Metro | *Agenda*

Meeting: ATP Stakeholder Advisory Committee meeting

Date: Jan 10, 2012

Time: 3-5 p.m.

Place: Room 401, Metro, 600 NE Grand Ave., Portland, 97232

Purpose: Bicycle and Pedestrian Network Evaluation

3:00   Meeting overview and purpose, project updates/timeline

3:10   Principles/criteria, final revisions
Review and approve

3:25   Updated pedestrian evaluation methodology
Memo was revised based on feedback from SAC workgroup meeting, consultants and Metro staff. Discuss weighting of factors/priorities. Refer to updated memo and memo on proposed improvements

3:45   Destinations for evaluation and prioritization
Discuss proposed approach to using a set of identified regional destinations to help prioritize investments for networks. Refer to memo.

4:10   Updated bicycle parkway evaluation memo
Origin-Destination trip pairs
Memo was revised based on feedback from SAC workgroup meeting, consultants and Metro staff. Provide feedback on suggested origin-destinations for bicycle modeling. Discuss weighting factors.

4:40   Preliminary bicycle modeling evaluation results for 2010 and 2035 networks

5:00   Adjourn

If time allows, update from SAC members on STIP and RFF projects

See other side for list of attachments and upcoming meeting dates

Attachments
1. Final revisions for "Principles and Criteria" and clean copy
2. Revised Alta memo "Regional Pedestrian Network Flow Analysis Methodology", track changes and clean copy
3. Memo "Proposed improvements for evaluating pedestrian network" track changes
4. Memo "Proposed approach – measuring improved access to destinations"
5. Revised "Proposed Evaluation Methodology for Regional Bicycle Parkway Network Concepts" memo, track changes and clean copy
6. List of proposed origins and destinations for bicycle concept modeling
7. Notes from 11/15 meeting and Dec. 5 & 6 workgroup meetings

Additional handouts available at meeting
All attachments will be printed and available at the meeting, along with additional handouts.
1. Initial evaluation results from bicycle modeling tool for 2010 existing network and 2035 RTP planned network
2. Pedestrian network map of initial proposed improvements
3. Update project meeting timeline
4. Updated bicycle parkway network concept maps

Upcoming SAC meeting dates
Thursday, February 21, 3-5 p.m.
Thursday, March 21, 3-5 p.m.
Thursday, May 2, 3-5 p.m.
Thursday, June 6, 3-5 p.m.

Metro | *Memo*

Date: January 10, 2013

To: ATP Stakeholder Advisory Committee (SAC)

From: Lake McTighe, Metro

Subject: Overview of responses to SAC direction on principles, criteria, network evaluation
           methodologies, draft maps

Purpose
The purpose of this memo is to provide an overview of Metro staff's responses to direction the SAC
and SAC workgroups have provided on the principles, criteria, network concepts and evaluation
methodologies.

Background
The SAC met on November 15 and provided additional direction on the principles and criteria and
the draft bicycle and pedestrian network concepts. SAC pedestrian and bicycle workgroups met on
Dec. 5 and 6 respectively and provided direction on the proposed methods and measures for
evaluating the bicycle network concepts and the pedestrian network improvements.

Principles and criteria
SAC members had a discussion on the relationship of principles, implementing strategies, policies
and standards and requirements. The SAC agreed to remove Principle # 4 (Buffers from traffic are
provided on routes with high traffic volumes or speeds) as a principle and include it as a policy or
standard. The SAC also discussed a policy or standard that took advantage of manmade and natural
corridors, and on the width of regional routes that could accommodate growing capacity and help
achieve modal active transportation targets. Metro staff is tracking these suggested
policies/implementation standards and will bring them to the SAC at a future meeting for
consideration.

Pedestrian Network
There is agreement that the network to be evaluated is regional districts and corridors (includes
trails). The discussion about the network leaned towards prioritization and what the vision is for
the regional pedestrian network. The SAC still needs to confirm what destinations will be included
in the evaluation. Refer to the Metro memo on proposed approach.

 Bicycle Parkway Networks
The SAC agreed on the three concepts – Grid, Spiderweb and Mobility Corridors. There was some
concern that the network of parkways may not be dense enough. The discussion also leaned
towards prioritization, such as looking for near term opportunities for implementation. Members
provided comments and changes to Metro staff which were incorporated. Updated maps will be
available at the Jan. 10 meeting.

Principles for the Regional Active Transportation Network

The following principles are used to guide policies and development of the principal regional active transportation network.

1. ~~Connections between c~~Cycling, walking, <u>and</u> transit <u>are integrated and connections and</u> ~~to~~ regional centers and destinations are seamless.
2. Routes are direct, connected, easy-to-use, intuitive and accessible at all times.
3. Routes are safe and comfortable ~~to use~~ for people of all ages and abilities.
4. ~~Buffers from traffic are provided on routes with high traffic volumes or speeds.~~
5.<u>4.</u> Routes are attractive and travel is enjoyable.
6.<u>5.</u> Routes are integrated with nature and facility designs are context sensitive.
7.<u>6.</u> Relieves strain on other transportation systems.
8.<u>7.</u> Increases access to destinations for low income and minority populations.
9.<u>8.</u> Policies and development of the network are data driven.
10.<u>9.</u> Implements <u>local and</u> regional land use and transportation goals <u>and active transportation modal targets</u>.

> **Comment [LSM1]:** This principle will be addressed as a policy and implementation strategy to achieve the principles.
>
> A suggested principle to take advantage of man-made and natural corridors (e.g. rail, powerline, stream) will also be formulated as a proposed policy to implement principles.

Regional Active Transportation Network Evaluation Criteria

Access. Does the network improve access to destinations?

Safety. Does the network make it safer to walk and ride a bike for all users, regardless of age and ability?

Equity. Does the network increase access for low income and minority populations?

Increased activity. Does the network increase the number of trips made by walking and bicycling?

Principles for the Regional Active Transportation Network

The following principles are used to guide policies and development of the principal regional active transportation network.

1. Cycling, walking, and transit are integrated and connections to regional centers and destinations are seamless.
2. Routes are direct, connected, easy-to-use, intuitive and accessible at all times.
3. Routes are safe and comfortable for people of all ages and abilities.
4. Routes are attractive and travel is enjoyable.
5. Routes are integrated with nature and facility designs are context sensitive.
6. Relieves strain on other transportation systems.
7. Increases access to destinations for low income and minority populations.
8. Policies and development of the network are data driven.
9. Implements local and regional land use and transportation goals and active transportation modal targets

Regional Active Transportation Network Evaluation Criteria

Access. Does the network improve access to destinations?

Safety. Does the network make it safer to walk and ride a bike for all users, regardless of age and ability?

Equity. Does the network increase access for low income and minority populations?

Increased activity. Does the network increase the number of trips made by walking and bicycling?

Memorandum

To: Lake McTighe, Metro

CC: Lidwien Rahman, ODOT and Sumi Malik, CH2M HILL

From: Matt Berkow and Kim Voros, Alta Planning + Design

Date: ~~October 8~~November 29, 2012

Re: Metro Active Transportation Plan – Regional Pedestrian Network Flow Analysis Methodology

This memorandum outlines a ~~proposed~~ revised technical approach to conducting ~~the Pedestrian Network Flow Analysis (~~Task 6.2~~)~~ of the Regional Active Transportation Plan based on feedback from Metro. The ~~intention of this task is to~~analysis will measure ~~key evaluation criteria for~~for the impact of potential improvements made to the regional pedestrian network to address identified deficiencies and gaps. Locations and types of improvements~~the three (3) Network Concepts that~~ will be provided to the consultant team by Metro. The objective of the analysis is to help Metro and the Stakeholder Advisory Committee match up the places that people want to get to with gaps and deficiencies in the network to help determine which gaps and deficiencies will provide the most benefit in increasing access, safety and equity.

Potential Criteria for Assessing the Pedestrian Network Concepts

Below are the criteria identified by the Stakeholder Advisory Committee: ~~potential criteria~~ for evaluating the proposed Regional Pedestrian Network ~~Concept~~Concepts.: ~~It is recommended that three relevant and measureable criteria be included in this analysis:~~ Access, Equity, ~~and~~ Safety, and Increased Activity. ~~The relative extent of facilities provided by each Network Concept is proposed as informational, but not key to decision-making~~.

Criteria
Access: Improved access to destinations, including transit, schools, jobs, parks, social services, town centers, etc.
Equity~~/Environmental Justice~~: Providing access (see criterion above) to serve low income ~~and~~, minority ~~populations~~., non-white, non-English speaking, youth (under 18), and elderly populations (over 65)
Safety~~for pedestrians.~~: Solves a safety problem, provides safe crossings, safety on high volume/speed roads.

Criteria
Increases Activitys: Measures the increase or decrease in the number of trips made by walking and bicycling. (Metro will evaluate this criterion using the Metro bicycle modeling tool.)
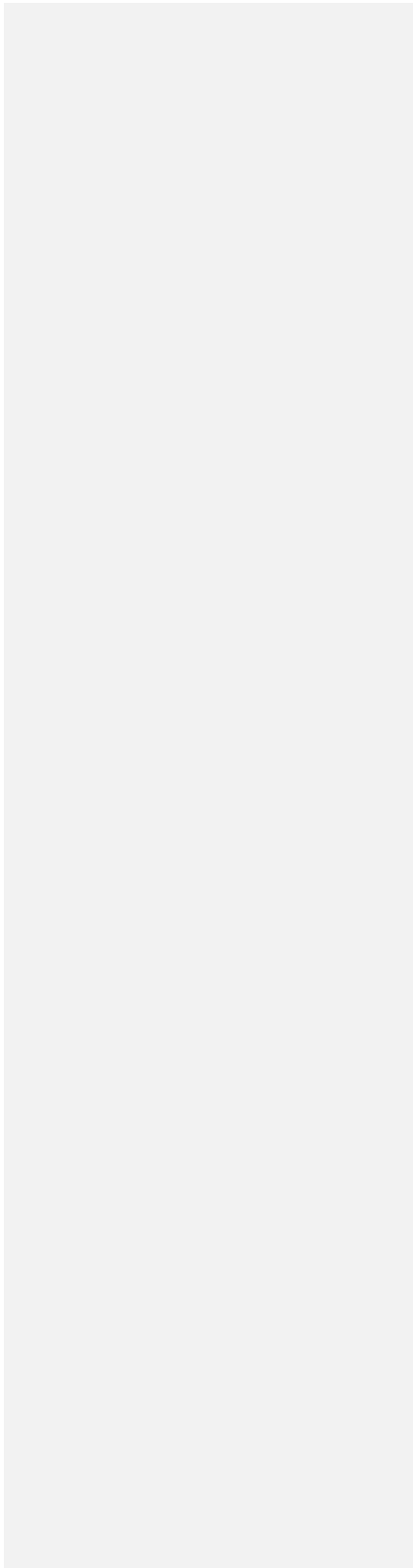
Evaluation Methodology

~~Improved~~ Access ~~(improved access to destinations)~~~~to Destinations~~

- What will be measured?
  - Access to destinations within the existing and proposed regional pedestrian network by way of sidewalks, trails, bridges, stairs, overcrossings, and signalized crossings. The ~~existing~~ planned network is identified in the 2035 RTP Pedestrian Network map (5/18/10). For purposes of this project, ~~with the addition of any~~ routes not designated as a 2040 corridor but serving as a high frequency bus route have been added to the planned network.

  - For consistency with recent regional transportation planning efforts, we propose defining destinations in the same way as was done for the Transportation Equity Analysis for the 2014-15 Regional Flexible Fund Allocation (RFFA). This effort utilized an essential services indicator derived from selected North American Industry Classification System (NAICS) codes and categorized into five individual categories: civic, financial/legal, healthcare, food and essential retail services. This analysis will ~~We propose~~ add~~ing~~ a sixth category of ~~destinations into the analysis of~~ high frequency ~~TriMet transit~~ bus stop locations (light rail stations are captured in station communities), and regional parks ~~and regional natural areas~~ (those identified on the 2040 map). Access will be measured separately for each of the NAICS categories, potentially for specific location types (e.g. education or colleges and universities), for high frequency transit, regional parks and as a whole (for access for all destinations).

  - The measure will calculate the average distance for residential and employment populations (trip generators) to travel along the pedestrian network to the closest destination type (trip attractors - see the destination types identified above~~),~~). Pending confirmation from the SAC, there will be designation of 'priority destination types' to receive a higher weighting~~with high priority destinations receiving higher weighting~~.

  -

- Methodology
  - GIS will be used to create a network destinations dataset, with destinations snapped to the network. Residential and employment populations will be snapped to the network at the census block level. Employment data (i.e., number of jobs) will be apportioned evenly across the census blocks rather than tied to specific employment centers within the TAZ.

  - Closest facility analysis will be used to identify an average walking distance to destinations within each Pedestrian District and Pedestrian Corridor (the analysis will include people accessing destinations from beyond the district or corridor)~~.~~ within a ½ mile. The total population in each pedestrian area (district or corridor) will be incorporated into the analysis to identify the relative number of people that will benefit from improvements to each area.

Comment [LSM1]: TriMet and SMART (need to determine if SMART has high frequency bus stops)

Formatted: Underline

Formatted: Bulleted + Level: 1 + Aligned at: 0.25" + Indent at: 0.5"

Formatted: Underline

Formatted: Font: Italic

Formatted: Underline

Comment [LSM2]: This is the ½ mile buffer correct? Or am I mis interpreting?

ALTA: Correct

- o We will work with Metro (see key assumptions below) to develop a single aggregate measure of pedestrian access to destinations.
- o Pedestrian travel assumptions:
  - Sidewalks are required for pedestrian travel on collectors and above.
  - Trails must be complete for travel.
  - The existence of a local street, regardless of whether it has a sidewalk, will be assumed to be sufficient for pedestrian travel.
  - Pedestrian access is prohibited across 'barrier' streets (those streets identified as having high volumes and/or speeds and/or widths in the 2013-15 RFFA analysisPZA analysis) without a signal protected crossing. This includes trails crossing barrier streets.
- o The following information identifying the amount of pedestrian facilities included in the Network Concept will be provided for informational purposes:
  - Miles of sidewalks and % of sidewalks complete
  - Miles of trails and percentage of regional trails complete
  - Number of signalized crossings
  - Miles of gaps filled

- Key Assumptions for Approval by Metro:
  - o The analysis will use 2035 population data available at the Transportation Analysis Zone (TAZ) level, which is much larger than the parcel or census block level. Data from each TAZ can be apportioned to smaller study areas by calculating the percentage of each TAZ that falls within a given area and apportioning that amount of the population to the geography in question. The apportionment will be informed by a 20352010 household density layer (available at the TAZ level).
  - o AThere is no industry agreed upon 'walkable' distance used in evaluation methodologies. Evaluation methodologies commonly use distances between ¼ mile and ½ mile. We recommend using ½ mile will be used to constitute a walkable distance for this analysis, which is consistent with the methodology used in the TriMet Pedestrian Network Analysis report and the results of the . Please advise us if Metro travel survey data suggests a different distance would be more appropriate.2011 Oregon Household Activity Survey.
  - o Similar to the above, tThe analysis will consider a ½ mile network buffer to around each regional pedestrian area (i.e. corridors, station areas, etc.),LRT station, and a ½ mile buffer around each pedestrian corridor (including trails) and pedestrian district thereby including people living within a walkable distance of the regional pedestrian areas.

- Data Requested from Metro

Comments (margin):

Formatted: Highlight

Comment [LSM3]: Lidwien makes a good comment below (h4).

Comment [h4]: Actually we are more interested in seeing the benefit of individual improvements than in a single aggregate measure. We are not comparing alternative networks, so the purpose of the analysis is to help us prioritize improvements.

Formatted: Highlight

Formatted: Font: 10.5 pt, Highlight

Formatted: Highlight

Formatted: Highlight

Comment [LSM5]: So if there is a gap travel will not be allowed on that section?

Comment [h6]: My interpretation is that where there is a gap an improvement that closes the gap will be assumed

Comment [LSM7]: Matthew is checking whether this is available for 2035

- o Essential services indicator point data derived from North American Industry Classification System (NAICS) codes used to complete the Transportation Equity Analysis for the 2014-15 Regional Flexible Fund Allocation.

- o TriMet ~~transit~~ high frequency bus stop location data ~~(we can request directly from TriMet if necessary).~~

- o ~~Should any destination types (civic, financial, healthcare, food, retail services and transit) be weighted more highly?~~2035 population data

- o ~~2035~~2010 household density ~~layer~~ by TAZ

- o ~~Rdata(RLIS),~~ Regional parks identified on the 2040 map ~~(this will be part of the regional pedestrian network)~~

- ~~Regional natural areas (which will come from the 2040 maps)~~

- ~~Shapefile of regional pedestrian areas (i.e. corridors, station areas, etc)~~

- o ~~E~~Shapefiles of existing pedestrian network ~~(including~~ regional trails, corridors, LRT stations (Alta will add ½ mile network buffer to define station community), and pedestrian districts ~~and greenways)~~

- o Employment and industrial areas

- o Regional bike network data (from RLIS, for ~~and which includes some~~ overcrossings and stairs)

- o Location and/or list of pedestrian network enhancements ~~(i.e. :~~ sidewalks, crossings, trails, and pedestrian bridges~~)~~, trail access points.

- o Metro's approach to automating crossing improvements and filling sidewalk gaps.

- o Corridor segmentation, if corridors are shortened.

Equity ~~Analysis~~

- What will be measured?
  - o Improved access to destinations (see access criterion) for each social equity population sub-group ~~s using a composite equity score~~identified in the RFFA analysis.

- Methodology
  - o For consistency with recent regional transportation planning efforts, we propose utilizing the analysis used in the Transportation Equity Analysis for the 2014-15 Regional Flexible Fund Allocation (RFFA), which included low-income population, non-white populations, non-English speaking populations, youth populations (under 18), and elderly populations (over 65).
  - o The RFFA methodology was completed at the census block group level, while we propose to conduct the Access analysis at the census block level. Thus, this metric will be achieved by aggregating the Access scores to a census block group average and then linking these to the

Formatted: Font: 10.5 pt

RFFA equity results. This will allow for an assessment of the number of block groups with higher proportions of equity populations that will benefit (i.e. access or access improvements above a certain threshold) from improvements ~~under each Network Concept~~ to the network.

- Key Assumptions ~~for Approval by Metro:~~
  - Since we cannot forecast the distribution of future populations by sub-group, ~~we~~ the analysis ~~propose to~~ will assume ~~a similar~~ distribution of population sub-groups _similar to 2010_ in the 2035 population scenario.
- Data Requested from Metro
  - ~~This metric will require Metro to provide the~~ GIS shapefiles from the RFFA Transportation Equity Analysis.
  - ~~~~

> **Comment [mb8]:** Note: the RFFA analysis used 2000 geometry with 2010 ACS estimates (2004-2009). Refer to the methodology here : http://library.oregonmetro.gov/files//final_equity_doc_3.1.12.pdf

Safety / Barriers Reduced

- What will be measured?
    - The number of miles of separated paths, sidewalks and crossings (including signalized and grade separated) added to roads within the regional pedestrian network with high volumes, speeds, and auto lanes – i.e. those identified as 'barriers' in the Pedestrian Zone Analysis (PZA) Metro's analysis of the existing regional pedestrian network and those identified by Metro as barriers.

- Methodology
    - Calculate the number (and length) of facilities (see above) on high risk roads identified in the Metro's analysis of the existing regional pedestrian networkPZA. For longer corridors, Metro may break the corridor into shorter segments, taking into consideration local analyses of high risk corridors.
    - Overlay with location of pedestrian crashes.
    - Crossings opportunities will be normalized for roads of different lengths by calculating an average crossing distance. Average crossing distances should make general considerations for the crossing need, which can be estimated per the bullet below.

    > **Comment [LSM9]:** Alta is adding the crossing opportunities based on the rule that Metro developed.

    - As Metro will be providing the GIS data describing the pedestrian facilities in each Network Concept, we recommend that Metro has identify identified at least two differenta crossing standards to take into consideration different needs for crossing frequency across the region (i.e., segments of the road surrounded by higher density land uses would have a higher crossing frequency need than segments surrounded by lower density suburban land usesrule. Alta will use the rule to automate adding in crossings). AnAlta will develop an algorithm or 'rule' could be developed based on the location of destinations and populations to ensure that crossings are not proposed in areas where they are clearly not appropriate or needed. Alta will send the proposed crossings layer to Metro for confirmation and revision of particular crossing locations prior to performing the analysis.

    > **Comment [LSM10]:** A crossing "rule" has been developed. See attached memo

    - Calculate the number of "mid-block crossings" of trails on the network that do not have a signal. A mid-block crossing is defined as a trail crossing a barrier street.

- Key Assumptions for Approval by Metro
    - The safety benefit should likely relates to the number of people the facility improvements will serve. In other words, there will be a greater safety benefit for facilities provided on streets likely to have more pedestrian activity. Thus, the analysis willWe propose to interact the safety/barriers calculation with the access criteria for each particular pedestrian area to weight improvements to areas with higher likely use.

    > **Formatted:** Font: 10.5 pt, Underline

    > **Comment [LSM11]:** Seems like this should be moved to Methodology section since it seems to imply a task/work product

- Data Requested from Metro
    - Suburban and UrbanMetro cCrossing Standard rule. which Metro will use to develop point data for proposed crossings on the regional pedestrian network.

    > **Comment [LSM12]:** My understanding was that the rule would by Alta to automate filling in the location off the crossings?

    > **Formatted:** Not Highlight

- o Location of pedestrian network enhancements on Barrier roads (this data is already requested under the Access criteria).
- o Existing sidewalks 'gaps' layer
- o 2007-2010 pedestrian and bicycle crash location data.Crossings 'gaps' layer, which can be derived from the analysis to identify proposed crossings

> **Comment [LSM13]:** This will be developed by Alta above

Facility Extent

- What will be measured?
  - o We propose that the plan identify the amount of pedestrian facilities included in each Network Concept.
  - o The presence of facilities are already included in the calculation of the 'access' criteria. To avoid double counting, we propose that this criterion be presented for informational purposes only rather than include it as a separate evaluation criterion.
- Methodology
  - o The following metrics can be calculated from the GIS shapefiles that Metro will develop indicating the location of the various pedestrian facilities for each Network Concept.
    - Miles of sidewalks and % of sidewalks complete, by street classification
    - Miles of trails and percentage of planned regional trails complete
    - Number of signalized crossings
    - Number and miles of gaps filled
- Key Assumptions for Approval
  - o Since Metro is developing the pedestrian facility GIS shapefiles, it might be simplest (and valuable for the process of developing/refining the Network Concepts) for Metro to conduct the Facility Extent calculations as the Network Concepts are developed and provide it to the consultant team.
  - o Confirm that Figure 1.18 from the RTP (Regional Trails and Greenways) would be the regional trails network on which network completion would be based.
  - o How will a gap be defined to measure the miles of gaps filled? If it doesn't exist already, Metro will need to develop a base pedestrian network which identifies existing 'gaps.' We recommend that gaps be defined as any collector or arterial roadway where the sidewalk is missing on one or both sides.

- **Data Requested from Metro**

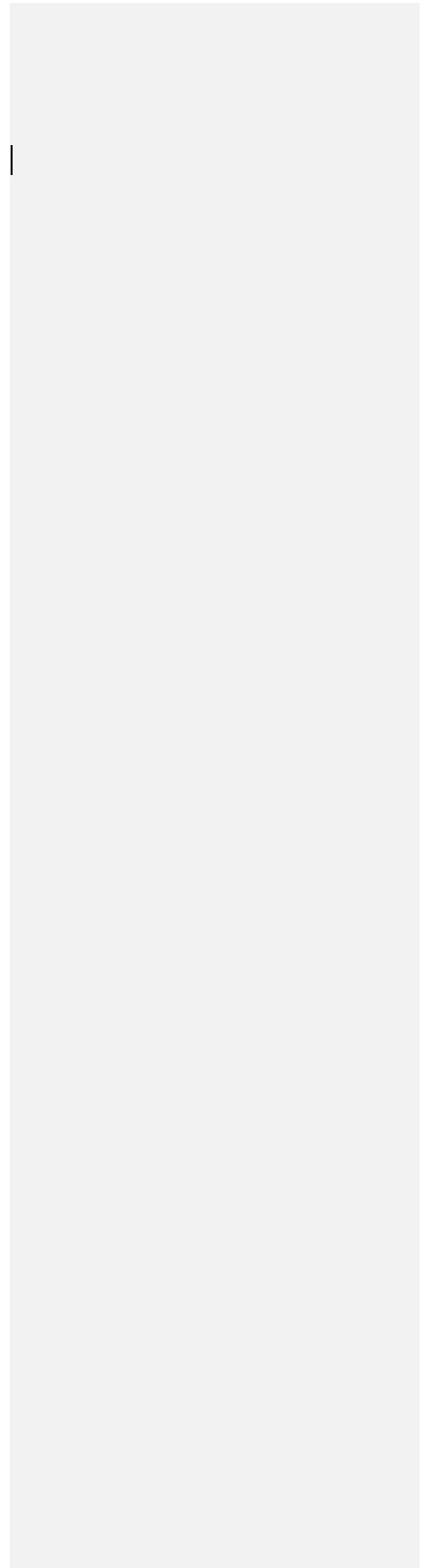- o **Facility Extent table for each Network Concept.**

> **Formatted:** Font: 11 pt, No underline

> **Formatted:** No underline

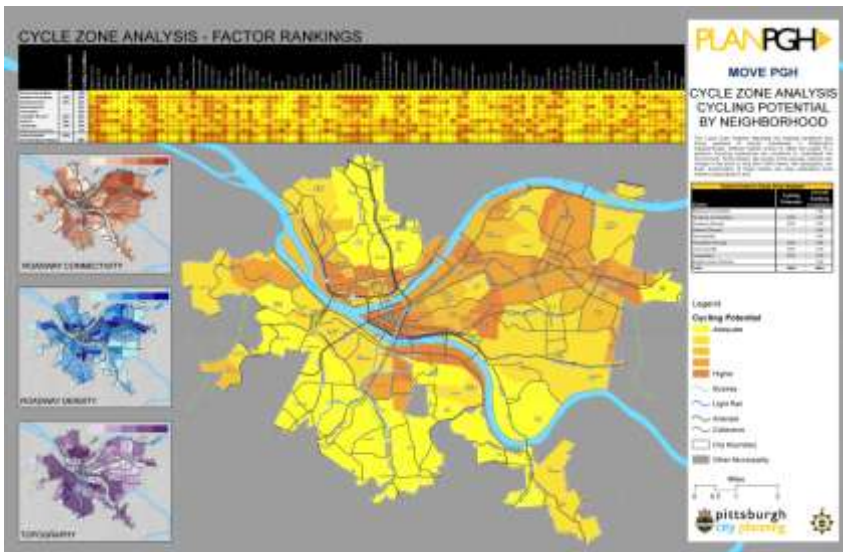> **Formatted:** Figure title, None, Space Before: 0 pt, Don't keep with next

> **Formatted:** Figure title, None, Space Before: 0 pt, No bullets or numbering, Don't keep with next

Presentation

- <u>Methodology</u>
  - o Given the large number of criteria ~~and multiple Network Concepts~~, we propose presenting the results in a matrix format with accompanying maps illustrating the ~~composite~~ results <u>for each criterion for each corridor and district</u>. The example map below illustrates a potential format for including multiple pieces of information on a single map.
  - o <u>To the extent possible the analysis will maintain consistency with</u> ~~the~~ Metro's analysis of the <u>existing regional pedestrian network</u>~~,~~ ~~PZA~~ <u>so that improvements to the regional pedestrian network can be compared to the existing conditions analysis.</u>
  - ~~o~~

  - o The analysis will be presented graphically as follows:
    - ▪ A set of four maps<u>, with one map per criteria to</u> illustrat~~ing~~<u>e</u> the~~a composite~~ score ~~for~~<u>for</u> each Pedestrian District and Pedestrian Corridor<u>. A fourth map will illustrate a composite score of the three criteria.</u>
    - ▪ <u>Each map will include the existing conditions as a smaller map for easy comparison</u> ~~under existing conditions and each Network Concept~~.
    - ▪
    - ▪ Per the example above, each map can include:
      - ~~-~~Large map illustrating the ~~composite~~ <u>criteria</u> evaluation score in the center

- Smaller maps to identify existing conditionss on the side to illustrate the individual criteria (i.e., access, safety and equity). and the net change between existing conditions and the score based on improvements

- A matrix of the individual criteria scores for each Pedestrian District/ Corridor
- The number of facilities in each scenario, provided as a table
- We propose Results will be reportingreported analysis results on a five point scale, as was done in the PZAMetro's analysis of the existing regional pedestrian network. Each of the numbers in the scale will be represented in a different color.
- The consultant team will develop maps using an agreed upon color scheme and Metro template.

o Developing a single pedestrian score for the region for each Network Concept

- If there is more than one network concept, We are assuming that the network that serves the highest number of people is preferred. As such, we propose to weight the composite scores for each Pedestrian Corridor/District will be weighted by population to create a regional score.
- We also propose toThe analysis will identify the number of Pedestrian Corridors/Districts that benefit (i.e., that have a composite score above a certain threshold) under each Pedestrian Network Concept. As a hypothetical example, one concept may benefit 25 of the 30 pedestrian areas while another may only benefit 15 of 30. This metric will provide a useful complement to the population based regional score to illustrate how benefits would be distributed across the region.

- Key Questions:

  o Metro often prefers to develop its own maps for consistency. Will the consultant team develop the maps using a Metro provided template or will the consultant provide data for Metro to make the maps?

  o The consultant team and Metro will need to agree on a calculation for a composite score of the final agreed uponthree evaluation criteria (i.e.,Access, Equity, and Safety). As discussed previously, the 'Facility Extent' can be provided as a table on the map rather than be included in the composite score to avoid double counting with the 'access' criterion.

Memorandum

To:	Lake McTighe, Metro
CC:	Lidwien Rahman, ODOT and Sumi Malik, CH2M HILL
From:	Matt Berkow and Kim Voros, Alta Planning + Design
Date:	November 29, 2012
Re:	Metro Active Transportation Plan – Regional Pedestrian Network Flow Analysis Methodology

This memorandum outlines a revised technical approach to conducting Task 6.2 of the Regional Active Transportation Plan based on feedback from Metro. The analysis will measure for the impact of potential improvements made to the regional pedestrian network to address identified deficiencies and gaps. Locations and types of improvements will be provided to the consultant team by Metro. The objective of the analysis is to help Metro and the Stakeholder Advisory Committee match up the places that people want to get to with gaps and deficiencies in the network to help determine which gaps and deficiencies will provide the most benefit in increasing access, safety and equity.

Potential Criteria for Assessing the Pedestrian Network Concepts

Below are the criteria identified by the Stakeholder Advisory Committee: for evaluating the proposed Regional Pedestrian Network Concept: Access, Equity, Safety, and Increased Activity.

Criteria
Access: Improved access to destinations, including transit, schools, jobs, parks, social services, town centers, etc.
Equity: Providing access (see criterion above) to serve low income, minority, non-white, non-English speaking, youth (under 18), and elderly populations (over 65)
Safety: Solves a safety problem, provides safe crossings, safety on high volume/speed roads.
Increases Activity: Measures the increase or decrease in the number of trips made by walking and bicycling. (Metro will evaluate this criterion using the Metro bicycle modeling tool.)

Evaluation Methodology

Access

- What will be measured?

    - Access to destinations within the existing and proposed regional pedestrian network by way of sidewalks, trails, bridges, stairs, overcrossings, and signalized crossings. The planned network is identified in the 2035 RTP Pedestrian Network map (5/18/10). For purposes of this project, routes not designated as a 2040 corridor but serving as a high frequency bus route have been added to the planned network. For consistency with recent regional transportation planning efforts, we propose defining destinations in the same way as was done for the Transportation Equity Analysis for the 2014-15 Regional Flexible Fund Allocation (RFFA). This effort utilized an essential services indicator derived from selected North American Industry Classification System (NAICS) codes and categorized into five individual categories: civic, financial/legal, healthcare, food and essential retail services. This analysis will add high frequency TriMet transit stop locations (light rail stations are captured in station communities) and regional parks (those identified on the 2040 map). Access will be measured separately for each of the NAICS categories, potentially for specific location types (e.g. education or colleges and universities), for high frequency transit, regional parks and as a whole (for access for all destinations). The measure will calculate the average distance for residential and employment populations (trip generators) to travel along the pedestrian network to the closest destination type (trip attractors - see the destination types identified above). Pending confirmation from the SAC, there will be designation of 'priority destination types' to receive a higher weighting.

- Methodology

    - GIS will be used to create a network destinations dataset, with destinations snapped to the network. Residential and employment populations will be snapped to the network at the census block level. Employment data (i.e., number of jobs) will be apportioned evenly across the census blocks rather than tied to specific employment centers within the TAZ.

    - Closest facility analysis will be used to identify an average <u>walking</u> distance to destinations within each Pedestrian District and Pedestrian Corridor (the analysis will include people accessing destinations from beyond the district or corridor within a ½ mile. The total population in each pedestrian area (district or corridor) will be incorporated into the analysis to identify the relative number of people that will benefit from improvements to each area.

    - Pedestrian travel assumptions:

        - Sidewalks are required for pedestrian travel on collectors and above.

        - Trails must be complete for travel.

        - The existence of a local street, regardless of whether it has a sidewalk, will be assumed to be sufficient for pedestrian travel.

- Pedestrian access is prohibited across 'barrier' streets (those streets identified as having high volumes and/or speeds and/or widths in the 2013-15 RFFA analysis) without a signal protected crossing. This includes trails crossing barrier streets.
  - The following information identifying the amount of pedestrian facilities included in the Network Concept will be provided for informational purposes:
    - Miles of sidewalks and % of sidewalks complete
    - Miles of trails and percentage of regional trails complete
    - Number of signalized crossings
    - Miles of gaps filled

- Key Assumptions
  - The analysis will use 2035 population data available at the Transportation Analysis Zone (TAZ) level, which is much larger than the parcel or census block level. Data from each TAZ can be apportioned to smaller study areas by calculating the percentage of each TAZ that falls within a given area and apportioning that amount of the population to the geography in question. The apportionment will be informed by a 2010 household density layer (available at the TAZ level).
  - A ½ mile will be used to constitute a walkable distance for this analysis, which is consistent with the methodology used in the TriMet Pedestrian Network Analysis report and the results of the 2011 Oregon Household Activity Survey.
  - The analysis will consider a ½ mile network buffer to around each LRT station, and a ½ mile buffer around each pedestrian corridor (including trails) and pedestrian district thereby including people living within a walkable distance of the regional pedestrian areas.

- Data Requested from Metro
  - Essential services indicator point data derived from North American Industry Classification System (NAICS) codes used to complete the Transportation Equity Analysis for the 2014-15 Regional Flexible Fund Allocation.
  - TriMet high frequency bus stop location data 2035 population data
  - 2010 household density by TAZ
  - Regional parks identified on the 2040 map
  - Shapefiles of existing pedestrian network (regional trails, corridors, LRT stations (Alta will add ½ mile network buffer to define station community), and pedestrian districts)
  - Employment and industrial areas
  - Regional bike network data (from RLIS, for overcrossings and stairs)
  - Location and/or list of pedestrian network enhancements: .sidewalks, crossings, trails, and pedestrian bridges, trail access points.

- o Metro's approach to automating crossing improvements and filling sidewalk gaps.
- o Corridor segmentation, if corridors are shortened.

Equity

- What will be measured?
  - o Improved access to destinations (see access criterion) for each social equity population sub-group identified in the RFFA analysis.

- Methodology
  - o For consistency with recent regional transportation planning efforts, we propose utilizing the analysis used in the Transportation Equity Analysis for the 2014-15 Regional Flexible Fund Allocation (RFFA), which included low-income population, non-white populations, non-English speaking populations, youth populations (under 18), and elderly populations (over 65).
  - o The RFFA methodology was completed at the census block group level, while we propose to conduct the Access analysis at the census block level. Thus, this metric will be achieved by aggregating the Access scores to a census block group average and then linking these to the RFFA equity results. This will allow for an assessment of the number of block groups with higher proportions of equity populations that will benefit (i.e. access or access improvements above a certain threshold) from improvements to the network.

- Key Assumptions
  - o Since we cannot forecast the distribution of future populations by sub-group, the analysis will assume a distribution of population sub-groups similar to 2010 in the 2035 population scenario.

- Data Requested from Metro
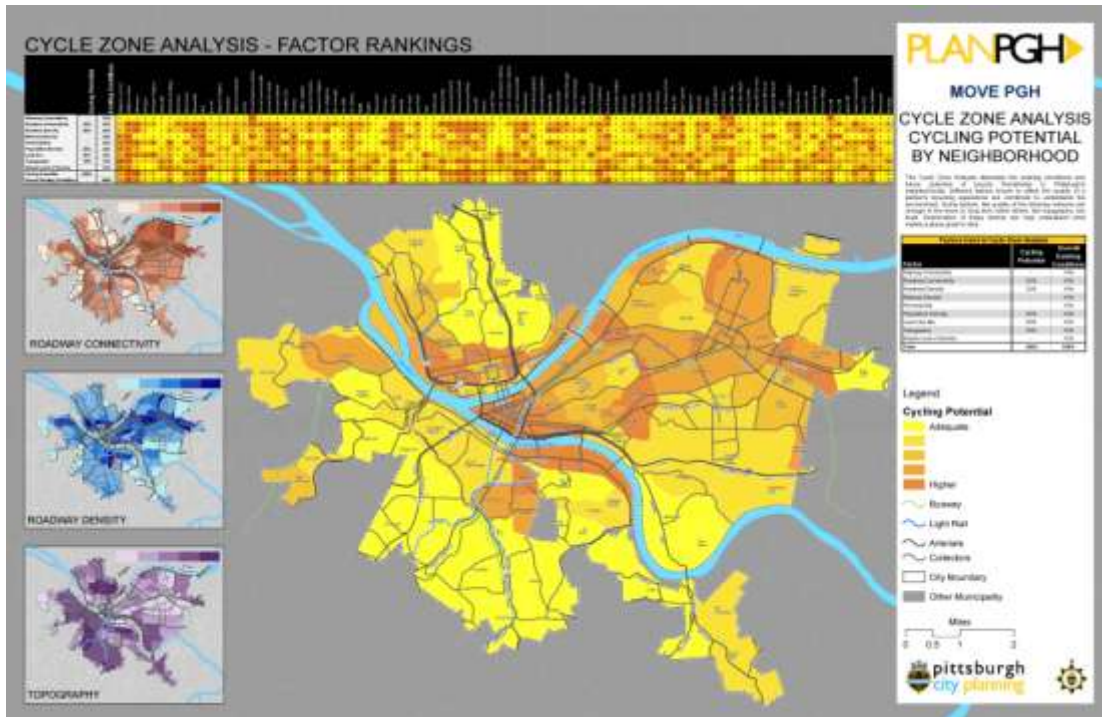 - o GIS shapefiles from the RFFA Transportation Equity Analysis.

Safety

- <u>What will be measured?</u>

    o The number of miles of separated paths, sidewalks and crossings (including signalized and grade separated) added to roads within the regional pedestrian network with high volumes, speeds, and auto lanes – i.e. those identified as 'barriers' in Metro's analysis of the existing regional pedestrian network and those identified by Metro as barriers.

- <u>Methodology</u>

    o Calculate the number (and length) of facilities (see above) on high risk roads identified in the Metro's analysis of the existing regional pedestrian network. For longer corridors, Metro may break the corridor into shorter segments, taking into consideration local analyses of high risk corridors.

    o Overlay with location of pedestrian crashes.

    o Crossings opportunities will be normalized for roads of different lengths by calculating an average crossing distance. Average crossing distances should make general considerations for the crossing need, which can be estimated per the bullet below.

    o Metro has identified a crossing rule. Alta will use the rule to automate adding in crossings. Alta will develop an algorithm or 'rule' based on the location of destinations and populations to ensure that crossings are not proposed in areas where they are clearly not appropriate or needed. Alta will send the proposed crossings layer to Metro for confirmation and revision of particular crossing locations prior to performing the analysis.

    o Calculate the number of "mid-block crossings" of trails on the network that do not have a signal. A mid-block crossing is defined as a trail crossing a barrier street.

    o <u>The safety benefit rela</u>tes to the number of people the facility improvements will serve. In other words, there will be a greater safety benefit for facilities provided on streets likely to have more pedestrian activity. Thus, the analysis will interact the safety/barriers calculation with the access criteria for each particular pedestrian area to weight improvements to areas with higher likely use.

- <u>Data Requested from Metro</u>

    o Metro crossing rule.

    o Location of pedestrian network enhancements on Barrier roads (this data is already requested under the Access criteria).

    o Existing sidewalks 'gaps' layer

    o 2007-2010 pedestrian and bicycle crash location data.

Presentation

- Methodology

  o Given the large number of criteria, we propose presenting the results in a matrix format with accompanying maps illustrating the results for each criterion for each corridor and district. The example map below illustrates a potential format for including multiple pieces of information on a single map.

  o To the extent possible the analysis will maintain consistency with Metro's analysis of the existing regional pedestrian network, so that improvements to the regional pedestrian network can be compared to the existing conditions analysis.

  o The analysis will be presented graphically as follows:

    ▪ A set of four maps, with one map per criteria to illustrate the score for each Pedestrian District and Pedestrian Corridor. A fourth map will illustrate a composite score of the three criteria.

    ▪ Each map will include the existing conditions as a smaller map for easy comparison.

    ▪ Per the example above, each map can include:

      • Large map illustrating the criteria evaluation score in the center

      • Smaller maps to identify existing conditions and the net change between existing conditions and the score based on improvements

      • A matrix of the individual criteria scores for each Pedestrian District/ Corridor

- The number of facilities in each scenario, provided as a table

  ▪ Results will be reported on a five point scale, as was done in Metro's analysis of the existing regional pedestrian network. Each of the numbers in the scale will be represented in a different color.

  ▪ The consultant team will develop maps using an agreed upon color scheme and Metro template.

  o Developing a single pedestrian score for the region

  ▪ If there is more than one network concept, the composite scores for each Pedestrian Corridor/District will be weighted by population to create a regional score.

  ▪ The analysis will identify the number of Pedestrian Corridors/Districts that benefit (i.e., that have a composite score above a certain threshold) under each Pedestrian Network Concept. As a hypothetical example, one concept may benefit 25 of the 30 pedestrian areas while another may only benefit 15 of 30. This metric will provide a useful complement to the population based regional score to illustrate how benefits would be distributed across the region.

- Key Questions

  o The consultant team and Metro will need to agree on a calculation for a composite score of the three evaluation criteria (Access, Equity, and Safety).

Metro | Memo

Date:	January 10, 2013
To:	ATP Stakeholder Advisory Committee (SAC)
From:	Lake McTighe, Metro
Subject:	UPDATED - Proposed improvements for evaluating the regional pedestrian network

A set of improvements to the regional pedestrian network will be evaluated to demonstrate the potential of increasing access to destinations within and near the network, increasing the safety of the network and increasing access and safety for identified equity populations. Metro is proposing that the type and location of improvements will be identified using a variety of methods and sources.

Sources for regional pedestrian network improvements
1. Gaps in sidewalks, trails and crossings identified in existing conditions analysis
2. TriMet Pedestrian Network Analysis priority transit stop locations
3. 2035 RTP project list, Mobility Corridor Atlas, local TSPs SW Corridor project list and East Metro Connections Plan priorities for major crossings and improvements
3.4. 2016-18 STIP Enhance Applications, 2016-18 RFF applications

Proposed improvements for evaluating the regional pedestrian network

1. Fill in every sidewalk gap in regional pedestrian corridors and districts identified in the 2012 sidewalk inventory.

2. Complete trail gaps in pedestrian network trails identified in the Regional Trails data set.

3. Add the following regional trails to the regional pedestrian network (identify non-paved trails:). These trails were identified by Metro staff and most are currently identified on the regional trail map. Trails that provided a unique pedestrian connection or are a newly identified trail were included.
   - *Sandy River to Springwater Multimodal Corridor (includes the Beaver Creek Trail from Glenn Otto Park, Troutdale, to Springwater Corridor via Mt Hood Community College)(not on regional trail map, identified in EMCP)*
   - *Wildwood Trail from US Hwy 26 to NW Cornelius Pass Road*
   - *Marquam Trail from US Hwy 26 to SW Terwilliger Blvd*
   - *SW Terwilliger Blvd from SW 6th Ave to OR Hwy 43*
   - *BN Powerline Corridor Trail from the Rock Creek Trail to the Cooper Mt. Trail*
   - *Hillsdale to Lake Oswego Trail*
   - *River to River Trail, a.k.a., Wilson Creek Trail, from the Willamette River in Lake Oswego to the Tualatin River in Stafford.*
   - *Columbia Slough Trail from NE 47th to NE 82nd*
   - *Columbia Slough Trail from NE 166th to NE Fairview Lake Way*
   - *Sunrise Multi-Use Path (not on regional trail map) (RTP 11347)*

⊗ Metro | *Memo*

4. Add the following potential regional bicycle parkways (which are not current pedestrian corridors) or appropriate parallel route and fill any sidewalk gaps:
   - 229th/231st from Evergreen to Lois, Lois from 231st to Century Blvd, Century Blvd from Lois to TV Hwy
   - Schools Ferry Rd. from Sunset Hwy to TV Hwy
   - On street Crescent Connection Trail through Beaverton TC
   - Connection from Sunset Hwy to Hwy 26 Trail
   - Milwaukie LRT connection from Willamette River Bridge into downtown Portland
   - NE Vancouver and Williams couplet in Portland
   - Sunnyside Rd. from Damascus TC to 242nd.
   - NW 205th, 206th, NW John Olson Road from *TV Hwy* to Evergreen
   - Milwaukie LRT Clinton St. Multi-use path
   - McLoughlin Trail (Tacoma to 17th Ave)

5. Improved pedestrian crossings:
   - For corridors with posted speeds over 35 MPH, over 10,000 daily auto trips and/or those with 3 or more lanes of traffic provide for an improved pedestrian crossing at least every 530 feet or at a trail crossing.[1]
   - For pedestrian districts with a high proportion of roadways with speeds over 35 MPH, over 10,000 daily auto trips and/or those with 3 or more lanes of traffic provide for an improved pedestrian crossing at least every 530 feet.[2]
   - Provide for an improved crossing when a regional trail intersects with a roadway.
   - Provide for an overcrossing or similar type of separated crossing where corridors or roadways within districts intersect with a limited access freeway or highway, a railroad or river. (RTP projects for these type of crossings are listed in #6. If no project exists but a barrier is identified a crossing will be added for the evaluation.)

---

[1] Examples of crossing improvements:
A. A median refuge (or equal/better treatment) is provided where any of the following conditions is satisfied:
   - Road is 4 lanes or more
   - Daily traffic volume is 12,000 or greater
   - Posted speed is 45 mph or greater
B. A signal or rapid-flash beacon and yield lines and marked continental crossing (or equal/better treatment) are provided where any of the following conditions is satisfied:
   - Road is 4 lanes of more and posted speed is 45 mph or greater
   - Daily traffic volume is 15,000 or greater and posted speed is 35 mph or greater
   - Daily traffic volume is 25,000 or greater and posted speed is 25-30 mph

[2] *ITE- Context Sensitive Solutions, Designing Walkable Urban Thoroughfares -Urban Chapter 10, Intersection Design Guidelines*" states: The preferred location for pedestrian crossings is at intersections. However, if the block length exceeds 400 feet, consider adding a midblock crossing. The target spacing for pedestrian crossings in more intensive urban areas (C-4 to C-6) is every 200 to 300 feet." http://www.ite.org/css/online/index.html

Metro | Memo

6. Add pedestrian bridges at the following locations, providing crossings of limited access freeways or highways, rivers and railroads, or on constricted roadways:

- *Causey Ave Overcrossing of I-205 at Bob Schumaker Road and I-205 path (RTP 10007)*
- *Hwy 26 at 173rd/174th Ave.*
- *Boeckman Rd. I-5 overcrossing in Wilsonville, connect to regional trails (RTP 10132)*
- *I-5 at Gibbs Overcrossing, Portland (completed; confirm on map)*
- *N. Lombard at Columbia Slough Overcrossing, Portland (RTP 10217)*
- *Grover pedestrian Bridge, Naito to Barbur (RTP 10235)*
- *205th Ave Bridge over Beavercreek (RTP 10592)*
- *Bridge at 231st/Century Blvd. Hillsboro (10818)*
- *Separated grade crossing of TV Hwy by Westside Trail (RTP 11210)*
- *Bridge crossing of Hwy. 26 by Westside Trail (RTP 11211)*
- *Bridge crossing of Scholls Ferry Road by the Westside Trail (RTP 11213)*
- *Grade separated crossings of major roads in Aloha connecting to the Westside Trail (RTP 11239)*
- *French Prairie Bike/Ped Bridge (RTP 10133)*
- *Trolley Trail Bridge (RTP 10151)*
- *Wildwood Bridge at West Burnside (RTP 10351)*
- *162nd RR Bridge at I-84, Gresham Fairview Trail (RTP 10492)*
- *Kellogg Creek ped/Bike bridge (RTP 10109)*
- *SE 122nd at SE Morrison Ped Overcrossing (RTP 10223)*
- *Ross Island Bridge Improvements (RTP 10259)*
- *Pedestrian Overpass near Markham School, over SW Barbur and I-5 (RTP 10286)*
- *Ped/bike bridges over 99 W, Sherwood (RTP 10707)*
- *Pedestrian Bridge over the Tualatin River at SW 108th Ave (RTP 10742 – not on regional ped system)*
- *Bike/ped undercrossing of I-5 R sw Sheridan, Portland (RTP 10247)*
- *Killingsworth Bridge at I-5 (RTP 10296)*
- *SE Tacoma Overcrossing, Portland (RTP 10297)*
- *SW Barbur Bridge improvements (RTP 11324)*

7. Assume trail access at the intersection of two trails or roadway.

Metro | *Memo*

Date:	January 10
To:	ATP Stakeholder Advisory Committee (SAC)
From:	Lake McTighe, Metro
Subject:	Proposed approach - Measuring improved access to destinations

Purpose
Analysis of the regional pedestrian network for the Active Transportation Plan (ATP) includes evaluating access to destinations within the network. This memo outlines Metro's proposed approach to determining which destinations should be included in the evaluation. This memo also responds to the SAC pedestrian workgroup's question as to whether a comprehensive set of destinations or a limited set of destinations defined as regional should be used.

Background
As part of the ATP the regional pedestrian network will be evaluated using the criteria of access, safety, equity and increased (pedestrian) activity. The regional pedestrian network includes pedestrian districts (regional and town centers and station communities) and pedestrian corridors (mixed-use and high frequency transit and trails). The pedestrian corridors and districts are highlighted as regional focus areas for pedestrian investments in the Regional Transportation Plan.

The Stakeholder Advisory Committee for the ATP needs to determine which destinations are used in the analysis for evaluating the access criteria. At the Oct. 18 meeting the SAC discussed using destinations identified as regional, such as those used in Metro's High Capacity Transit analysis with the addition of regional parks and high frequency transit stops. At that meeting the SAC agreed that using destinations identified as regional would be appropriate but that the types of destinations still needed to be determined. Subsequently, Metro and Alta Planning and Design developed a proposed methodology for evaluating the regional pedestrian network, and proposed using a more detailed set of data for destinations, using the US Census North American Industry Classification System (NAICS) codes data. The NAICS codes provide data, including location, of a wide range of businesses and services. Metro utilized this data in the 2014-15 RFFA Equity Analysis and identified a set of essential services and destinations.

Proposed Approach
Metro staff proposes the following approach to address the question of which destinations to evaluate for the access criterion.

1. **Use the NAICS data for the evaluation of improvements to the regional pedestrian network.** [1]Discussions with Alta Planning have led staff to understand that the evaluation will be less revealing with a more limited set of regional destinations. That is, it will be more difficult to determine how much access has improved on the network. Alta had proposed the option of running a "proof of concept analysis" in order to compare what the

---

[1] A list of the proposed destinations that would be included are attached. More detail on each destination type can be found by searching: http://www.census.gov/cgi-bin/sssd/naics/naicsrch

two types of analysis would look like, but Metro staff determined that this extra step will delay the project.

2. **Develop a list of regional destinations, see below.**

3. **Identify if there are regional destinations that do not fall within with a regional pedestrian district or corridor.** Regional destinations will be overlaid with the regional pedestrian network in order to identify any regional destinations that are not located on or near the regional pedestrian network. The SAC can then determine if some sort of regional connection to the destination should be explored.

4. **Use the "regional destinations" to help prioritize investments within the regional pedestrian network in Phase 3 of the ATP.** The set of agreed upon regional destinations can be used as one piece of information to help determine a phased investment strategy for the regional pedestrian network.

Potential Regional Destinations
This set of destinations is similar to the "regional attractors" defined in Metro's High Capacity Transit Analysis (see attached) and to regional destinations identified in Metro's SW Corridor project which are being used to help prioritize investments; the SW Corridor includes town centers.

1. Employment sites with 500 or more employees (Data source: NAICS code data, filtered by number of employees.)
2. High frequency bus stop locations (Data source: RLIS. Light rail stations are already captured within station communities in the pedestrian network.)
3. Regional shopping centers (Data source: Points created from Internet search. See list below)
4. Colleges and universities (Data source: RLIS)
5. High schools (Data source: RLIS)
6. Regional parks (Data source: RLIS, those identified on Metro's 2040 map)
7. Major government sites (Data source: RLIS)
8. Sports and attraction sites (Data source: NAICS)
9. Social services 200 daily LIFT pickups (Data source: NAICS)

Name	City	Year opened	Stores
Bridgeport Village	Tigard Tualatin	2005	90
Cascade Station	NE Portland	2007	25
Cedar Hills Crossing	Beaverton	1969	68
Clackamas Promenade	Clackamas	1989	30
Clackamas Town Center	Clackamas	1981	185
Eastport Plaza	SE Portland	1960	
Fubonn Shopping Center	SE Portland	2006	29
Jantzen Beach SuperCenter	N Portland	1972	39
Lloyd Center	NE Portland	1960	200
Mall 205	SE Portland	1970	40
Pioneer Place	Downtown Portland	1990	100
Sunset Esplanade	Hillsboro	1989	35
The Streets of Tanasbourne	Hillsboro	2004	55
Washington Square	Tigard	1973	170

Services Indicators - NAICS codes used in ATP Regional Pedestrian Network Analysis

Civic/Heath

491110	Postal Service
519120	Libraries and Archives
541930	Translation and Interpretation Services
541940	Veterinary Services
561311	Employment Placement Agencies
561320	Temporary Help Services
611110	Elementary and Secondary Schools
611210	Junior Colleges
611310	Colleges, Universities, and Professional Schools
611410	Business and Secretarial Schools
611420	Computer Training
611430	Professional and Management Development Training
611511	Cosmetology and Barber Schools
611513	Apprenticeship Training
611519	Other Technical and Trade Schools
611610	Fine Arts Schools
611620	Sports and Recreation Instruction
611630	Language Schools
611691	Exam Preparation and Tutoring
611692	Automobile Driving Schools
611699	All Other Miscellaneous Schools and Instruction
611710	Educational Support Services
621111	Offices of Physicians (except Mental Health Specialists)
621112	Offices of Physicians, Mental Health Specialists
621210	Offices of Dentists
621310	Offices of Chiropractors
621320	Offices of Optometrists
621330	Offices of Mental Health Practitioners (except Physicians)
621340	Offices of Physical, Occupational and Speech Therapists, and Audiologists
621391	Offices of Podiatrists
621399	Offices of All Other Miscellaneous Health Practitioners
621410	Family Planning Centers
621420	Outpatient Mental Health and Substance Abuse Centers
621491	HMO Medical Centers
621492	Kidney Dialysis Centers
621493	Freestanding Ambulatory Surgical and Emergency Centers
621498	All Other Outpatient Care Centers
621512	Diagnostic Imaging Centers
621910	Ambulance Services
621999	All Other Miscellaneous Ambulatory Health Care Services
622110	General Medical and Surgical Hospitals
622210	Psychiatric and Substance Abuse Hospitals
622310	Specialty (except Psychiatric and Substance Abuse) Hospitals
624110	Child and Youth Services
624120	Services for the Elderly and Persons with Disabilities
624190	Other Individual and Family Services
624210	Community Food Services
624229	Other Community Housing Services
624230	Emergency and Other Relief Services
624310	Vocational Rehabilitation Services
624410	Child Day Care Services
911240	Executive and Legislative offices combined

Food

311811	Retail Bakeries
445110	Supermarkets and Other Grocery (except Convenience) Stores
445210	Meat Markets
445220	Fish and Seafood Markets
445230	Fruit and Vegetable Markets
445291	Baked Goods Stores
445299	All Other Specialty Food Stores
446191	Food (Health) Supplement Stores
722110	Full-Service Restaurants
722212	Cafeterias

Essential Retail

448110	Men's Clothing Stores
448120	Women's Clothing Stores
448130	Children's and Infants' Clothing Stores
448140	Family Clothing Stores
448150	Clothing Accessories Stores
448190	Other Clothing Stores
448210	Shoe Stores
452111	Department Stores (except Discount Department Stores)
452112	Discount Department Stores
452910	Warehouse Clubs and Supercenters
452990	All Other General Merchandise Stores
453310	Used Merchandise Stores
444130	Hardware Stores
446199	All Other Health and Personal Care Stores
453910	Pet and Pet Supplies Stores
454311	Heating Oil Dealers
454312	Liquefied Petroleum Gas (Bottled Gas) Dealers
454319	Other Fuel Dealers
446110	Pharmacies and Drug Stores
446110	Pharmacies and Drug Stores
446130	Optical Goods Stores

Financial/Legal

522110	Commercial Banking
522120	Savings Institutions
522130	Credit Unions
522310	Mortgage and Nonmortgage Loan Brokers
523930	Investment Advice
541110	Offices of Lawyers
541120	Offices of Notaries
541199	All Other Legal Services
541211	Offices of Certified Public Accountants
541213	Tax Preparation Services
541219	Other Accounting Services

*The location of parks and high frequency bust stops is included in the civic/health category, but use a different data source.

C4: Ridership Generators

Description	This criterion identifies the location of major transit demand generators that exist today within proposed HCT corridors. The intent of the criterion is to provide credit for corridors that would immediately service major trip generators, particularly those land uses that are likely to have higher than average levels of transit demand, such as colleges and hospitals.
Data Sources	Data includes GIS data (RLIS and ESRI), TriMet LIFT September 2008 top boarding locations, PDC's 2007 Largest Metro Employers report, Oregon Employment Department Employer Database, various websites of public agencies, such as Metro, PDC, Portland Business Alliance, and the City of Portland.
Methodology	**Step 1**: Develop a list of key ridership generators Seven types of ridership generators were identified, and the following data sources were used. • Hospitals and medical centers (data source: RLIS data) • Major retail sites (internet resources including a website of Portland Business Alliance) • Major social service centers (LIFT monthly pick-up counts provided by TriMet. The social services with more than 200 monthly pick-up counts were selected.) • Colleges and universities (RLIS data) • Major Employers, >1500 employees (PDC 2007 Largest Metro Employers and Oregon Employment Department employer database). • Sports and attraction sites: (ESRI data) • Major government sites: (websites of public agencies including Metro and City of Portland) **Step 2**: Assess access to key generators along each corridor After ridership generators were geocoded, GIS was used to count the number of ridership generators within a half mile from alignments was counted for each corridor.
Ranking Methodology	Corridors were ranked based on a number of ridership generators within a half-mile from the alignments. ● Significant potential = 3 (6-8 ridership generators) ● Moderate potential = 2 (3-5) ● Slight potential = 1 (1-2) ● Neutral = 0 (None)
Issues / Limitations	This analysis excluded employers with less than 1,500 employees due to a limited employer data source for the Metro region. This may result in excluding potential trip demand attractors, such as Adidas' headquarters, which has approximately 700 employees. This criterion evaluates current conditions and does not account for future changes in employment or institutional siting.

Metro | *Memo*

Date: January 10, 2013
To: ATP Stakeholder Advisory Committee (SAC)
From: John Mermin and Lake McTighe, Metro
Subject: UPDATED -Proposed Evaluation Methodology for Regional Bicycle Parkway Network
             Concepts

This memorandum outlines the criteria methodology for evaluating alternative regional bicycle network concepts.   For the Regional Active Transportation Plan a total of five regional bicycle networks will be evaluated using Metro's regional bicycle modeling tool and geographic information system (GIS). The intention of the evaluation is to understand the potential benefits and trade-offs of each alternative bicycle network concept. From the five alternative network concepts a preferred Principal Regional Bicycle Parkway Network will be identified. The Principal regional Bicycle Network will be comprised of Regional Bicycle Parkways, the highest functional classification of regional bikeways and will serve as the primary spine of the entire regional and local bicycle network. Other regional bikeways and local bikeways will connect into the spine.

Proposed Regional Bicycle Network Concepts to be Evaluated
Base concepts
  1. **2010 Regional Bicycle Network.** This is the existing network of all existing local and regional bicycle facilities, both local and regional..
  2. **2035 RTP Regional Bicycle Network Projects.** This is the future planned network. It iIncludes the 2010 network plus all of the future planned bike projects that are listed inincluded on the RTP project list, including bike improvements that are part of roadway projects. (*Note: Not all gaps in the 2035 RTP bicycle network vision have projects identified in the RTP project list and some of the future projects improve areas outside the RTP bicycle network vision.)*

Regional Bicycle Parkway Concepts
  3. **Concept 1- Grid Network of Regional Bicycle Parkways.** Comprised of a grid of regional bicycle parkways spaced approximately every 2 miles north/south and east/west. Connecting to regional centers and areas of higher density employment and households is emphasized. The concept includes the 2035 network. This is the medium density concept.
  4. **Concept 2 – Spiderweb Network of Regional Bicycle Parkways.** Comprised of a spiderweb of regional bicycle parkways with connections to regional centers and areas of higher density employment and households emphasized. The concept includes the 2035 network. This is the densest bicycle parkway concepts. The spiderweb is comprised of long radials with circular connectors.
  5. **Concept 3 – Mobility Corridors.** Identifies at least one Regional Bicycle Parkway per regional mobility corridor. Mobility corridors that extend outside the urban growth boundary are not

included. The concept includes the 2035 network. This is the sparsest of the bicycle parkway network concepts.

Description of Proposed Regional Bicycle Parkway
The 2035 Regional Transportation Plan (RTP) included a new policy concept for the regional bicycle network, the "Regional Bicycle Parkway." These routes are intended to form the spine of the regional bicycle network, providing for direct and efficient travel with minimal delays in different urban environments and to destinations outside the region. The RTP introduced the concept but did not designate specific routes. It deferred to a future Active Transportation Plan to further develop the concept, including desired spacing, designation of routes and prioritization for implementation. Key experiential aspects that the bicycle parkways should embody:

- Comfort and safety provided by protection from motorized traffic
- Large volumes of cyclists traveling efficiently with minimal delays
- A green environment (some will already be green, while others will be made greener as part of bicycle parkway development, e.g. adding street trees, plantings or bioswales along the route)

The experience of the cyclist will be optimized to such a high level that people will clearly know when they are riding on a Regional Bicycle Parkway. The specific design of a bicycle parkway will vary depending on the land use context within which it passes through. The facility could be designed as an off-street trail along a stream or rail corridor, a cycle track along a main street or town center, or a bicycle boulevard through a residential neighborhood. Priority treatments will be given to cyclists (e.g. signal timing/priority) using the bicycle parkway when they intersect other transportation facilities, and connections to/from other types of bicycle routes will be intuitive.

Criteria to Evaluate the Bicycle Network Concepts
The following criteria were identified by the ATP Stakeholder Advisory Committee to evaluate the bicycle network concepts to aid in determining the best concept or combination of concepts for the principal regional bicycle network.

Criteria
Access: Improved access to destinations, including transit, schools, jobs, parks, social services, town centers, etc.
Equity: Providing access (see criterion above) to serve low income, minority, non-white, non-English speaking, youth (under 18), and elderly populations (over 65 and over)
Safety: Solves a safety problem, provides safe crossings, safety on high volume/speed roads.
Increased Activity: Measures the increase or decrease in the number of trips made by walking and bicycling. (Metro will evaluate this criterion using the Metro bicycle modeling tool.)

Comment [LSM1]: Include disabled

Process
Potential Regional Bicycle Parkways (e.g. the I-205 Trail, SW Barbur Blvd, etc) identified by Metro staff and the Stakeholder Advisory Committee are coded into Metro's bicycle modeling tool. Actual facilities and/or right-of-way are identified in order to use the modeling tool. While the ATP will propose a set of

Regional Bicycle Parkways, for the purposes of the evaluation the identified facilities and/or rights-of-way are proxies for the corridors where it is assumed a regional bicycle parkway is needed.

To test the impact of narrowing a roadway to accommodate an in-roadway bikeways, such as a cycle track, a lane was removed for some of the corridors on the Spiderweb and Mobility Corridor Concepts. No lanes were removed from the Grid concept to provide a comparison.

Decisions such as lane removal are generally made during the design phase of a project, and identifying a comprehensive and accurate list of roadways where lane removal is beyond the scope of the ATP project. Our approach is to identify a limited set of roadway corridors where we could reasonably assume that some lane removal or parking removal might be needed and/or feasible and compare the modeled results to roadways that did not have a lane removed. Some of the roadway corridors are present on at least two bicycle network concepts for comparison purposes.

Corridors with one auto travel lane replaced with bikeway
> 1. SW Barbur Blvd. (Remove lane from Mobility Corridor and Spiderweb, not on Grid)
> 2. SE Halsey, east of I-205 (Remove lane from Mobility Corridor and Spiderweb, not on Grid)
> 3. Troutdale Road/282nd. (Remove lane from Mobility Corridor and Spiderweb)
> 4. SE Foster to SE 172nd (Remove lane from Spiderweb)
> 5. SE Sandy to I-205 Trail (Remove lane from Spiderweb)
> 6. SE Tualatin Valley Hwy (Remove lane from Mobility Corridor and Spiderweb, not on Grid)
> 7. Hillsboro to Forest Grove (Baseline/Adair/Pacific) (Remove lane from Spiderweb, not Grid)
> 8. SE 172nd (Remove lane from Spiderweb, not Grid)

Evaluation Methodology

Access
1. The increase/decrease in the ease of access for bicycle trips by way of the bicycle network and roadway network. The Metro bicycle modeling tool will be used to measure the utility from Transportation Analysis Zones (TAZs) and Cycle Analysis Zones (CAZs) to regional destinations such as the CBD or, Regional Centers such as Gateway, Gresham, and Hillsboro, or large employers, e.g. OHSU, Intel. Higher utility, identified by a number, indicates better access from the identified TAZ or CAZ to the regional destinations. Metro will identify set of "to fromorigin-destination" trips, attached; t hat will be reviewed by the Stakeholder Advisory Committee.

2. Increase in bikeway density. Measures the number of new miles (compared to 2010 network) of bike lanes, bike boulevards and trails in each network concept. Metro will utilize the bicycle modeling tools and GIS to calculate the miles of new bicycle lanes, bicycle boulevards and, regional trails and cycletracks. The density the bicycle network in each concept will be calculated for each cycle analysis zone. A map will depict whether the facilities are improved existing or are new. Facilities such as buffered bike lanes and cycle tracks were not in existence in the region when the bicycle modeling tool was developed. These facilities will be identified (in the bicycle modeling tools) as having a similar comfort level as "bicycle boulevards" and will be included in

~~the mileage for bicycle boulevards~~. If possible, report out the mileage of mileage traveled on buffered bike lanes and cycle tracks separately from bicycle boulevards.

3. Bikeway connectivity for each of the network concepts will be calculated using GIS. The ratio of three-way or more intersections for the bikeway network concepts will be calculated. Bikeway connectivity for the existing bicycle network has already been calculated in Metro's Cycle Zone Analysis.

4. Increase in bicycle volumes on new parkway bridges that cross barriers such as rivers, freeways or railroads. Metro will utilize the bicycle modeling tool to calculate the bicycle volumes. The level of attractiveness for the new crossings to "attract" new bicycle trips will also be calculated.

~~3.~~5. Measure change in directness of trips and/or travel time savings~~?~~

Safety

~~Increase in bicycle volumes on new parkway bridges that cross barriers such as rivers, freeways or railroads. Metro will utilize the bicycle modeling tool to calculate the bicycle volumes. The level of attractiveness for the new crossings to "attract" new bicycle trips will also be calculated.~~

1. ~~Increased~~ Measures increased separation from roadway traffic. Using the bicycle modeling tool~~s~~, the percentage of miles of bicycle (and pedestrian) ~~trips~~ traveled made on ~~facilities separated from traffic such as~~ trails and ~~bicycle boulevards (~~cycle tracks ~~are coded as bicycle boulevards)~~ will be calculated and compared with the percentage of miles of each facility type.

~~1.~~2. Number of high crash locations/corridors that intersect with improvements to the bicycle network.

Equity

1. Increase in the miles of all new bicycle facilities and new bicycle parkways in U.S. Census block groups that have a higher than average percentage of low income, minority, non-English speaking, youth (under age 18) or elderly (over age 65) populations. Metro will use the demographic calculations developed in the Transportation Equity Analysis for the 2014-15 Regional Flexible Fund Allocation (RFFA). Using GIS, the miles of new facilities in each block group will be determined for each bicycle network concept. Since we cannot forecast the distribution of future populations by sub-group, the analysis will assume a distribution of population sub-groups similar to 2010 in the 2035 bicycle network concepts. Metro will assign an equity score to each of the network concepts based on the calculations.

Increased activity

1. Increase or decrease in the percentage of all trips made by bicycling and walking for the overall network concept and for some individual bicycle parkways. The bicycle modeling tool will be used to measure the change (decrease/increase) in mode share for all modes region wide by trip length for all types of trips under 12 miles. The calculations can be aggregated by CAZ.

2. Increase or decrease in the number of miles traveled by bicycle and foot for all types of trips. Using the bicycle modeling tool the change in VMT, BMT (bicycle miles traveled) and PMT

(pedestrian miles traveled), total and per person will be calculated. The calculations can be aggregated by CAZ.

3. Number of short trips made by bicycle and foot for all types of trips. Using the bicycle modeling tool, the percentage of trips under three miles and change in VMT, BMT, PMT under 3 miles will be calculated. The data can be aggregated by CAZ.

4. Average trip length on new bicycle parkways for all types of trips. Using the bicycle modeling tool, Metro will identify a few illustrative examples and compare to the overall average bike trip length. Helps answer the question, "do longer trails/seamless corridors allow longer trips to be made by bicycle?"

4.5. Calculate change in mode share by geographic areas used in the 2011 Oregon Household Activity Survey (e.g. CBD, city center minus CBD, inner east side, counties, other cities)

Potential Presentation of Evaluation Outcomes

1. Schematic representation of each bicycle network concept overlaid on 2035 bicycle network. Each map will include a matrix of the criteria with evaluation measure outcomes (e.g. increase in bicycle miles traveled, equity score, etc.).

2. Metro will explore the possibility of calculating the evaluation measures by cycle analysis zone (CAZ) and displaying the changes graphically by CAZ.

1.3. Map depicting whether the Regional Bicycle Parkways consist of improved existing facilities or are new.

4. Network flow maps. These maps provide a graphic representation of the modeled volume of bicycle trips on the bicycle network.

2.5. Maps of each regional center showing level of access (utility) from TAZs and CAZs

Metro | *Memo*

Date:	January 10, 2013
To:	ATP Stakeholder Advisory Committee (SAC)
From:	John Mermin and Lake McTighe, Metro
Subject:	UPDATED -Proposed Evaluation Methodology for Regional Bicycle Parkway Network Concepts

This memorandum outlines the criteria methodology for evaluating alternative regional bicycle network concepts.   For the Regional Active Transportation Plan a total of five regional bicycle networks will be evaluated using Metro's regional bicycle modeling tool and geographic information system (GIS). The intention of the evaluation is to understand the potential benefits and trade-offs of each alternative bicycle network concept. From the five alternative network concepts a preferred Principal Regional Bicycle Parkway Network will be identified. The Principal regional Bicycle Network will be comprised of Regional Bicycle Parkways, the highest functional classification of regional bikeways and will serve as the primary spine of the entire regional and local bicycle network. Other regional bikeways and local bikeways will connect into the spine.

Proposed Regional Bicycle Network Concepts to be Evaluated
Base concepts
1. **2010 Regional Bicycle Network.** This is the existing network of existing local and regional bicycle facilities.
2. **2035 RTP Bicycle Network Projects.** Includes the 2010 network plus future planned bike projects that are included on the RTP project list, including bike improvements that are part of roadway projects. (*Note: Not all gaps in the 2035 RTP bicycle network vision have projects identified in the RTP project list and some of the future projects improve areas outside the RTP bicycle network vision.*)

Regional Bicycle Parkway Concepts
3. **Concept 1- Grid Network of Regional Bicycle Parkways.** Comprised of a grid of regional bicycle parkways spaced approximately every 2 miles north/south and east/west. Connecting to regional centers and areas of higher density employment and households is emphasized. The concept includes the 2035 network. This is the medium density concept.
4. **Concept 2 – Spiderweb Network of Regional Bicycle Parkways.** Comprised of a spiderweb of regional bicycle parkways with connections to regional centers and areas of higher density employment and households emphasized. The concept includes the 2035 network. This is the densest bicycle parkway concepts. The spiderweb is comprised of long radials with circular connectors.
5. **Concept 3 – Mobility Corridors.** Identifies at least one Regional Bicycle Parkway per regional mobility corridor. Mobility corridors that extend outside the urban growth boundary are not

included. The concept includes the 2035 network. This is the sparsest of the bicycle parkway network concepts.

Description of Proposed Regional Bicycle Parkway
The 2035 Regional Transportation Plan (RTP) included a new policy concept for the regional bicycle network, the "Regional Bicycle Parkway." These routes are intended to form the spine of the regional bicycle network, providing for direct and efficient travel with minimal delays in different urban environments and to destinations outside the region. The RTP introduced the concept but did not designate specific routes. It deferred to a future Active Transportation Plan to further develop the concept, including desired spacing, designation of routes and prioritization for implementation. Key experiential aspects that the bicycle parkways should embody:

- Comfort and safety provided by protection from motorized traffic
- Large volumes of cyclists traveling efficiently with minimal delays
- A green environment (some will already be green, while others will be made greener as part of bicycle parkway development, e.g. adding street trees, plantings or bioswales along the route)

The experience of the cyclist will be optimized to such a high level that people will clearly know when they are riding on a Regional Bicycle Parkway. The specific design of a bicycle parkway will vary depending on the land use context within which it passes through. The facility could be designed as an off-street trail along a stream or rail corridor, a cycle track along a main street or town center, or a bicycle boulevard through a residential neighborhood. Priority treatments will be given to cyclists (e.g. signal timing/priority) using the bicycle parkway when they intersect other transportation facilities, and connections to/from other types of bicycle routes will be intuitive.

Criteria to Evaluate the Bicycle Network Concepts
The following criteria were identified by the ATP Stakeholder Advisory Committee to evaluate the bicycle network concepts to aid in determining the best concept or combination of concepts for the principal regional bicycle network.

Criteria
Access: Improved access to destinations, including transit, schools, jobs, parks, social services, town centers, etc.
Equity: Providing access (see criterion above) to serve low income, minority, non-white, non-English speaking, youth (under 18), and elderly populations (65 and over)
Safety: Solves a safety problem, provides safe crossings, safety on high volume/speed roads.
Increased Activity: Measures the increase or decrease in the number of trips made by walking and bicycling. (Metro will evaluate this criterion using the Metro bicycle modeling tool.)

Process
Potential Regional Bicycle Parkways (e.g. the I-205 Trail, SW Barbur Blvd, etc) identified by Metro staff and the Stakeholder Advisory Committee are coded into Metro's bicycle modeling tool. Actual facilities and/or right-of-way are identified in order to use the modeling tool. While the ATP will propose a set of

Regional Bicycle Parkways, for the purposes of the evaluation the identified facilities and/or rights-of-way are proxies for the corridors where it is assumed a regional bicycle parkway is needed.

To test the impact of narrowing a roadway to accommodate an in-roadway bikeways, such as a cycle track, a lane was removed for some of the corridors on the Spiderweb and Mobility Corridor Concepts. No lanes were removed from the Grid concept to provide a comparison.

Decisions such as lane removal are generally made during the design phase of a project, and identifying a comprehensive and accurate list of roadways where lane removal is beyond the scope of the ATP project.   Our approach is to identify a limited set of roadway corridors where we could reasonably assume that some lane removal or parking removal might be needed and/or feasible and compare the modeled results to roadways that did not have a lane removed. Some of the roadway corridors are present on at least two bicycle network concepts for comparison purposes.

Corridors with one auto travel lane replaced with bikeway
1. SW Barbur Blvd. (Remove lane from Mobility Corridor and Spiderweb, not on Grid)
2. SE Halsey, east of I-205 (Remove lane from Mobility Corridor and Spiderweb, not on Grid)
3. Troutdale Road/282nd. (Remove lane from Mobility Corridor and Spiderweb)
4. SE Foster to SE 172nd (Remove lane from Spiderweb)
5. SE Sandy to I-205 Trail (Remove lane from Spiderweb)
6. SE Tualatin Valley Hwy (Remove lane from Mobility Corridor and Spiderweb, not on Grid)
7. Hillsboro to Forest Grove (Baseline/Adair/Pacific) (Remove lane from Spiderweb, not Grid)
8. SE 172nd (Remove lane from Spiderweb, not Grid)

Evaluation Methodology

Access
1. The increase/decrease in the ease of access for bicycle trips by way of the bicycle network and roadway network. The Metro bicycle modeling tool will be used to measure the utility from Transportation Analysis Zones (TAZs) and Cycle Analysis Zones (CAZs) to regional destinations such as the CBD, Regional Centers such as Gateway, Gresham, and Hillsboro, large employers, e.g. OHSU, Intel. Higher utility, identified by a number, indicates better access from the identified TAZ or CAZ to the regional destinations. Metro will identify set of "origin-destination" trips, attached; that will be reviewed by the Stakeholder Advisory Committee.

2. Increase in bikeway density. Measures the number of new miles (compared to 2010 network) of bike lanes, bike boulevards and trails in each network concept. Metro will utilize the bicycle modeling tools and GIS to calculate the miles of new bicycle lanes, bicycle boulevards, trails and cycletracks. The density the bicycle network in each concept will be calculated for each cycle analysis zone. A map will depict whether the facilities are improved existing or are new. Facilities such as buffered bike lanes and cycle tracks were not in existence in the region when the bicycle modeling tool was developed. These facilities will be identified (in the bicycle modeling tools) as having a similar comfort level as "bicycle boulevards". If possible, report out

the mileage of mileage traveled on buffered bike lanes and cycle tracks separately from bicycle boulevards.

3. Bikeway connectivity for each of the network concepts will be calculated using GIS. The ratio of three-way or more intersections for the bikeway network concepts will be calculated. Bikeway connectivity for the existing bicycle network has already been calculated in Metro's Cycle Zone Analysis.

4. Increase in bicycle volumes on new parkway bridges that cross barriers such as rivers, freeways or railroads. Metro will utilize the bicycle modeling tool to calculate the bicycle volumes. The level of attractiveness for the new crossings to "attract" new bicycle trips will also be calculated.

5. Measure change in directness of trips and/or travel time savings

Safety
1. Measures increased separation from roadway traffic. Using the bicycle modeling tools, the percentage of miles of bicycle (and pedestrian) traveled made on trails and cycle tracks will be calculated and compared with the percentage of miles of each facility type.

2. Number of high crash locations/corridors that intersect with improvements to the bicycle network.

Equity
1. Increase in the miles of all new bicycle facilities and new bicycle parkways in U.S. Census block groups that have a higher than average percentage of low income, minority, non-English speaking, youth (under age 18) or elderly (over age 65) populations. Metro will use the demographic calculations developed in the Transportation Equity Analysis for the 2014-15 Regional Flexible Fund Allocation (RFFA). Using GIS, the miles of new facilities in each block group will be determined for each bicycle network concept. Since we cannot forecast the distribution of future populations by sub-group, the analysis will assume a distribution of population sub-groups similar to 2010 in the 2035 bicycle network concepts. Metro will assign an equity score to each of the network concepts based on the calculations.

Increased activity
1. Increase or decrease in the percentage of all trips made by bicycling and walking for the overall network concept and for some individual bicycle parkways. The bicycle modeling tool will be used to measure the change (decrease/increase) in mode share for all modes region wide by trip length for all types of trips under 12 miles. The calculations can be aggregated by CAZ.

2. Increase or decrease in the number of miles traveled by bicycle and foot for all types of trips. Using the bicycle modeling tool the change in VMT, BMT (bicycle miles traveled) and PMT (pedestrian miles traveled), total and per person will be calculated. The calculations can be aggregated by CAZ.

3. Number of short trips made by bicycle and foot for all types of trips. Using the bicycle modeling tool, the percentage of trips under three miles and change in VMT, BMT, PMT under 3 miles will be calculated. The data can be aggregated by CAZ.

4. Average trip length on new bicycle parkways for all types of trips. Using the bicycle modeling tool, Metro will identify a few illustrative examples and compare to the overall average bike trip length. Helps answer the question, "do longer trails/seamless corridors allow longer trips to be made by bicycle?"

5. Calculate change in mode share by geographic areas used in the 2011 Oregon Household Activity Survey (e.g. CBD, city center minus CBD, inner east side, counties, other cities)

Potential Presentation of Evaluation Outcomes

1. Schematic representation of each bicycle network concept overlaid on 2035 bicycle network. Each map will include a matrix of the criteria with evaluation measure outcomes (e.g. increase in bicycle miles traveled, equity score, etc.).

2. Metro will explore the possibility of calculating the evaluation measures by cycle analysis zone (CAZ) and displaying the changes graphically by CAZ.

3. Map depicting whether the Regional Bicycle Parkways consist of improved existing facilities or are new.

4. Network flow maps. These maps provide a graphic representation of the modeled volume of bicycle trips on the bicycle network.

5. Maps of each regional center showing level of access (utility) from TAZs and CAZs

Proposed trip pairs to measure change increased access for bicycles (measured by utility between zone pairs)

Note - the Stakeholder Advisory Committee will give us feedback and edit these

CAZ origin	CAZ Name	CAZ destination	CAZ Name	2035 Total daily person trips (under 10 miles)	Relevant RTP Mobility Corridor
12	SW Portland-Hillsdale/Multnomah Village	11	Portland -Downtown/Nob hill/S.Waterfront	69,995	2-Central City to Tualatin
31	NE Portland-Inner	11	Portland -Downtown/Nob hill/S.Waterfront	68,525	1-Central City to Vancouver & 5-Central City to Gateway *(somewhat)*
30	SE Portland-Inner	31	NE Portland-Inner	57,585	1-Central City to Vancouver *(somewhat-misses SE)*
14	Beaverton-South/Aloha-South	7	Beaverton-North	56,204	19-Beaverton to Tigard
31	NE Portland-Inner	30	SE Portland-Inner	53,388	1-Central City to Vancouver *(somewhat- misses SE)*
30	SE Portland-Inner	11	Portland - Downtown/Nob Hill/S.Waterfront	52,677	5-Central City to Gateway & 10-Central City to Milwaukie *(somewhat)*
16	Tigard	13	Beaverton-East/Raleigh Hills/Wash Sq RC	51,697	19-Beaverton to Tigard
11	Portland - Downtown/Nob Hill/S.Waterfront	31	NE Portland-Inner	48,363	1-Central City to Vancouver & 5-Central City to Gateway *(somewhat)*
40	Happy Valley	27	Milwaukie-North/Clackamas RC	41,882	11-Milwaukie to Clackamas & 12-I-205 to Rock Creek Jct
8	Bethany	7	Beaverton-North	41,080	*Not captured*
38	Outer East Portland / W.Gresham	45	Central Gresham / W.Village/Fairview	39,103	6-Gateway to Troutdale/W.Village/Fairview
14	Beaverton-South/Aloha-South	13	Beaverton-East/Raleigh Hills/Wash Sq RC	37,808	*Not captured*
8	Bethany	5	Hillsboro-North	37,074	22-Beaverton to N.Plains
26	Milwaukie-Downtown/Oak Grove/Gladstone	27	Milwaukie-North/Clackamas RC	36,936	8-Oregon City to Gateway
10	Forest Park	11	Portland - Downtown/Nob Hill/S.Waterfront	35,841	21-Central City to Beaverton
45	Central Gresham / W.Village/Fairview	38	Outer East Portland / W.Gresham	34,881	6-Gateway to Troutdale/W.Village/Fairview
11	Portland -Downtown/Nobhill/S.Waterfront)	30	SE Portland-Inner	33,340	5-Central City to Gateway

2040-based TAZ aggregations

Origin	Destination	Interesting reason to analyze this pair
Hillsboro RC	Beaverton RC	
Tanasbourne RC	Beaverton RC	
Tigard TC	Beaverton RC	
All TAZs (outside CC)	Central City	
Beaverton RC	Central City	Impact of Hwy 26 trail into central city
Gateway RC	Central City	Impact of Sullivan's gulch trail
Hollywood TC	Central City	Impact of Sandy Blvd cycle track
Lents TC	Central City	Impact of Foster Cycle track
Milwaukie TC	Central City	

St Johns TC	Central City	
Tigard TC	Central City	Impact of Barbur cycle track
Milwaukie TC	Clackamas RC	
Oregon City RC	Clackamas RC	
Hillsboro RC	Forest Grove TC	
Gresham RC	Gateway RC	
Gateway RC	Gresham RC	
Beaverton RC	Hillsboro RC	
Forest Grove TC	Hillsboro RC	
Beaverton RC	Intel	
Hillsboro RC	Intel	
Milwaukie TC	Lake Oswego TC	
Lake Oswego TC	Milwaukie TC	Impact of new willamette bridge between LO and Milwaukie
Beaverton RC	Tanasbourne RC	
St Johns TC	Tanasbourne RC	Impact of St Johns bridge and Westisde trail through Forest Park
Beaverton RC	Tigard TC	
Lake Oswego TC	Tualatin TC	
Tigard TC	Tualatin TC	
Wilsonville TC	Tualatin TC	Impact of Tonquin trail
Lake Oswego TC	Washington Sq RC	
Tigard TC	Washington Sq RC	
Tualatin TC	Wilsonville TC	Impact of Tonquin trail

Active Transportation Plan | Stakeholder Advisory Committee Meeting
Pedestrian and Bicycle Network Concepts
3:00-5:00 p.m., Nov. 15, 2012

SAC Members present: Brad Choi, Hillsboro
                              Rob Sadowsky, Bicycle Transportation Alliance
                              Lidwien Rahman, ODOT
                              Todd Borkowitz, Citizen Rep.
                              Lori Mastrantonio-Meuser, Clackamas County
                              Hal Bergsma, Tualatin Hills Parks and Recreation
                              Suzanne Hansche, Elders in Action
                              Kate McQuillen, Multnomah County
                              Jeff Owen, TriMet
                              Shelley Oylear, Washington County
                              Roger Geller, PBOT
                              Stephanie Routh, Willamette Pedestrian Coalition

SAC Members absent: Allen Berry, Fairview
                              Derek Robbins, Forest Grove
                              Jose Orozco, Cornelius
                              Katherine Kelly, Gresham
                              Aaron Brown, The Intertwine
                              Allen Schmidt, Portland Parks and Recreation

Metro staff and guests present: Lake McTighe, John Mermin, Robert Spurlock

Principles
SAC members reviewed the updated principles and criteria.
- Hal Bergsma suggested adding a principle to take advantage of natural & man-made corridors where they exist, e.g. power lines, stream corridors, rail corridors, inventory them
- Roger Geller, Jeff Owen, Lidwien Rahman– Seems like more of an implementation strategy than a principle.
- Lori Mastrantonio likes idea.
- Shelly - Consider moving principle #4 to implementation strategies (buffers from traffic are provided on routes with high traffic volumes or speeds)
- Roger and Jeff agreed.
- Consider making a new policy – when a large project is built, make sure it includes active transportation, e.g. Milwaukie LRT
- Policies vs requirement – are two different ways of implementing principles. Staff will make recommendations on broad policies for RTP and specific requirements for RTFP (e.g. TSPs shall include an inventory of man-made and natural corridors for potential bike and pedestrian trails).

- Stephanie Routh suggested that a policy on scaleability, that certain routes need to be wider in order to meet regional mode share targets (which we might recommend to more ambition than adopted target (tripling biking/walking/transit) and to accommodate both bike and pedestrian travel comfortably.
- Shelley stated she felt this was captured in principle #9. Lidwien stated that the data does not dictate standards and that a policy or standard tied to regional performance that referenced data would be good.
- Robert Spurlock noted that FHWA has a tool that provides guidance on how wide a trail should be (based on counts/demand) and stated that he would share it.
  Note: Link to FHWA study on emerging needs for greater shared trail width
  http://www.fhwa.dot.gov/publications/research/safety/04104/index.cfm
- Roger Geller noted that it would be good to have a standard to build facilities that would help achieve a desired mode split.
- Lake McTighe mentioned the Secretary Ray LaHood's office had issued recommendations for bike and ped design included recommendations for building to address future need and demand. Link to policy statement http://www.fhwa.dot.gov/environment/bicycle_pedestrian/overview/policy_accom.cfm
- Shelley Oylear mentioned AASHTO guidance for 2-way multi-use trails – 14 ft minimum
- Lidwien – need a standard for the region.

Regional Pedestrian Network Concept
SAC members reviewed the draft map of the regional districts and corridors. The map included large employers with over 500 employees, colleges and universities.
- Hal Bergsma noted that we should confirm that all 2040 Main Streets are included within the "mixed-use corridors" shown on the RTP ped system map. It appears to be the case, but we should double check since Hal saw a main street missing in the Bethany area.
- Rob Sadowsky asked if it made sense to overlap the network with zoning to get at where there would be more demand for pedestrian activity.
- Lidwien noted that it will be up to local jurisdictions and TSPs to make the last mile connections.
- Jeff Owen raised the question that the vision for the pedestrian network does not seem clear. He noted that it seems to include everything.
- Should there be a primary and secondary tier for the pedestrian network or a functional class?
- Where should the high-priority areas be for the regional pedestrian network: Hal B. stated that the higher density mixed-use area (town centers, regional centers, station communities to lesser extent). Industrial campuses should be much lesser in priority.
- Rob. S. suggested adding a health impact – focus on areas with higher levels of disease, etc.
- Jeff & Shelly – Don't add park access as equivalent to other destinations from regional transportation perspective.
- However, we will map the parks and include them in our analysis.
- Lake stated that we were not yet to the stage of prioritizing – we needed to determine what the network is, what is included in the evaluation. The suggestions for how to prioritize and filter comes next. The ped districts and corridors are already a way to prioritize since they leave out areas of the region.

Regional Bike Parkway Network Concepts
John Mermin walked through each of the bike parkway network concepts (Grid, Spiderweb, Mobility Corridors)
- Don't confuse bike functional class, with prioritization. (that step comes later).
- We could end up with a concept that's as dense as the grid/spiderweb, but prioritizes a sparer network for implementation

- Lori – add 129th corridor in H.Valley to the grid concept to meet 2-mile spacing
- BTA can provide input based on the feedback they are hearing from public outreach on the big projects needed regionwide.
- What's possible along a corridor changes over time
- Be judicious about where you take away motor vehicle lanes when doing modeling. Evaluate on case-by-case basis. *Note: To test the effect of removing a lane on bicycle ridership staff determined to test a few corridors, primarily those that appear on more than one concept. No lanes would be removed from the Grid concept for comparison purposes. See bike evaluation methodology memo.*
- Roger - From Portland's experience (and others around the world) , you need to take space away from autos to create the width for world-class designs
- Rob – the concepts look good.
- The mobility corridors does not seem adequate
- Roger- Show travel time changes with the model for the different alternatives.
- Lori - There is a gap in Happy Valley
- Shelley- The network needs to be dense.
- Shelley- Important to accommodate pedestrians on major streets, but Sometimes the main bike route can be a parallel route on a lower volume street.
- Shelley- Would be good to look at the projects in the RTP to see what is prioritized there and where there is lane widening – good to take advantage of for separated in-roadway.
- Hal - #3 (mobility corridors) does not take advantage of trails
- Jeff. There are less routes on#3 so it will not show up as well on the evaluation. (Will cost less)
- Provide feedback by 11/28 (Wednesday after Thanksgiving).

SAC Workgroup Members
Brad Choi, Hillsboro
Lidwien Rahman, ODOT
Todd Borkowitz, Citizen Rep.
Lori Mastrantonio-Meuser, Clackamas County
Hal Bergsma, Tualatin Hills Parks and Recreation
Kate McQuillen, Multnomah County
Jeff Owen, TriMet

Metro staff and guests present:
Lake McTighe, John Mermin, Robert Spurlock, Anthony Buczek, Kim Voros (Alta Planning)

SAC workgroup members walked through the draft memo prepared by Alta Planning and Design and Metro. Kim Voros from Alta attended the meeting to answer questions about the proposed methodology used.

Page 2 of the Alta memo, Access criteria: Lidwien Rahman raised the question of whether the NAICS code data, which provides a very rich set of data on the location of a wide range of services, businesses, government agencies, etc. was too detailed for the regional analysis. She noted that including so many destinations would make it difficult to prioritize investments.

She referred to earlier SAC discussions on developing a set of "regional destinations" (see Oct. 18 meeting notes). At the Oct. 18 meeting SAC had discussed defining destinations similar to those in Metro's High Capacity Transit analysis (which determined by size and population served (e.g. colleges and universities but not high schools, no grocery stores, etc), but adding transit stops and parks. But the decision on what type of destinations and how to filter them, if at all, was not finalized.

Lake McTighe asked the workgroup if there was a preference for using the NAICS data versus a defined set of "regional destinations". She noted that defining destinations was tricky (determining which parks are regional, for example, has still not been fully agreed upon). Brad Choi stated that it was difficult to say without really knowing what the outcomes of the analysis would be. Kim Voros stated that it could be possible to run a "proof of concept" analysis and compare access using the NAICS data and access to a limited set of regional destinations (yet to be agreed upon). Lake replied that Metro would consider the possibility of providing a "proof of concept" analysis for the SAC to consider.

Todd Borkowitz noted that civic destinations should be included in the analysis. The workgroup noted that only High Frequency Transit bus stops should be included as a destination. Lori Mastrantonio mentioned Clackamas Counties Opportunity Mapping and asked if the analysis would be similar to that. Lake said yes it would be similar in that it would identify the concentrations services and destinations. The analysis would then measure the ease of pedestrian access to those areas.

Page 3, key assumptions for Access criteria: Lake clarified that a network buffer would be drawn around LRT stations to provide for "station communities"(which are included as pedestrian districts); ½ mile buffers will also be drawn around corridors, trails and pedestrian districts.

Page 4, Equity criteria: Steph Routh noted that it is important here to show access of equity populations to destinations.

Page 5, Safety criteria: Lake noted that she felt that the measurement of safety was lacking since it is difficult to determine if safety has actually improved. Anthony Buczek replied that number of crossings was a good measure of improved safety. Metro's state of safety report found that crossing barrier streets was one of the most dangerous locations for pedestrians.

Lake referred the workgroup to the memo "*proposed improvements for evaluating the regional pedestrian network"* and to the proposed methodology for automating crossing improvements to the network (project to improve the pedestrian network are not currently digitized).

A question was raised if a crossing every 530 ft was too aggressive. Anthony explained that making people walk further than 530 feet for a protected crossing on a barrier street results in a level of service of "F" for pedestrians and discourages walking. The workgroup agreed to the crossing methodology.

It was suggested that the location of pedestrian crashes be added to the maps. In order to help understand if using visual analysis

Metro memo on "*Proposed improvements for evaluating the regional pedestrian network":*
- It was suggested that a map of the proposed improvements would be helpful
- Lake agreed, stated that the main objective in reviewing the memo was not on whether these were the exact, correct investments/projects, but to get agreement on the proposed approach on how to identify and add improvements to the network
- Lidwien suggested identifying non-paved trails separately from paved trails.
- Lidwien reminded that it was agreed to add parkways or a parallel route to the ped network.
- Mel Huie asked if the McLouglin Trail and Milwaukie LRT/Clinton St. Path would be added to the bicycle parkways list. (*Yes)*
- Lidwien asked if the Barbur Bridges were included (*they are included – the RTP project does not identify ped/bike as a mode served, but the project description does).*
- It was suggested to look at the STIP Enhance applications for other potential project improvements.

MEETING SUMMARY
Active Transportation Plan | SAC Bicycle Workgroup
Bicycle Network Concepts Evaluation Methodology
December 6, 2012, 4-5 p.m., Metro Regional Center

SAC Workgroup Members:
Brad Choi, Hillsboro
Lidwien Rahman, ODOT
Roger Geller, Portland
Todd Borkowitz, Citizen Rep.
Lori Mastrantonio-Meuser, Clackamas County
Hal Bergsma, Tualatin Hills Parks and Recreation
Kate McQuillen, Multnomah County
Jeff Owen, TriMet
Shelley Oylear, Washington County

Metro staff and guests present: Lake McTighe, John Mermin, Anthony Buczek, Robert Spurlock, Mel Huie, Metro

Workgroup members discussed the evaluation approach and measures proposed by Metro and outlined in the draft memo "Proposed Evaluation Methodology for Regional Bicycle Network Concepts"
Main points are listed below and highlighted in track changes in the memo.

- Clarify that the "2010 and 2035 RTP Regional Bicycle Networks" include all existing bicycle facilities not only those identified as "regional".
- Is it possible to include disabled in the equity measurement? (this would apply to pedestrian analysis also.) Metro will look into using TriMet LIFT data.
- Can we measure directness of trips and the change in (# of bike miles traveled, length of trip, time trip takes)?
- Origin-Destination pairs – can you show how much difference between the directness of trips in the different scenarios changes?
- Metro will develop draft list of origins and destinations.
- Do the different scenarios have different trip times between the same O/D pairs?
- Can we identify which corridors are trails, cycle tracks, bike blvds? *Yes*
- Safety measure #1 seems to be more of an access measure. *Moved*
- Add the # of high crash locations to the maps, add as safety measure.
- How to weight the factors?
  - e.g. safety was weighted highest in recent Washington County process that did a survey asking citizens which criteria that cared about the most
- For increased activity criteria break out by trip purpose.
- Can model display results by geographic location of household? – e.g. Districts – inner Portland east of I-205, West Portland, etc. similar to how OHAS results were recently presented? *yes*
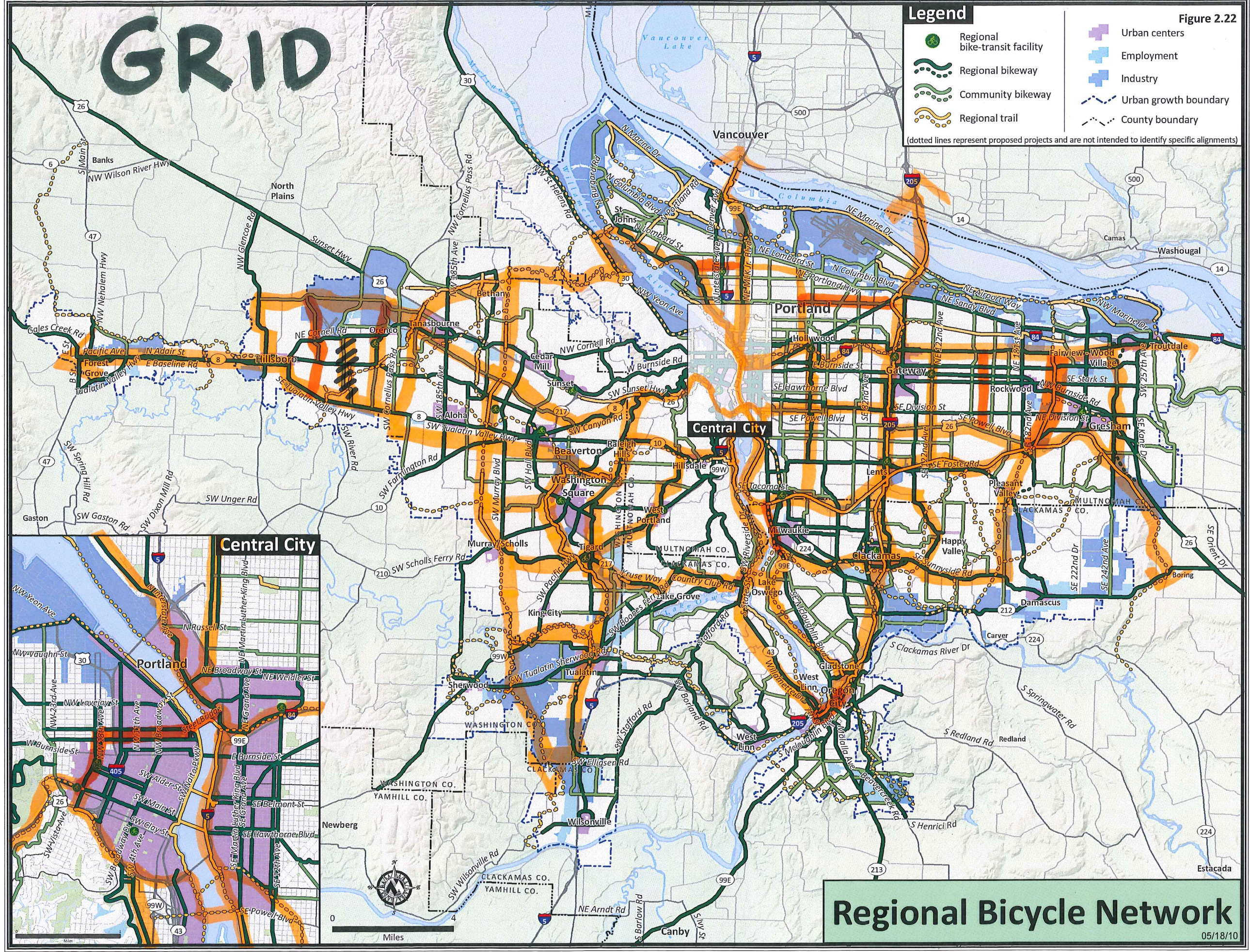
MOBILITY CORRIDORS

Legend

- Regional bike-transit facility
- Regional bikeway
- Community bikeway
- Regional trail
- Urban centers
- Employment
- Industry
- Urban growth boundary
- County boundary

(dotted lines represent proposed projects and are not intended to identify specific alignments)

Figure 2.22

Central City

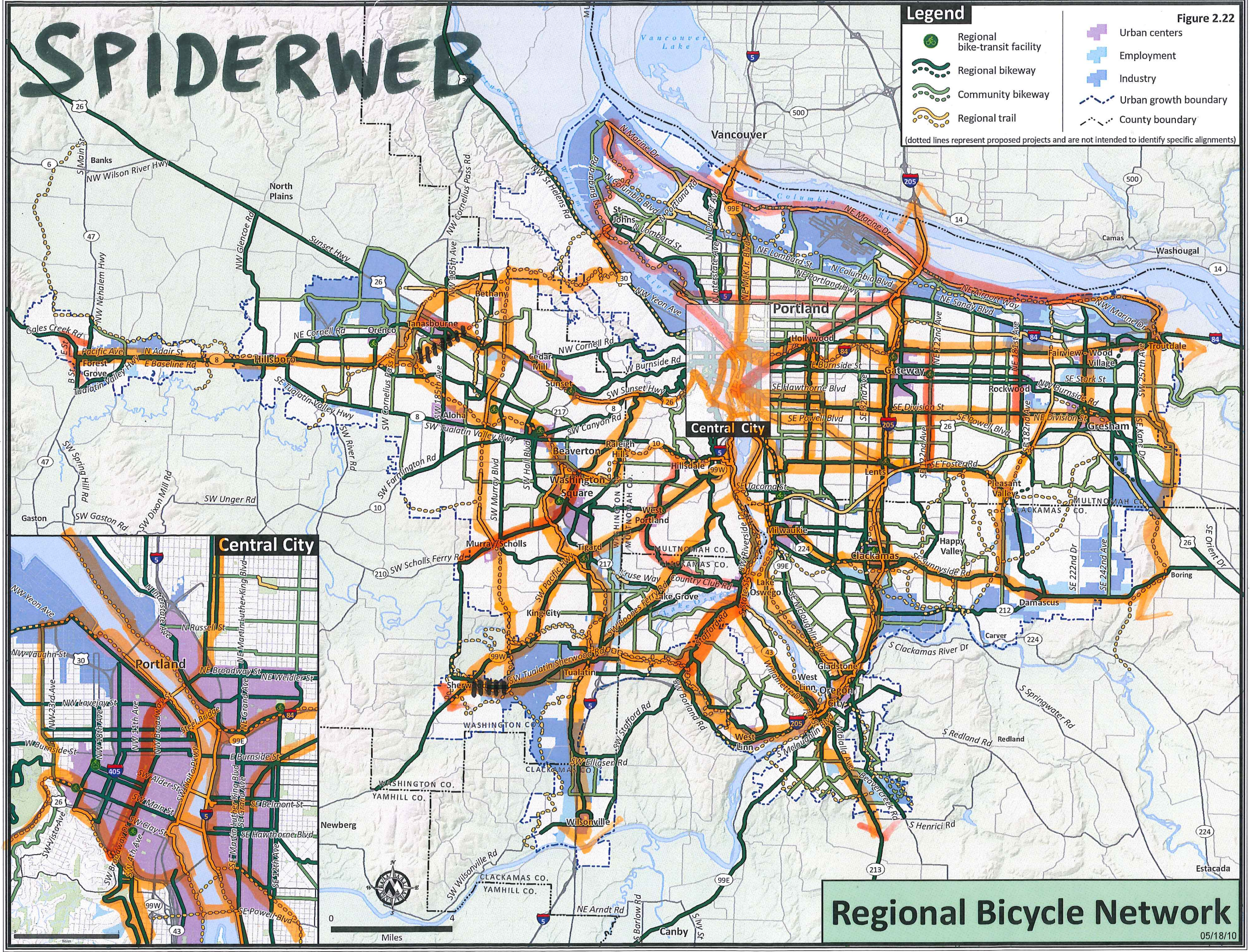## Regional Bicycle Network

05/18/10

GRID

Legend

- Regional bike-transit facility
- Regional bikeway
- Community bikeway
- Regional trail
- Urban centers
- Employment
- Industry
- Urban growth boundary
- County boundary

(dotted lines represent proposed projects and are not intended to identify specific alignments)

Central City

Portland

Regional Bicycle Network

0   4
Miles

05/18/10

SPIDERWEB

Legend

- ● Regional bike-transit facility
- ∿ Regional bikeway
- ∿ Community bikeway
- ∿ Regional trail

- Urban centers
- Employment
- Industry
- — · — Urban growth boundary
- — ·· — County boundary

(dotted lines represent proposed projects and are not intended to identify specific alignments)

Central City

Regional Bicycle Network

05/18/10

METRO

Regional Active Transportation Plan
Meetings & Milestone Calendar
Updated December 20, 2012 – Subject to Change

Phase 1: Existing Conditions/Frame Choices, JAN-JUNE 2012
Existing conditions analysis, Findings Report drafted

Phase 2: Develop Network Concepts/Select Alternative, JULY-DEC 2012
July - August –Sept - Set direction for development of network concepts, AT principles and criteria
July 19 – Stakeholder Advisory Committee meeting, review Existing Conditions Report
July 26- Metro Councilor Liaison check in, overview of findings, next steps
Sept 4 – Metro Council Worksession, existing conditions findings
Sept 6- Stakeholder Advisory Committee meeting, existing conditions revisions, criteria/principles
Sept 27- Stakeholder Advisory Committee Workgroup to develop principles and criteria

October –Draft bike and ped network concepts, develop evaluation criteria
Oct 4 – Executive Council for Active Transportation, Existing Conditions findings/funding update
Oct 18 – Stakeholder Advisory Committee, intro to network concepts/refine principles and criteria
Oct 25 – Intertwine Active Transportation Workshop

November – Continue to develop and receive feedback on Network Concepts/Evaluation Criteria
Nov 6 &7 – Stakeholder Advisory Committee Workgroups on bike and ped network concepts
Nov 15 - Stakeholder Advisory Committee meeting, network concepts/principles and criteria
Nov 29 –WCCC TAC, project update

December – Confirm evaluation methodology, begin evaluation of bike and ped networks
Dec 5 &6 – Stakeholder Advisory Committee Workgroups, evaluation methodology
Dec 18 –CTAC, project update

Phase 3: Identify Priorities/Implementation Plan, JAN-JUNE 2013
January – Evaluate and model alternative networks
Jan 2 – EMCTC TAC, project update
Jan 10 – Stakeholder Advisory Committee meeting, evaluation methodology and initial findings
Jan 29 – Metro Council worksession, initial findings of evaluation, direction on network concepts
Jan 30 – Regional Trails Qtly Forum

February – Evaluate and model alternative networks
*Feb 14 – Stakeholder Advisory Committee meeting, evaluation progress
Feb 22 – Executive Council for Active Transportation meeting

March – Report on evaluation of bike and pedestrian network alternatives
*March 15- Stakeholder Advisory Committee, evaluation results, funding and phasing

*Denotes that meeting date is tentative

April – Stakeholder outreach, Select preferred alternative, priority bundles and phasing strategy
Early April – Public engagement/open house for project
All month - Targeted stakeholder outreach, coordinating committees, bike/ped/freight/trail groups, etc.
Early April – One on one meetings with trail and transportation planners
Metro Council - Review proposed phased priorities, funding strategies
*April 9 – Metro Council worksession
April 23&24 – Oregon Active Transportation Summit, Salem
*April – Joint JPACT/MPAC summit, active transportation elements
*April 24 – Executive Council for Active Transportation (meeting at 2013 OATS)
*April 25 - Stakeholder Advisory Committee meeting, proposed phased priorities, funding strategies
*April 26 – TPAC, project update

May – Finalize draft of final plan, priority bundles and phasing strategy
*May 1 – MTAC, project update
May 15 & 16 – Stakeholder Advisory Committee workgroups

June – Adoption of plan
*June 5 – MPAC, presentation on plan
*June 6 – JPACT, presentation on plan
*June 13 – Executive Council for Active Transportation
*June 20 - Metro Council meeting, vote to adopt ATP and proposed amendments to RTP and RTFP

*Denotes that meeting date is tentative