

MEMORANDUM

**Date:** July 13, 2012

**To:** Seattle Bicycle Advisory Board

**From:** SDOT, Policy & Planning Division

**Subject:** **Bicycle Master Plan Update: High Priority Area/Corridor Analysis Methodology – Background and Context**

**Introduction**

The Bicycle Master Plan (BMP) update presents an opportunity to include fast-evolving best practices and new thinking in bicycle facilities, safety, and design that will result in an even more connected bicycle network for all Seattle residents wishing to ride a bike. Part of the scope of work for the update process includes developing a more robust process to identify areas of greatest need and priority for bicycle facilities. The purpose of this document is to summarize the Pedestrian Master Plan (PMP) high priority area analysis and project prioritization methodology and Transit Master Plan (TMP) corridor evaluation methodology. The work done on these two earlier modal master plans provides some context and lessons learned as staff develops the BMP high priority area/corridor analysis methodology.

**Pedestrian Master Plan (PMP) High Priority Area Analysis and Prioritization Methodology**

The strategy for prioritizing projects accounts for both the quality of the pedestrian environment and potential pedestrian activity levels. It is intended to focus resources in areas where conditions are difficult and where people may need to be able to walk the most. Other inputs were also used, such as socioeconomic and health factors. The strategy includes a systematic citywide analysis of existing and future needs and project prioritization.

**Steps in the High Priority Area analysis****Step 1 – Base Analysis**

**1a. Potential Pedestrian Demand** – identified existing destinations that are most likely to generate pedestrian traffic. These include transit stations, parks, schools, grocery stores, libraries, and other land uses. The demand analysis acknowledged that not all pedestrian generators generate the same levels of pedestrian activity and accounted for the distance people are willing to walk to and from different types of destinations. The analysis also factored in that the walking distances are not the same for all generators. The demand analysis accounted for the differences by weighting the various types of uses and the buffers around them.

The potential pedestrian demand map reflects the different amounts of pedestrian activity that are anticipated in different parts of the city.

**1b. Equity** – accounted for socioeconomic and health factors such as lower rates of car ownership and higher rates of diabetes and obesity. This step prioritized pedestrian improvements in areas that serve community residents with the greatest needs. The socioeconomic and health categories were broken into five quantiles – the top quantile for each category received five points – there were thirty possible points and the highest point value received was thirty.

**1c. Corridor Function** – street types were also factored into the prioritization analysis. All street type categories were given a weighted value, based on character of the street and its contribution to the pedestrian network. The higher points allocated are focused on the streets designed with a focus on vehicles (25 points – regional connectors, commercial connectors, and local connectors), as often these streets could potentially provide more direct pedestrian access, but may not currently support pedestrian movement.

## **Step 2 – High Priority Areas**

The results of the potential pedestrian demand, equity and corridor function analyses were combined together in order to identify High Priority Areas throughout the city. The combination of analysis completed the high priority area analysis process. The different factors were weighted in the following manner:

- Potential pedestrian demand – measured vibrancy and contributed to 40% of the total score.
- Socioeconomic and health analysis – measured equity and contributed to 35% of the total score.
- Corridor function analysis – measured land-use and transportation and contributed to 25% of the total score.

## **Step 3 – Improvement Opportunities Assessment**

After the high priority area analysis was completed, the next step (step 3) moved forward with an improvement assessment. The analysis looked at conditions both “Along the Roadway” and “Crossing the Roadway.” The assessment included variables that contribute to the pedestrian environment, such as posted speed limit, width of street, presence of traffic signals, curb ramps, sidewalks, physical buffer – parking lane or planter strip – and crosswalks. Point values were assigned to all roads and intersections to capture a combination of the variables. The analysis provided a measure of quality of the existing physical environment along and crossing the roadway, based on:

- Along the Roadway – a road with the higher number of total points indicated that it is more uncomfortable to walk along than a road with a lower number of total points.
- Crossing the Roadway – points were assigned to characteristics that negatively impact crossing conditions. An intersection with a higher number of total points indicated that it is more difficult to cross than an intersection with a lower number of total points.

## **Step 4 – Development of project lists and prioritization**

The potential demand and needs assessments were combined to focus resources in areas where conditions are difficult and where people may need to be able to walk the most. The composite ranking accounted for both the quality of the pedestrian environment (supply) and anticipated pedestrian activity levels (demand). The primary project list included streets and intersections in the highest tier of Along the Roadway and Crossing the Roadway analyses that occurred within the highest tier of the High Priority Area map.

## **Transit Master Plan (TMP) Corridor Evaluation Framework**

For the recently adopted Transit Master Plan, three evaluation stages were used to identify and evaluate corridors, resulting in prioritization of corridors into top tier and second tier corridors and development of capital investment recommendations for both tiers.

**Stage I: Corridors** – the assessment of corridor potential were based on the previously identified Urban Village Transit Network (UVTN) corridors and performance, KC Metro route structure and Strategic Plan, RapidRide Planning, and street network and classification. Existing ridership, ridership potential and future ridership potential, service to transit dependent, low-income populations, and generator strength were other criteria that was used in the assessment. The Stage I process narrowed an initial set of potential corridors to 15 citywide priority corridors for more detailed analysis in Stage II, and developed a framework for prioritizing capital, operating, and supporting programmatic improvements to transit in those corridors. In addition, several Center City corridors analyzed in Stage I performed extremely well and were analyzed in a separate track from the citywide corridors.

**Stage II: Evaluation** – the intent was to determine which of the 15 priority corridors should be evaluated for high capacity transit (HCT) investments and which should be evaluated for priority bus improvements. Corridor performance was analyzed for each evaluation account by evaluation criteria, methods, and weights. The criterion includes community, economy, social equity, environment justice, and efficiency which totaled a score of 20 points. In Stage II, a Multiple Account Evaluation (MAE) process, which consists of raw scores, weighted measures, normalized scores and weighted accounts was utilized to evaluate corridors in detail, and to prioritize the corridors.

**Stage III: Corridor Ranking** – the project team conducted an evaluation of mode options for HCT corridors. HCT corridors were analyzed for mode, feasibility, greenhouse gas reduction, time travel savings, potential ridership, and cost. Stage III of the evaluation analyzed mode options for the top priority corridors and conducted a detailed analysis of these corridors; enhancement options were also analyzed for the second tier corridors.

## **Bicycle Master Plan High Priority Area/Corridor Analysis Methodology**

After assessing both the PMP and TMP analysis methodologies, SDOT and the consultant team believe that working with and modifying the PMP analysis methodology model is more applicable for the BMP high priority area/corridor process. Pedestrians and people who ride bicycles both have more flexibility in their travel mode, as they do not have a “fixed” structure or pre-determined routes as transit does. The TMP also had the ability to forecast ridership data, which was heavily used within their analysis, whereas the bicycle counts (similar to pedestrian counts), are much less detailed and infrequent to allow for extensive forecasting. The potential BMP framework, below, is

based on ground work laid out by the Pedestrian Master Plan and could potentially incorporate ideas from the Transit Master Plan corridor evaluation. One of the common denominators that both plans used as a part of the assessment is equity inputs, the BMP methodology will also incorporate an equity analysis.

### Description of High Priority Area/Corridor Analysis in the BMP Update Project Scope of Work

The BMP scope of work identified a process that will identify areas of the city where bicycle facilities are most needed. Analysis will be performed regarding potential demand (where people do or want to ride), equity (people most likely to need to use a bicycle as a mode of transportation), and corridor assessment (which areas are best suited for cyclists of varying experience levels).

#### **Step 1 – Base Analysis**

- Potential Bicycle Demand
- Equity Analysis
- Corridor Assessment

**1a. Potential Bicycle Demand** – intended to evaluate existing and future demand for a variety of existing and potential users (commuter and recreational cyclists, women, families, etc) and incorporate relevant inputs that will help account for potential demand based on users generators (land uses that have the potential to generate cyclists traffic). Some examples of land use destinations (data inputs) that we may want to consider are Universities and Colleges, High Capacity Transit stations, and Parks.

**1b. Equity Analysis** – intended to identify opportunities to enhance bicycle network connections to potentially underserved populations (minorities, seniors, youth, lower income, etc) and incorporate relevant inputs that will help account for demographic data. Some socioeconomic (data inputs) that we may want to consider are census tracts for low car ownership, low income, age, minority populations.

**1c. Corridor Assessment** – intended to assess the function of street corridors for bicycling based on factors such as motor vehicle volumes and speeds, bicycle counts, bicycle-involved collisions, and roadway characteristics (slope, number of lanes, lane widths, block lengths, and intersection controls).

**Step 2 – High Priority Areas/Corridors** – represents a synthesis of Step 1 analysis and will establish areas of priority for bicycle related infrastructure needs throughout the city. The summary will include both maps and textual narratives describing key analysis findings, results, and implications to the BMP update.

#### SBAB Input

The BMP project team will be providing the SBAB with information on the outline for the proposed BMP update High Priority Area/Corridor analysis and asking for feedback and questions on the process. The project team will be seeking input on the relative importance of different demand generators (land use destinations), equity, and corridor assessment inputs. After the July 17 discussion, the project team will vet ideas with the executive steering committee members and inter-agency technical team. Continuing the discussion at the August 1 SBAB meeting, the project

team will outline the finalized list of data inputs and begin to contemplate a weighting system for the various types of land use destinations since, like the PMP potential pedestrian demand analysis, it is thought that not all bicycle generators generate the same levels of bicycle activity and that a person riding a bicycle may be willing to bike different distances to various types of destinations.

### **Next Steps**

Following the discussion with the SBAB at the July 17 and August 1 meetings, the project team will be working on the High Priority Area/Corridor Analysis. Upon completion of this analysis, the project team will begin to work on the update of the Bicycle Network Map and, further into the update process, project lists will be created as well as a project prioritization plan. The project prioritization plan will identify an approach (evaluation criteria and methodology) to rank projects utilizing a data-driven approach to maximize objectivity and efficiency during prioritization. The intent of prioritizing the recommendations will be to best meet Seattle's bicycle system needs.