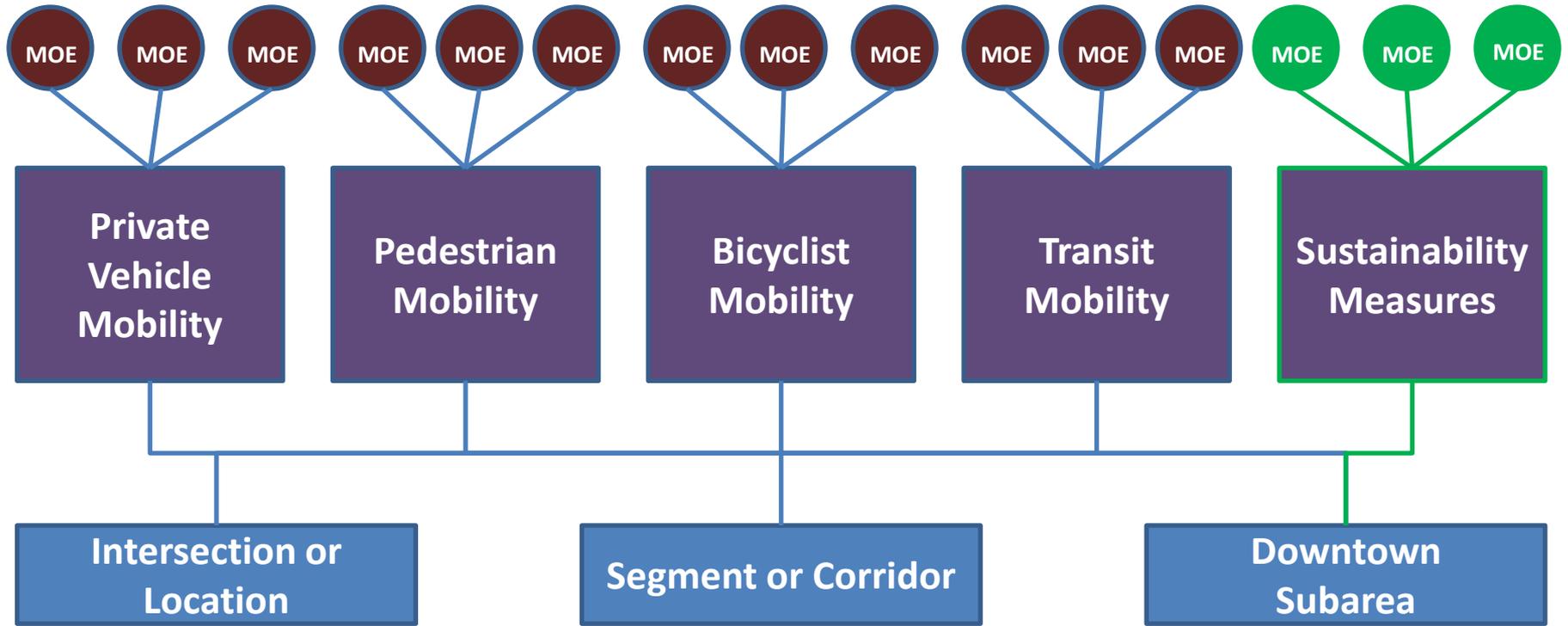
Greenhouse Gas Emissions (GHG)

- Total transportation GHG emissions
 - Downtown as a whole
 - Downtown resident – per capita
 - Downtown employee – per capita

Sustainability Measures



Measures of Effectiveness: Tiered Framework



Measures of Effectiveness: Next Steps

December 8 Commission Meeting

- Refinements on specific measures of effectiveness
- Hypothetical scenario addressing mobility issues

Q1 – Q3 2012

- Use measures of effectiveness to help identify projects to address transportation issues raised in scoping