BELLEVUE
PEDESTRIAN
& BICYCLE
IMPLEMENTATION INITIATIVE

DATE: May 28, 2015

TO: Members of the Transportation Commission

FROM: Franz Loewenherz, Senior Transportation Planner
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SUBJECT: Pedestrian & Bicycle Implementation Initiative

PURPOSE

At its May 28, 2015 workshop, staff seeks Transportation Commission concurrence on the Comprehensive Pedestrian and Bicycle Implementation Initiative (PBII) Scope of Work (see attachment). This document refines the seven tasks identified in the preliminary PBII Scope of Work (12/11/14) to more thoroughly elaborate on the intended outcomes and associated timeline.

BACKGROUND

At its October 9, 2014 workshop, staff reviewed with Commission a preliminary Pedestrian & Bicycle Master Plan scope of work – an update to the 2009 Pedestrian and Bicycle Transportation Plan. Commissioners were in agreement that the 2009 Plan articulates a shared vision of a desirable future that remains relevant today. As such, Commissioners were not supportive of expending resources on a master planning process that revisits/refines the overall construct of the 2009 plan document at this time. Instead, Commissioners requested staff develop a pedestrian and bicycle implementation initiative that results in specific outcomes that advance the projects and programs identified by the 2009 Plan.

At its December 11, 2014 meeting, the Transportation Commission voted in favor of recommending Council initiate the Pedestrian & Bicycle Implementation Initiative (PBII) – a complement of action-oriented strategies to advance the projects and programs identified in the 2009 Plan. At its February 9, 2015 meeting, the City Council endorsed the PBII program principles and preliminary scope of work. Council expressed support for a unified and recognizable strategy that:

- Links planning with implementation so that we can “finish what we’ve started.”
- Promotes coordinated solutions in engineering, education, encouragement, evaluation, and enforcement.
- Advances a “Complete Streets” philosophy aimed at improving the conditions for people who walk and bicycle.
- Considers a variety of creative and affordable solutions to achieve the adopted performance targets.
- Leverages the best technologies and innovative tools that are successful elsewhere and applicable to Bellevue.
- Investigates “Vision Zero” techniques to enhance safety for all users of the roadway network.
- Advances demonstration projects that test experimental facility design treatments.

- Identifies early-win opportunities that can be implemented quickly to advance project delivery.
- Balances the needs of various roadway users and their associated design requirements.
- Coordinates roadway and non-motorized projects to maximize construction efficiencies.
- Promotes physically separated facilities to minimize conflicts between roadway users where possible.
- Prioritizes a connected network that "fills the gaps" in lieu of piece-meal implementation.
- Engages stakeholders at the earliest stages of scope development to ensure their input is included in project design.

At its February 17, 2015 meeting, the City Council received a transmittal letter from the Transportation Commission seeking concurrence to initiate the Pedestrian and Bicycle Implementation Initiative. Scott Lampe, Chair of the Transportation Commission and Commissioners Francois Larrivee and Clifford Chirls were in attendance. Council was unanimous in approving the PBII program principles, preliminary scope of work, and the Transportation Commission's oversight of this initiative.

BELLEVUE
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IMPLEMENTATION INITIATIVE

COMPREHENSIVE PBII SCOPE OF WORK

adopted by the City of Bellevue Transportation Commission

May 28, 2015

DRAFT

BELLEVUE PEDESTRIAN & BICYCLE IMPLEMENTATION INITIATIVE

Making Bellevue a great place to walk and bike.

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BELLEVUE PEDESTRIAN & BICYCLE IMPLEMENTATION INITIATIVE

INTRODUCTION: MAKING BELLEVUE A GREAT PLACE TO WALK AND BIKE

2009 Pedestrian and Bicycle Transportation Plan

The *2009 Pedestrian and Bicycle Transportation Plan* (see Figure 1) was approved by Council Ordinance (No. 5861) on February 17, 2009. This plan established a vision for Bellevue as a walkable and bikeable community, amended Bellevue's Comprehensive Plan with policies to inform the city's transportation investment priorities, identified roads and corridors citywide that represent the designated pedestrian and bicycle networks, developed prioritized lists of projects to help realize these networks, and adopted five measures by which to assess progress toward achieving the plan's goals.

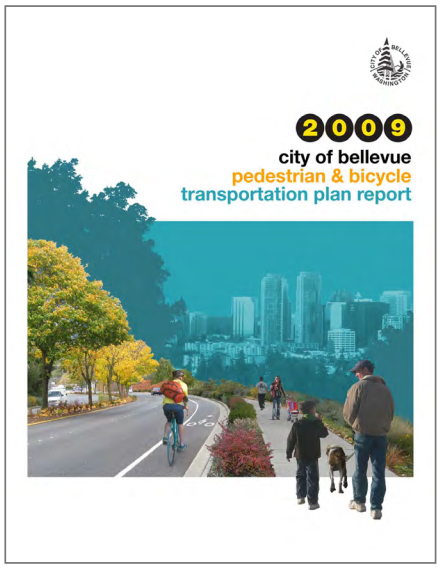

Figure 1. Bellevue's *2009 Pedestrian and Bicycle Transportation Plan.*

The 2009 Plan is the product of extensive public outreach—including online surveys, focus groups, and public events—as well as research, inter-agency coordination, field work, and review by the Transportation Commission. As a result of these efforts, the Plan aims to achieve the following:

- implementation targets related to network completion, usage, and collision reduction;
- facility designs that are safe, attractive, and compatible with surrounding land uses;
- public education and encouragement programs and policies that support pedestrian and bicycle mobility;
- incorporation of best practices from innovative pedestrian and bicycle initiatives in other cities;
- consideration of the needs of people on foot and on bikes when planning and designing roadway projects.

When fully implemented, the 435 projects identified by the plan will yield 90 miles of sidewalk, 144 miles of bikeway, and 20 miles of trail facility improvements. Given that the plan represents a long range vision, all of the project descriptions are framed as "conceptual," requiring additional design, engineering, and a long-term commitment to move from plan to implementation.

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Pedestrian and Bicycle Implementation Initiative

In 2015, when considering the prospect of updating the 2009 Ped-Bike Plan, the Transportation Commission and City Council chose an alternate path. They asserted that the vision, goals, overall framework, and proposed project lists in the 2009 Plan remain a valid and accurate reflection of Bellevue's perspective about and priorities for walking and biking in the city. Rather than undertaking another multi-year planning process to update the plan, Council voted unanimously on February 17, 2015 in favor of initiating the Pedestrian & Bicycle Implementation Initiative (PBII)—a complement of action-oriented strategies to advance the projects and programs identified by the 2009 Plan. This initiative responds to Council's support for a unified and recognizable strategy that:

- Links planning with implementation so that we can "finish what we've started."
- Promotes coordinated solutions in engineering, education, encouragement, evaluation, and enforcement.
- Advances a "Complete Streets" philosophy aimed at improving the conditions for people who walk and bicycle.
- Considers a variety of creative and affordable solutions to achieve the adopted performance targets.
- Leverages the best technologies and innovative tools that are successful elsewhere and applicable to Bellevue.
- Investigates "Vision Zero" techniques to enhance safety for all users of the roadway network.
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- Engages stakeholders at the earliest stages of scope development to ensure their input is included in project design.

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PBII Program Principles

To guide the Transportation Commission in its oversight of the PBII, the Bellevue City Council approved the following set of Program Principles:

The City Council envisions an accessible, well-connected network of pedestrian and bicycle facilities for Bellevue that (i) enhances livability, (ii) supports economic vitality, and (iii) serves the mobility needs of people of all ages and abilities. The Council developed the following set of Program Principles to direct the Pedestrian & Bicycle Implementation Initiative, a complement of action-oriented efforts that advance non-motorized facility designs and programs identified by the 2009 Pedestrian and Bicycle Transportation Plan to meet or exceed the City's 2019 targets and position the City to realize its long-term vision for a walkable and bikeable Bellevue.

1. Continue to aspire to the vision established by the 2009 Pedestrian and Bicycle Transportation Plan, pursue its goals, which should not be diluted, and monitor its established measures of effectiveness.
2. Undertake an action-oriented initiative that advances projects and programs to help realize the City's vision.
3. Provide a safe pedestrian and bicycle environment, which is a prerequisite to making non-motorized travel a viable, attractive option in Bellevue.
4. Advance the implementation of Bellevue's planned Bicycle Priority Corridors to facilitate continuous bicycle travel along a connected grid of safe facilities throughout the city and the region.
5. Research pedestrian and bicycle count technologies to improve the City's data driven decision-making.
6. Determine where pedestrian and bicycle investments can improve the connectivity of the multi-modal transportation system.
7. Coordinate with other efforts underway in Bellevue related to pedestrian and bicycle issues.
8. Identify partnership opportunities to advance the implementation of non-motorized projects and programs.
9. Engage community stakeholders in setting the priorities for investment in non-motorized facilities.
10. Refine existing metrics to track plan progress and engage other departments as needed to foster a One City commitment to active transportation.

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PBII Scope of Work

To guide this initiative, Council approved a Preliminary Scope of Work and directed staff to work with the Transportation Commission to refine the seven tasks identified to more thoroughly elaborate on the intended outcomes and associated timeline.

- Task 1 – Pedestrian and Bicycle Safety Assessment and Awareness Report: Improve Bellevue's capacity to collect and analyze crash data to identify safety hazards and top crash locations.
- Task 2 – Bicycle Priority Corridor Design Report: Build a more connected network of on-street and off-street bicycle facilities and expand the toolbox of options to increase safety with designs like protected bike lanes.
- Task 3 – Transit Master Plan and Pedestrian and Bicycle Integration Report: Create more seamless connections between transit projects and pedestrian and bicycle facilities that will make the overall transportation system stronger and more useful.
- Task 4 – Pedestrian and Bicycle Implementation Strategy Report: Document short- and long-term investment priorities aimed at improving bicycle and pedestrian mobility in Bellevue.
- Task 5 – Pedestrian and Bicycle Count Assessment Report: Establish a foundation on which to make smart decisions about how and where to prioritize municipal investments in bicycle and pedestrian facilities.
- Task 6 – Bike Share Feasibility Analysis and Implementation Strategy Report: Provide people in Bellevue access to a bicycle when they want one, without having to worry about storage, security, and maintenance.
- Task 7 – Progress Measurement and Management Report: Identify key measures to best support 2009 Plan goals and objectives and evaluate progress.

BELLEVUE PEDESTRIAN & BICYCLE IMPLEMENTATION INITIATIVE

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PBII Staff Team

The Transportation Department is advancing this initiative with in-house staff and "One City" collaboration, cost-effectively leveraging resources across departments and community partners to promote solutions in engineering, education, encouragement, evaluation, and enforcement.

The PBII Core Team is composed of Franz Loewenherz (the PBII Program Manager), Andreas Piller, and Stela Nikolova. Franz will serve as the staff lead for the PBII Teams associated with Tasks 1, 2, 4, 5, and 7; Andreas will be the staff lead for the PBII Teams associated with Tasks 3 and 6.

The following staff representatives from various divisions of Transportation and departments across the City comprise the PBII Teams associated with each of the initiative's seven tasks:

- Brian Breeden, Transportation
- Brian Ward, Utilities
- Chris Masek, Transportation
- Chris Vandall, Parks
- Dan Dewald, Parks
- Darek Jarzynski, Transportation
- David Sanabria, Police
- Dustin VanNieulande, Parks
- Emil King, PCD
- Eric Miller, Transportation
- Gaje Wagner, Transportation
- Geoff Bradley , Parks
- Jesse Canedo, PCD
- John Murphy, Transportation
- Kate Weber, GIS Services
- Kevin McDonald, Transportation
- Kristi Oosterveen, Transportation
- Marcia Harnden, Police
- Midge Tarvid, GIS Services
- Mike Ingram, Transportation
- Mike McCormick-Huentelman, PCD
- Patti Wilma, PCD
- Paul Andersson, PCD
- Paula Stevens, Transportation
- Raid Tirhi, Transportation
- Ray Godinez, Transportation
- Sally Nichols, Development Services
- Shuming Yan, Transportation
- Steve Costa, Transportation
- Toni Finco, Transportation
- Vangie Garcia, Transportation

Note: Planning and Community Development (PCD); Geographic Information Systems (GIS)

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Public Engagement

PBII responds to feedback from multiple surveys in which Bellevue residents and employers have indicated a need for the City to prioritize increasing travel options. Maintaining dialog with the public is important to help ensure that the outcomes of this initiative reflect the priorities and perspectives of the community. As such, consistent with the guidance of Program Principle 9, the PBII Team will undertake "a targeted yet robust public engagement strategy" that solicits "input on non-motorized priorities from a range of stakeholders including residents, businesses, major institutions, 'under-represented' communities, neighboring cities, transportation agencies, and other organizations."

Because the PBII is an action-oriented collection of efforts, the outreach required to support this initiative differs from that employed in typical master planning endeavors. The primary distinction is that, whereas citywide planning efforts emphasize outreach strategies capable of obtaining public input on a wide range of topics from the broadest possible cross-section of the community, this implementation initiative will employ strategies whose scale, reach, and subject matter correspond to the target audience affected by the nature of a given task.

Next Steps

The timing and intent of the PBII aligns well with the national movement promoting the improvement of the way cities accommodate people on foot and on bikes. The City of Bellevue is one of more than 200 cities across the United States that has committed to improving walking and biking by participating in the Mayors' Challenge for Safer People and Safer Streets, a call to action by the U.S. Department of Transportation (USDOT) for mayors and local elected officials to take significant action to improve safety for bicycle riders and pedestrians of all ages and abilities over the next year.

With the Transportation Commission's approval of this Comprehensive PBII Scope of Work, the PBII Team commences its work program to deliver a pragmatic solution set of projects, programs, and policies that fits within the Bellevue context, is affordable, and can be implemented in a reasonable time frame. What's next is exciting; let's make Bellevue a great place to walk and bike.

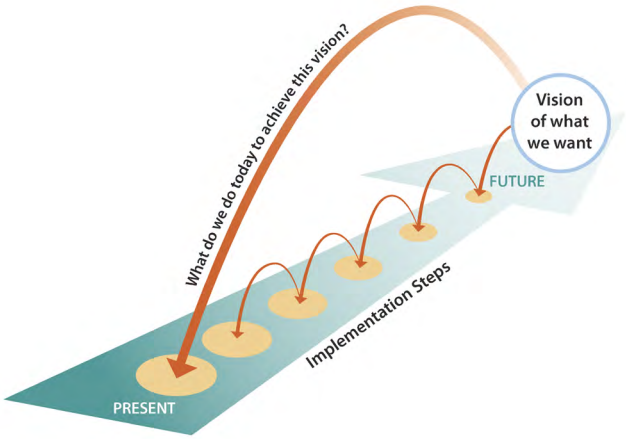

Figure 2. The PBII is an action-oriented initiative that will identify the steps Bellevue should pursue today to advance the projects and programs identified in the 2009 Plan.

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BELLEVUE PEDESTRIAN & BICYCLE IMPLEMENTATION INITIATIVE

TASK 1: PEDESTRIAN AND BICYCLE SAFETY ASSESSMENT AND AWARENESS REPORT

Introduction

In the US DOT's Safer People, Safer Streets report, Anthony Foxx, Secretary of Transportation, states that: "We must better protect people on foot and bicycle by fostering environments and multi-modal transition points that are safe… This [Pedestrian and Bicycle Safety Initiative] will include new research and tools to improve safety, generate better data on pedestrian and bicycle activity, crashes, and infrastructure, and build stronger partnerships between DOT headquarters and field offices, local officials, safety organizations, state, regional and local planners and engineers, and advocacy groups."

This US DOT initiative recognizes that the way we design our streets, educate our road users, and enforce traffic laws can dramatically improve safety. Street design that more deliberately accommodates vulnerable users—people who walk and bike, children and the elderly, and people with disabilities—paired with targeted education and enforcement is proving to be effective in cities that have committed to similar goals.

Bellevue's Pedestrian & Bicycle Implementation Initiative (PBII) is clearly aligned with the US DOT's Pedestrian and Bicycle Safety Initiative and the national priority to support the evolution of our cities into more pedestrian- and bicycle-friendly communities. Locally it is recognized that pedestrian and bicycle activity is an essential part of Bellevue's vibrancy—it enlivens our streets, strengthens local businesses, creates safer neighborhoods, provides access to jobs, and leads to a healthier community. Given these benefits, Bellevue's streets must be comfortable and safe for all users. A critical component of this is pedestrian and bicycle safety. The city, residents, visitors, businesses, and community groups must ensure that everyone can travel safely. This shared responsibility relates to how we drive, travel as pedestrians, design our streets, and enforce our traffic laws.

To inform Bellevue's pedestrian and bicycle safety efforts, the PBII Team will complete an extensive pedestrian and bicycle crash analysis. This analysis will include all collisions in Bellevue from 2006 through 2015 that involved a person walking or riding a bicycle and a motor vehicle. The purpose of this analysis is to provide fundamental information needed to make sound, data-driven policies and programming decisions. Completion of Task 1.1 through 1.6 is anticipated in 2016.

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Task 1.1 – Pedestrian and Bicycle Crash Data Analysis

Walking or bicycling fatalities and serious injuries can happen anywhere, but understanding when and where crashes are most likely to occur can help transportation professionals target road safety improvement projects and thereby increase safety for all road users. In Task 1, the PBII Team will identify high crash areas, location factors (traffic and roadway design characteristics), and behavioral factors (for pedestrians, bicyclists, and motorists) that may contribute to prevalent crashes. A variety of tools (e.g. Pedestrian and Bicycle Crash Analysis Tool [PBCAT]) and their application (e.g. Bicycle Crash Analysis for Wisconsin Using a Crash Typing and Geographic Information System) will be considered at the task onset to facilitate this crash data analysis.

While knowing the numbers, locations, and behaviors involved in crashes is useful, exposure data is essential when attempting to assess the likely effectiveness of potential countermeasures. To explore this data, the PBII Team will select pairs of streets for comparisons of those with and without medians, lighting, and bicycle lanes. Pairs will be selected to keep other key factors comparable: number of lanes, traffic speed, traffic volumes, demographics, transit routes, median presence (for bicycle lane and lighting comparisons), and lighting (for median and bicycle lane comparisons). In approaching this task, the PBII Team will consider similar studies conducted elsewhere (see Countermeasures Report: Pedestrian and Bicycle Crash Plotting and Counts and Behaviors Observations).

Deliverable *– A technical memo documenting crash data, trends, and contributing location and behavioral factors informing the countermeasure workshop identified in Task 1.4.*

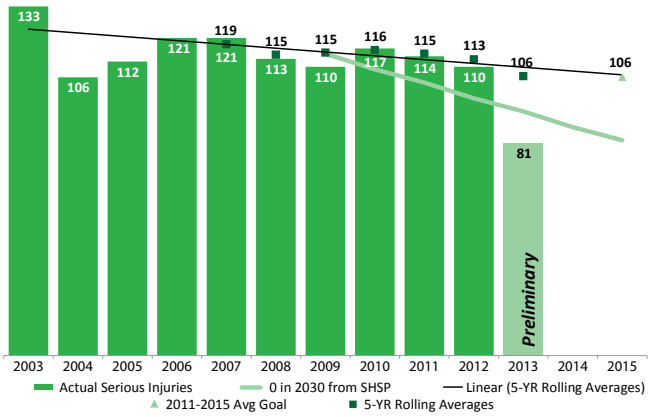

Figure 3. Bicyclist serious injuries have declined in Washington from 2003–2012, but the current rate of decline is not as rapid as the goal established by the WSDOT Target Zero "0 in 2030" vision. The Washington State 2015 Highway Safety Performance Plan demonstrates similar trends for pedestrian fatalities and serious injuries.

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Task 1.2 – Assessment of Traffic Law Compliance

The PBII Team recognizes that motorists, pedestrians, and bicyclists alike sometimes fail to properly adhere to the rules of the road, yet in public discourse one or more of these groups is commonly criticized by the others for being primarily responsible for causing traffic incidents and collisions. The PBII Team is interested in understanding the extent to which each group of the traveling public is responsible for breaking traffic laws, particularly those that are most common and most likely to result in the serious injury of other road users. How prevalent are these problems? How often are vehicles speeding, passing within three feet of a bicyclist, or failing to yield to pedestrians or school buses? How often do pedestrians illegally cross the street midblock where no crosswalks are present? How often do bicyclists fail to stop at stop signs or run red lights? Are there any identifiable trends that hint at the reasons why certain laws are broken in certain places?

The PBII Team will consider an assortment of procedures and data sources in an effort to answer these questions. Speed studies may be conducted to determine the prevalence and severity of speeding by people in motor vehicles in locations with high volumes of people walking and/or biking. Various sources of video may be leveraged to examine traffic behavior. For example, Bellevue's signal-mounted cameras or traffic data cameras (e.g. IDAX, Miovision) may be used to record and assess vehicle movements in locations identified by Police, advocacy organizations, and citizen comments where infractions are common. The team might also consider encouraging people who bicycle to use their active lifestyle cameras (e.g. GoPro) to capture their commutes and submit their video for review. Other approaches to better understand traffic law compliance on city streets might also be explored (see From Chaos to Compliance: How the NYPD Can Grasp New York City's Traffic Safety Problem).

Deliverable *– A technical memo assessing traffic law compliance on Bellevue streets by all modes, which will inform the countermeasure workshop identified in Task 1.4.*

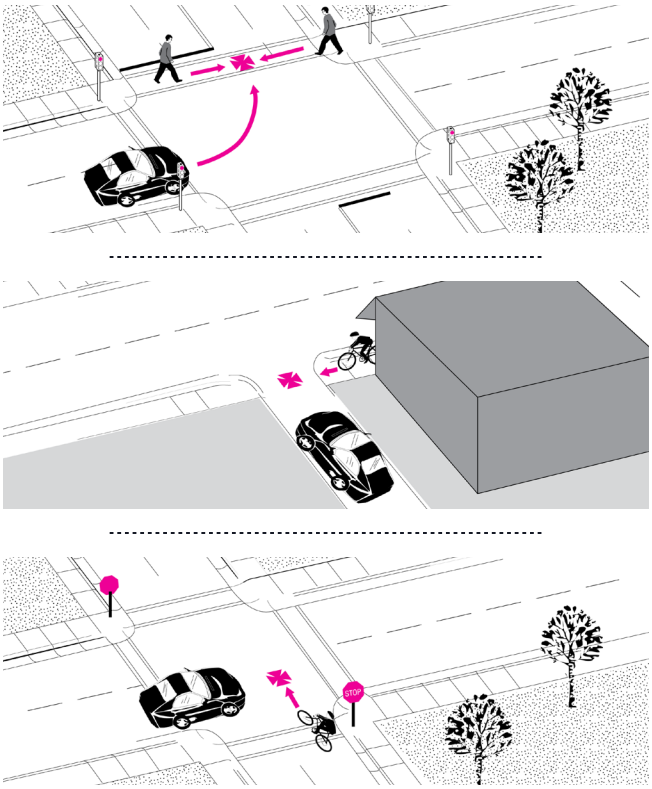

Figure 4. Examples of motorists (top, middle) and bicyclists (bottom) failing to yield, PBCAT pedestrian and bicycle crash types 781, 321, and 142, respectively.

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Task 1.3 – Under-Reported Crash Data Analysis

Crash data analysis is a fundamental method used to identify factors contributing to collisions and area-wide or location-specific crash trends that warrant further consideration. However, reported crashes may not reflect the full range of safety issues experienced by road users. Reported crashes typically only represent a fraction of the total number of pedestrian and bicycling crashes that occur in the public right-of-way. For example, the City of Bellevue, like other jurisdictions, does not have records of bicycle-only crashes that occur on roadways, bicycles striking fixed objects, or crashes between cyclists and pedestrians. It is also not uncommon for witnesses of minor incidents to call the Police, but all involved parties leave the scene before officers arrive so no official report is completed.

In its Walk Friendly City Community Report Card and Feedback report to Bellevue, the Pedestrian and Bicycle Information Center noted: "Bellevue does not have a high crash rate and it is good to see very few fatal crashes, but the injury rate is quite high. Work with the police department and the state to make sure that all crashes are reported, even if there isn't a severe injury. Compiling complete pedestrian crash information is fundamental to addressing pedestrian safety, particularly for identifying trends and determining where problem areas are located."

The PBII Team will examine several unconventional potential sources of data to supplement official collision records. For example, this may include a review of Police dispatch logs to identify where incidents involving bicyclists and pedestrians were called in, even if a formal collision report was never completed and more detailed information about the incident is unavailable. The team may also seek area hospital emergency department data to determine how many unreported incidents are serious enough to require medical attention. An FHWA study conducted using this approach suggests that typical crash databases—even with a high rate of reporting—may only capture about one-fourth of the crashes necessitating treatment at a hospital emergency department and less than half of the crashes on roadways resulting in serious injuries to bicyclists.

Finally, the PBII Team will consider a variety of outreach strategies to identify specific locations where users experience or perceive safety issues that may have resulted in unreported incidents or "near-misses." This outreach effort may include developing an online mapping interface, leveraging existing databases maintained by other organizations (e.g. Bikewise), or conducting on-the-ground safety assessments of selected corridors with community stakeholders.

Deliverable *– A technical memo exploring under-reported crash data, which will inform the countermeasure workshop identified in Task 1.4.*

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Task 1.4 – Assessment of Countermeasures

Reducing the number and severity of collisions involving people who walk and bike requires strategies that address the main factors that lead to collisions. Task 1.4 begins with a documentation of current engineering, education, and law enforcement strategies employed in Bellevue that aim to improve pedestrian and bicycle safety. The PBII Team will then identify additional countermeasure strategies employed elsewhere in the nation that strive to reduce crashes at intersections, along roadways, and at midblock crossings, reduce motor vehicle speeds, improve safety awareness and behavior, and increase the use of bicycle safety equipment (e.g. helmets, lights).

As a starting point, the PBII Team will consider the Pedestrian and Bicycle Information Center's Walk Friendly City Community Report Card and Feedback report to Bellevue. In Task 1.4, the PBII Team will also review the strategies documented in BIKESAFE: Bicycle Countermeasure Selection System and PEDSAFE: The Pedestrian Safety Guide and Countermeasure Selection System. Both the BIKESAFE and PEDSAFE systems provide guidance to transportation professionals selecting treatments to mitigate a known crash problem, as do the following resources: Pedestrian and Bicyclist Intersection Safety Indices; Bicycle Road Safety Audit Guidelines and Prompt Lists; FHWA Pedestrian RSA Guidelines and Prompt Lists; NCHRP Report 500 Volume 18: A Guide for Reducing Collisions Involving Bicycles; NCHRP Report 500 Volume 10: A Guide for Reducing Collisions Involving Pedestrians; FHWA Pedestrian and Bicycle Safety Webinars.

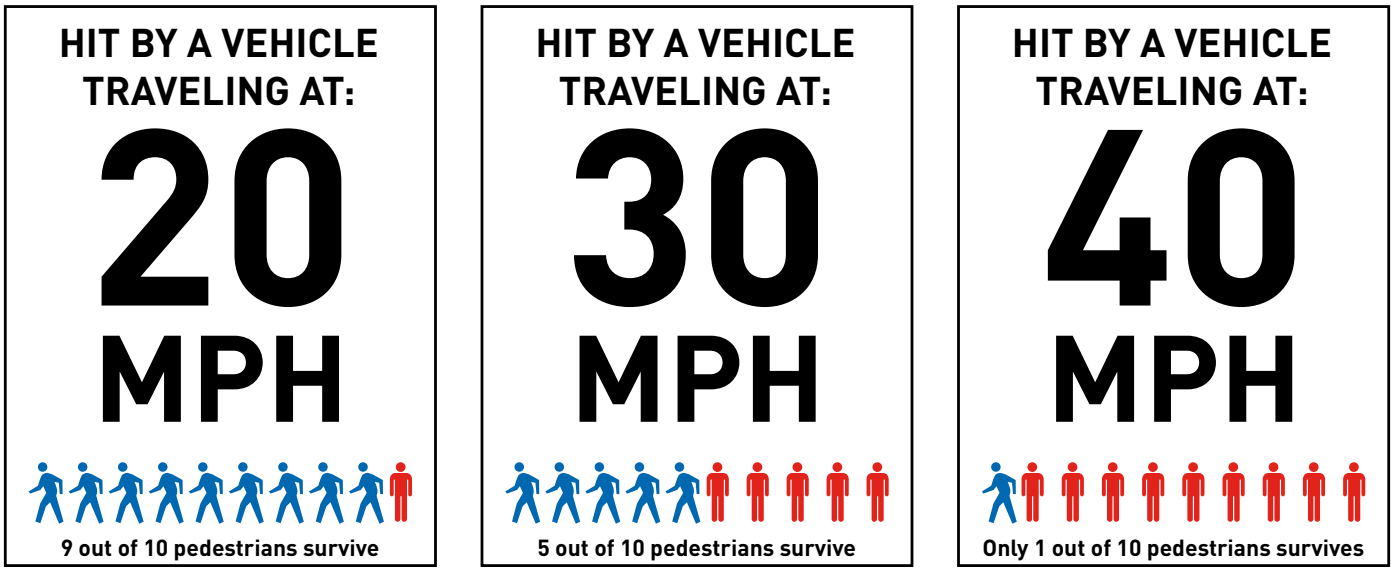

Figure 5. Speed is especially lethal for vulnerable road users like people walking and biking. The risk of injury and death increases as speed increases. Source: *Seattle's Vision Zero Plan*

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In addition to resources found at both the Walk Friendly Communities website and League of American Bicyclists website, the PBII Team will broaden its research beyond traditional countermeasures to assess fast evolving best practices (e.g. apps that alert drivers to the presence of bicyclists, "smart signs" that communicate with police to catch speeders, colored bike lane treatments, road user behavior change campaigns).

In conducting Task 1.4, Transportation and Police Department staff will meet with city boards and commission members in a workshop format to discuss what potential countermeasures should be considered for deployment. The purpose of the workshop is to discuss the results of the data analysis and solicit input on acceptable countermeasures and strategies proven to be effective in reducing the type of crashes classified in Task 1.1. Based on the analysis and feedback from the workshop, the PBII Team will draft a set of acceptable countermeasures generated from participant input.

As is common with these endeavors (e.g. Philadelphia case study), workshop discussions are expected to involve space allocation trade-off deliberations. Among these trade-off considerations are the need to balance vehicle and person throughput with pedestrian and bicycle safety. Many congestion reduction strategies, such as wider roads with higher design speeds, tend to increase traffic risks for all road users. In contrast, communities that improve transport options tend to have significantly lower traffic death rates. Evaluating transportation system performance based solely on vehicle level of service (LOS) ignores the crash risks that result from roadway expansions—or described in a more positive way, more comprehensive and multi-modal evaluation can help identify the congestion reduction strategies that also help improve traffic safety and increase community health.

Deliverable *– A technical memo documenting candidate engineering, education, and law enforcement countermeasures to reduce the number and severity of bicycle and pedestrian crashes. The memo will inform the prioritization of short- and long-term actions that aim to improve pedestrian and bicycle safety and will be the basis for the development of a budget proposal in the final report (see Task 1.6).*

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Task 1.5 – Crash Data Analysis System

Bellevue's Transportation and Police Departments are responsible for ensuring the safety and operational efficiency of the public street network. Fulfilling that responsibility requires extensive data collection and analysis. To reduce overall crash frequency on Bellevue roads, the Transportation Department collects data on automobile crashes such as their location and how they occurred. To store and analyze this data, Bellevue engineers leverage a crash analysis system to determine where crashes are most common and how roads can be improved to reduce crash frequency. In Task 1.5, the PBII Team will review Bellevue's current crash analysis system and determine if an updated platform for collecting and analyzing collision data is warranted.

The prudence of completing such a review is demonstrated by a recent study published in the journal Injury Prevention, which makes a strong case for better bicycle/motor vehicle crash reporting as a way to improve bicycling safety. The study shows that inadequate reporting that omits essential crash-site details results in a poor understanding of the causes and remedies for these crashes, limiting the ability of facility designers and transportation planners to respond with improved facilities for all road users. PBII Task 1.5 recognizes that crash analysis systems have become more complex and capable over time, and the FHWA has developed multiple crash tools in collaboration with other states. Improved data management, an increase in the depth of data sources, and the use of roadway geometric data allow these tools to provide more accurate information on crash trends and countermeasures.

As a High Performance Organization (HPO), the City of Bellevue leverages the best technologies and innovative tools that are successful elsewhere and applicable to Bellevue. This task builds on Bellevue's HPO journey by examining what lessons can be learned from the crash data analysis systems and technologies employed by other jurisdictions and by improving the processes employed by the Transportation and/or Police Departments accordingly.

The intent of Task 1.5 is to ensure that Bellevue's crash analysis system is easy to use, responsive to the needs of decision makers, and assists staff in determining where and how roadways should be improved to increase the safety of the transportation system. For each of the case studies it considers, the PBII Team will take into account the following five components of municipal crash-data analysis systems: data collection, data storage, analysis and reporting, accessibility, and overall system efficiency.

The PBII Team will then identify and assess the latest developments in crash analysis tools being used by other jurisdictions to determine the safety analysis capabilities that might be worth integrating into or replacing Bellevue's current crash data analysis system. This task involves the following steps: (1) conducting web research to identify the crash analysis software systems used by other public agencies as well as the vendors that supply them; (2) reviewing the agency web resources detailing the use of such software and searching the internet for examples of Request for Proposal and Request for Information documents

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related to safety analysis software; (3) reviewing this information to develop a list of features and capabilities that best match Bellevue's goals.

For example, many state-of-the-art systems are able to: (1) calculate crash metrics based on both severity and type; (2) identify locations with potential safety issues using both black spot and systemic analysis; (3) conduct statistical analyses with comparisons between individual locations, networks, and subsets of the network; (4) diagnose crash issues, generate collision diagrams, and identify the distribution of crash types—such as rear-end, head-on and left-turn—and other crash attributes; (5) conduct an economic analysis estimating the cost-effectiveness of countermeasures, benefit-cost ratios, and other metrics; (6) establish a priority ranking of countermeasures based on location crash metrics and economic metrics. In researching state-of-the-art crash management systems, the PBII Team will reach out to a number of other jurisdictions who have completed similar best practice assessments (e.g. Minnesota Department of Transportation).

A component of this task is to determine how best to communicate Bellevue's crash management program to the public. Task 1.5 will consider the feasibility of publishing and maintaining this data in an interactive online map interface as one element that this initiative might include. If such an online map is pursued, the interface would likely be designed to also serve other pedestrian- and bicycle-related public information purposes, potentially including the identification of safe routes, priority corridors, and proposed investments to address collision-prone areas, among others. The PBII Team will contact other jurisdictions that have already created such online maps to gain insight into any challenges they may have experienced regarding the publishing of this information; the following represents a starting point for consideration: City of Winston-Salem, City of Boston, City of Philadelphia, City of Portland, City of San Francisco, and New York City.

Deliverable *– A technical memo documenting Bellevue's current crash analysis system and best practices for collecting, analyzing, and publishing collision data, which will inform the process improvements that are included in the final report (see Task 1.6).*

Figure 6. The Washington Traffic Records Committee was created to foster collaboration and to facilitate the planning, coordination, and implementation of projects to improve the state's traffic records system.

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Task 1.6 – Pedestrian and Bicycle Safety Action Strategy Report

In Task 1.6, the PBII Team will prioritize short and long-term actions that aim to improve pedestrian and bicycle safety based on the analyses conducted in the previous tasks. The Pedestrian and Bicycle Safety Action Strategy Report will employ a comprehensive approach to improving safety and include recommended engineering solutions (physical improvements) and education and law enforcement strategies. The expectation is that not all roadways within the city—or even all roadways of a particular classification—will be recommended for any one countermeasure. Instead, the major focus of this task is on applying a context-sensitive approach to selecting the correct countermeasures for the correct roads to address specific crash characteristics that are discovered through the data analysis.

The Pedestrian and Bicycle Safety Action Strategy Report will serve as background to a larger effort to update the City's policies and guidelines related to pedestrian and bicycle safety, including consideration of adopting a "Vision Zero" policy. Vision Zero is an approach to traffic safety whose ultimate goal is to end traffic deaths and serious injuries. The idea began in Sweden in the 1990s, where it was adopted as national policy. At the core of Vision Zero is the belief that death and injury on city streets is preventable—that, for the most part, these are not "accidents." Collisions are often the result of poor behaviors and unforgiving roadway designs. So the problem must be approached from multiple angles: street designs that emphasize safety, predictability, and the potential for human error, coupled with targeted education and data-driven enforcement efforts.

In completing Task 1.6, the PBII Team will consider a wide range of reporting formats, including the City of Chicago Bicycle Crash Analysis Report, City of Chicago Pedestrian Crash Analysis Report, Minneapolis Bicyclist-Motorist Crash Analysis Report, Boston Cyclist Safety Report, Seattle Traffic Report, City of Largo Crash Data Assessment, Cambridge Bicycle Crash Analysis, City of Raleigh Pedestrian Crash Analysis, City of San Diego Comprehensive Pedestrian Safety Study, New York City Pedestrian Safety Study & Action Plan, and Hillsborough Countywide Bicycle Safety Action Plan. The final report will document performance measures or benchmarks for improved pedestrian and bicycle safety.

Deliverable *– A Pedestrian and Bicycle Safety Action Strategy Report documenting prioritized short- and long-term actions that aim to improve pedestrian and bicycle safety based on the analyses conducted in the previous tasks. The final report will include a budget proposal for prioritized safety actions and recommended policies and performance measures for Council consideration.*

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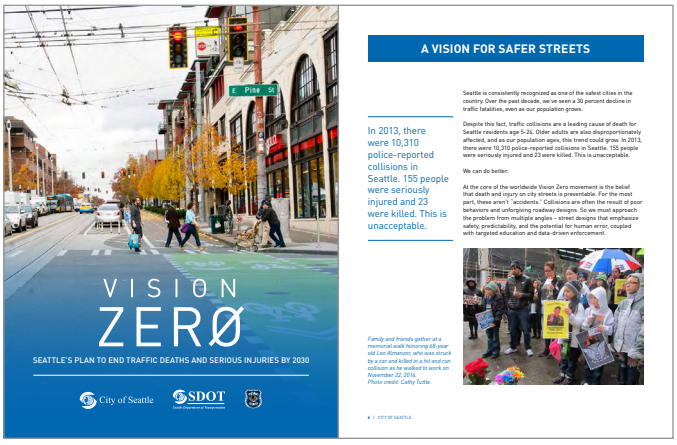

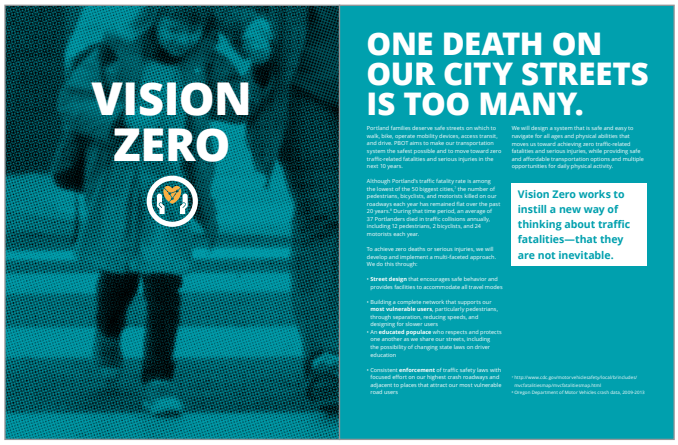

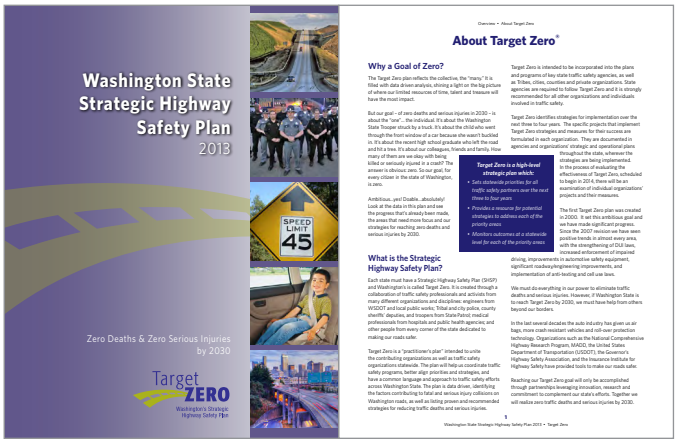

Figure 7. Streets safety efforts are gaining encouraging momentum across the country, with cities like New York City, San Francisco, Los Angeles, Seattle, Portland, Chicago, Boston, Austin, San Jose, and San Mateo—and multiple states including Minnesota, Montana, and Washington—having adopted their own initiatives inspired by the original Vision Zero Initiative begun in Sweden in 1997.

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BELLEVUE PEDESTRIAN & BICYCLE IMPLEMENTATION INITIATIVE

TASK 2: BICYCLE PRIORITY CORRIDOR DESIGN REPORT

Introduction

A recurring message throughout Bellevue's 2009 Pedestrian and Bicycle Transportation Plan development process—from the online survey effort, focus-groups sessions, public meetings, and online interactive map—was the need for improved connectivity to facilitate cross-city bicycle trips. There is broad public agreement that many of the existing bicycle facilities in Bellevue, particularly on-street segments, have been implemented in a piecemeal approach and therefore do not provide a connected and easily navigable cycling network.

Responding to this public input, Bellevue's 2009 Plan designates five east/west and six north/south cross-city priority bicycle corridors (see Figure 8) that link together the numerous corridor segments documented in the bicycle project list. Regardless of the type of facility implemented on a given corridor or corridor segment—whether bicycle lanes on major streets, multi-use off-street paths, shared lanes on low traffic streets, or some other context-appropriate solution—the components of the priority bicycle corridors must be well connected and provide safe and reasonably direct ways to travel between destinations throughout the city for people of all ages and abilities. Together, these priority bicycle corridors represent a continuous network that promotes connections to surrounding jurisdictions and creates links between neighborhoods within Bellevue.

In Task 2, the PBII Team will revisit the priority bicycle corridor network established in the 2009 Plan to:

1. evaluate the range of bicycle facility types that could be applied along missing segments in the priority bicycle corridor network, including innovative interim treatments as well as more permanent best practice facilities;
2. consider the pros and cons and the associated maintenance needs of each alternative treatment;
3. develop planning level cost estimates and priorities to inform the next round of updates to Bellevue's Transportation Facilities Plan and Capital Investment Program.

At the on-set of this effort, the PBII Team will consult with Cascade Bicycle Club and Feet First to arrive at a preferred public engagement strategy to inform the Bicycle Priority Corridor Design Report. Decisions about when and how to involve the public will be guided by a clear sense of purpose. A wide range of options (e.g. online questionnaire, focus group, mapping interface, engagement-oriented bike ride, crowd-sourced photo-sharing strategy, virtual open house, and coordinating with community blogs and advocacy group blogs) will be considered to

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solicit the public's input on existing gaps in the priority bicycle corridor network and evaluation of various bicycle facility design options.

The outreach effort associated with Task 2.4 may also include a "pop-up event" to provide people an opportunity to see and evaluate the scale and appearance of some of the potential bicycle facility improvements under consideration. Because not everyone has seen a protected bikeway, a temporary street reconfiguration can provide people a first-hand experience that may be difficult to replicate through any other means. The PBII Team will review the experiences of other jurisdictions that have employed the pop-up technique when considering this form of community engagement strategy.

Collaboration with external partners will be critical to successfully planning, funding, and ultimately implementing improvements along many priority bicycle corridors—particularly those connecting to existing or planned regional facilities outside of Bellevue city limits. As such, the PBII Team will coordinate with WSDOT, PSRC, the Mountains to Sound Greenway Trust, neighboring jurisdictions, and advocacy organizations throughout Task 2. Completion of PBII Task 2 is anticipated in 2016.

Figure 8. (top) Six typical on-street bicycle facility typologies. Depicted in order of least to greatest level of protection afforded to people on bikes (left to right) are shared lanes (sharrows), standard bike lanes, buffered bike lanes, parking-protected bike lanes, delineator/planter-protected bike lanes, and raised curb-separated bike lanes.

Figure 9. (above) Map of Bellevue's priority bicycle corridors as identified in the 2009 Pedestrian and Bicycle Transportation Plan.

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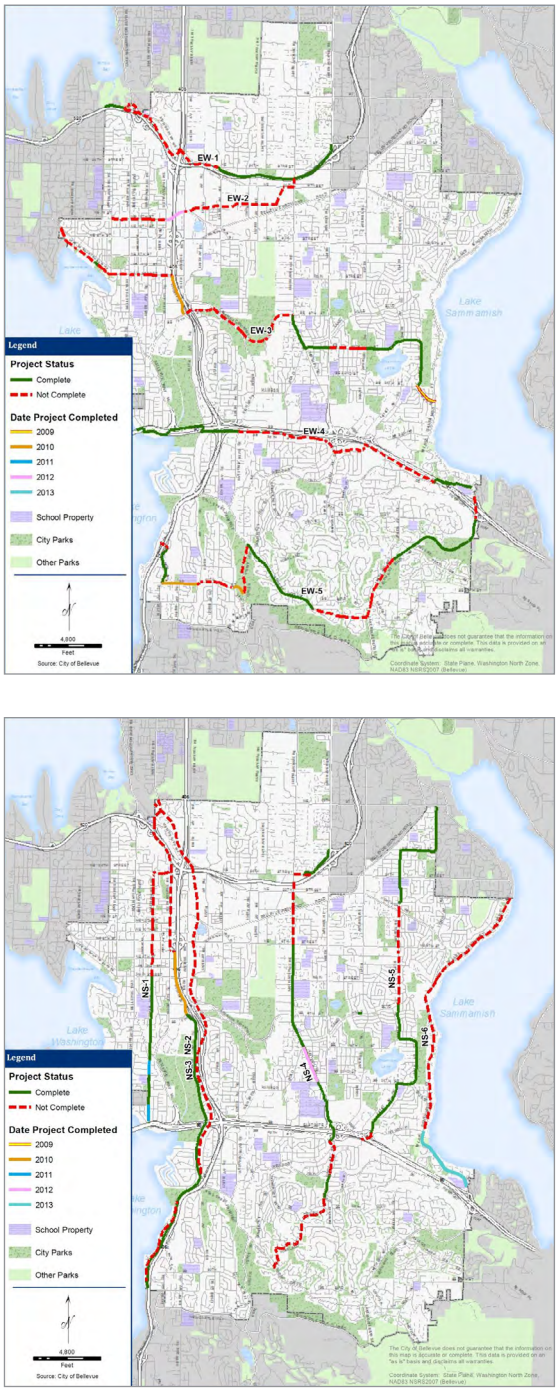

Figure 10. Maps of the completion status of the E-W (top) and N-S (bottom) priority bicycle corridors between 2009–2013. Solid green lines reflect completed segments.

Task 2.1 – Progress Report

In Task 2.1, the PBII Team will summarize the progress made to date implementing the priority bicycle corridor network and improvements anticipated through 2021. Annual progress reports from 2009 through 2013, available at the following links, document all pedestrian and bicycle facilities implemented throughout Bellevue (a 2014 report is in production):

- 2013 Pedestrian and Bicycle Program Progress Report
- 2012 Pedestrian and Bicycle Program Progress Report
- 2011 Pedestrian and Bicycle Program Progress Report
- 2010 Pedestrian and Bicycle Program Progress Report
- 2009 Pedestrian and Bicycle Program Progress Report

The time-horizon of this implementation progress report will extend to the year 2021 to account for priority bicycle corridor network improvements anticipated through funded projects in Bellevue's Capital Investment Program (2015–2021).

Deliverable *– A technical memo documenting the City of Bellevue's realized and anticipated progress completing the priority bicycle corridor network through 2021.*

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Task 2.2 – Existing Conditions Assessment

In Task 2.2, the PBII Team will review and refine the Priority Bicycle Corridor Network Report produced in 2009. Updating this report will help the team develop a familiarity with the opportunities and constraints to improve conditions along the remaining gaps in the priority bicycle corridor network. Because selecting the appropriate bikeway facility (Task 2.4) depends on context, the existing conditions report will document the following attributes of the roadway segments under consideration:

- Road function (arterial, local, etc.)
- Traffic volume
- Speed
- Crashes (derived from Task 1.1)
- Traffic mix (e.g. percentage of freight trucks)
- Expected users (e.g. is one type of user expected to dominate, such as children bicycling to school)
- Road conditions (lane widths, total roadway width, conditions at intersections, and parking demand)
- Frequency of driveways and access points
- Topography
- Existing and proposed adjacent land uses

The report will also include public comments and photos showing how the corridor is experienced by people bicycling. Once the PBII Team understands existing conditions and community needs, getting to a set of facility recommendations (Task 2.4) is a matter of examining the places where potential for positive change exists.

Deliverable *– A technical memo that updates the priority bicycle corridor network report, reflecting the opportunities and constraints to improve conditions along the remaining gaps in the priority bicycle corridor network.*

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Task 2.3 – Development of Evaluation Criteria

Task 2.3 involves developing evaluation criteria to help focus the process of creating, selecting, and prioritizing facility recommendations (Task 2.4). Evaluation criteria may include:

- Overcoming barriers: How well does the project overcome a barrier in the priority bicycle network?
- System connectivity: To what extent does the project fill a missing gap in the priority bicycle network?
- Transit connectivity: To what extent does the project fill a missing gap in access to Bellevue's Frequent Transit Network?
- Community support: To what degree do residents desire the proposed project? This criterion takes into account oral and written feedback.
- User generator: To what degree will the project likely generate transportation or recreational usage based on population, corridor aesthetics, etc.?
- Land uses: How many user generators does the project connect to within reasonable walking or bicycling distance, such as schools, parks, employment centers, etc.?
- Safety and comfort: Can the project potentially improve bicycling at locations with perceived or documented safety issues?
- Regional benefit: To what degree does the project offer potential benefits to the wider regional community by offering opportunities for increased connectivity to surrounding communities, other regional bikeways, etc.?
- Cost: What financial resources are needed to implement the project? Is the project cost prohibitive, or can it be implemented through grant funding or other opportunities?
- Ease of implementation: How difficult will it be to implement the project? This criterion takes into account constraints like topography, existing development, presence or lack of available right-of-way, and environmental and political issues.

After arriving at a set of evaluation criteria, the PBII Team will translate this information into a bicycle facility selection process to inform decisions about bikeway design (Task 2.4). In approaching this task, the PBII Team will consider similar toolkits employed elsewhere in the nation (e.g., Washington County, OR and San Gabriel Valley, CA).

Deliverable *– A technical memo documenting the evaluation criteria and facility selection process that will be used in Task 2.4 to create, select, and prioritize bicycle facility recommendations associated with the eleven priority corridors established in 2009.*

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Task 2.4 – Bicycle Facility Recommendations

Until recently, planners and engineers in the US overwhelmingly limited themselves to just two types of bikeways: conventional bicycle lanes and off-street pathways or trails. However, inspiration from European roadway design and domestic innovations in a handful of pioneering cities has expanded the range of bikeway facilities that are now accepted by transportation officials and promoted by citizens, businesses, and organizations in cities of all sizes across the country. In response to these fast evolving best practices, the Federal Highway Administration (FHWA) issued a memorandum in 2013 expressing its support for flexibility in bicycle facility design and in May 2015 published their own *Separated Bike Lane Planning and Design Guide*. Knowledge of the diversity of facility types and their applications, as put forth in the National Association of City Transportation Officials (NACTO) *Urban Bikeway Design Guide* and by FHWA—among a variety of other design resources for bicycle facility treatments, as cataloged by the Pedestrian and Bicycle Information Center (PBIC) Design Resource Index—will help the PBII Team apply appropriate treatments in appropriate contexts.

In Task 2.4, the PBII Team will revisit and refine the 2009 Pedestrian and Bicycle Transportation Plan proposed facility recommendations along the remaining gaps in the priority bicycle corridor network. For example, the 2009 Plan might suggest a bicycle shoulder improvement along a missing gap that would benefit from increased physical separation (e.g. a buffered or protected bicycle lane). The 2009 Plan acknowledges that:

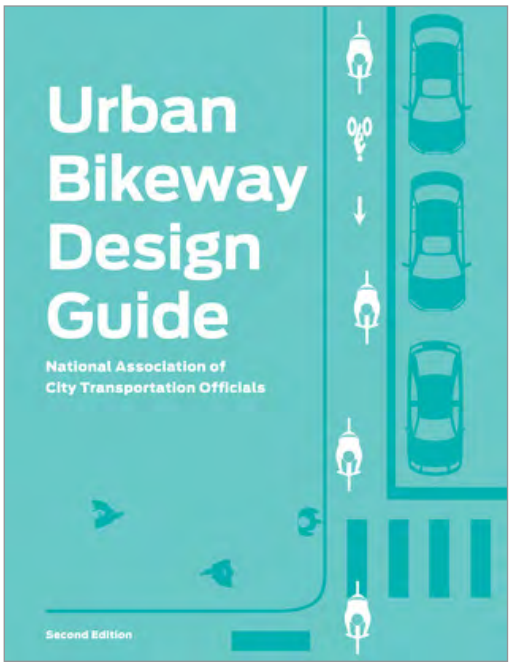

Figure 11. NACTO *Urban Bikeway Design Guide*.

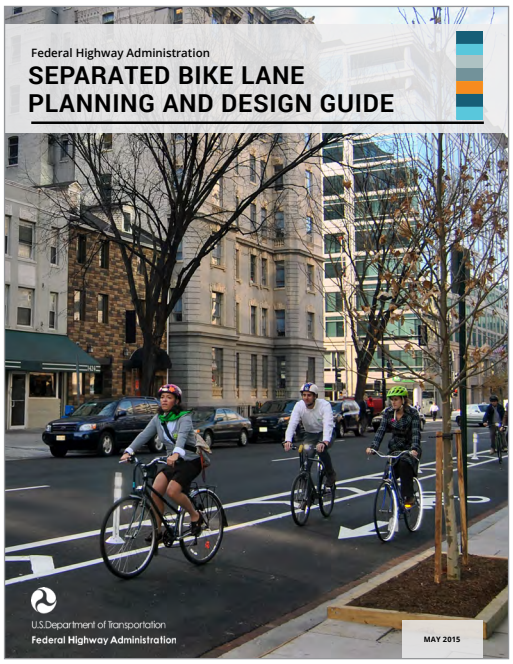

Figure 12. FHWA *Separated Bike Lane Planning and Design Guide*.

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"These projects are conceptual and the final details of design will be developed as the projects proceed further along in the implementation process." In revisiting the 2009 Plan facility recommendations, the PBII Team will evaluate existing conditions information, synthesize and interpret feedback from stakeholders and the public, balance the needs of various roadway users and their associated design requirements, gauge political realities in the community, leverage the best technologies and innovative tools that are successful elsewhere and applicable to Bellevue, and assess financial limitations simultaneously.

Traditional Strengths, Weaknesses, Opportunities, and Constraints (SWOT) exercises may provide a starting point for identifying initial possibilities and limitations. One of the most important factors to consider when designing for bicyclists is determining the type of bicycle user the facility is meant to attract. User preference varies with bicyclist's skill level, trip purpose, and individual characteristics, and no simple rule exists for determining what all users prefer. However, as the level of separation from other roadway users (i.e. motor vehicles) increases, a facility becomes more attractive to a wider range of bicycle users—making bicycling a more viable and preferred transportation mode for more people. Consistent with Bellevue City Council guidance, the PBII Team will strive to promote physically separated facilities to minimize conflicts between roadway users where possible.

After identifying potential bikeway design options for the remaining gaps in the network, the PBII Team will employ the evaluation criteria developed in Task 2.3 to select and prioritize facility recommendations. In some cases, it might be necessary in the evaluation of bicycle facility options to undertake a more detailed review of existing conditions than what is outlined in Task 2.2 (e.g. property research, physical features, and environmental conditions). The PBII Team will develop preliminary cost estimates for construction and a proper level of maintenance for the proposed bicycle facility recommendations identified in Task 2.4.

Deliverable *– A technical memo documenting the PBII Team's evaluation (based on traffic volumes and speeds, surrounding land uses, expected users, roadway and lane widths, the frequency of driveways, and other factors identified in Task 2.3) of various bicycle facility options for the remaining gaps in the priority bicycle corridor network, noting the positive or negative influences to their implementation.*

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Task 2.5 – Bicycle Priority Corridor Design Report

In Task 2.5, the PBII Team will produce a Bicycle Priority Corridor Design Report with detailed bikeway design sheets for each of the improvements identified in Task 2.4. Consistent with Bellevue City Council guidance, the report will provide a level of detail that will facilitate quick and effective implementation. Of course, simple pavement marking retrofits will be the easiest to implement because they do not require property acquisition or pavement reconstruction. Implementation will become more difficult as the project delivery method changes (i.e., new construction, reconstruction, resurfacing).

The corridor sheets in the Design Report will identify specific bikeway improvements proposed for implementation. Each of the bikeway sheets will be disaggregated by individual projects that, once implemented, will collectively develop a cohesive priority bicycle corridor network. The factors that will be used to delineate natural project boundaries include: proposed facility type, implementation barriers like parking and travel lane removal, a gap in the bikeway network, presence of an existing bike facility that needs improvement, project cost, and funding status.

Each bikeway design sheet will document the general characteristics of the corridor (traffic environment, corridor length, major connections, etc.), a "fly-through" description of the route, and cross sections of some key segments in each project. Cross-sections will be displayed relative to the existing condition to conceptualize how a street segment will look in the future. The PBII Team will consider leveraging the Esri CityEngine street modeling tool to graphically represent and analyze the proposed bicycle facility recommendations arising from this assessment.

The Bicycle Priority Corridor Design Report will identify both immediate and longer-term opportunities for improving conditions and will consider how early actions and investments lay a foundation for future improvements. A phasing plan beyond the initial five-year implementation period will outline how recommended actions will progress over time, which will be done by categorizing actions as short- or long-term priorities. A detailed annual work plan benefits the City of Bellevue by providing clear direction that enables monitoring of progress.

Deliverable *– A report documenting short- and long-term facility investments, including planning level cost estimates, that aims to improve the priority bicycle corridor network based on the analysis conducted in the previous tasks. The final report produced in Task 2.5 will inform Task 4.5, which will include a budget proposal(s) paired with an annual work plan specifying when each of the prioritized bicycle corridor facilities will be implemented.*

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BELLEVUE PEDESTRIAN & BICYCLE IMPLEMENTATION INITIATIVE

TASK 3: TRANSIT MASTER PLAN AND PEDESTRIAN AND BICYCLE INTEGRATION REPORT

Introduction

For people traveling on foot and by bicycle, the primary consideration other than safety is whether one's destinations can be accessed within a walkable or bikable distance (generally considered to be one-quarter mile and two miles, respectively) and with minimal deviation from the most direct path. As the Bellevue Transit Master Plan (TMP) recognizes, all transit users are pedestrians for some part of their trip, and if potential transit users are unable to reach a bus stop quickly and reasonably directly, they are more likely to consider alternative travel modes if any are available to them. The provision of an accessible pedestrian and bicycle network is therefore an essential component of a useful transit system. As Bellevue's transit network evolves with the implementation of East Link light rail and resources are increasingly focused on providing productive all-day services along the Frequent Transit Network, it will be ever more important to enhance the pedestrian and bicycle environment so that transit can enable more people to reach more destinations in less time.

PBII Task 3 will complete and expand on an analysis that began as part of the TMP. It will first provide a quantitative assessment of how easily people beginning at any property in the city can reach their nearest transit stop using existing non-motorized networks. It will then identify which high-priority non-motorized projects would significantly improve access to transit and assess how much additional ridership such improvements can be expected to attract. This analysis will help to inform where the Pedestrian and Bicycle Implementation Strategy (see Task 4) should target investments to realize the greatest degree of benefit to the connectivity of Bellevue's multi-modal transportation network and advance partnership opportunities with transit agencies to obtain grants and other funds in support of transit operations.

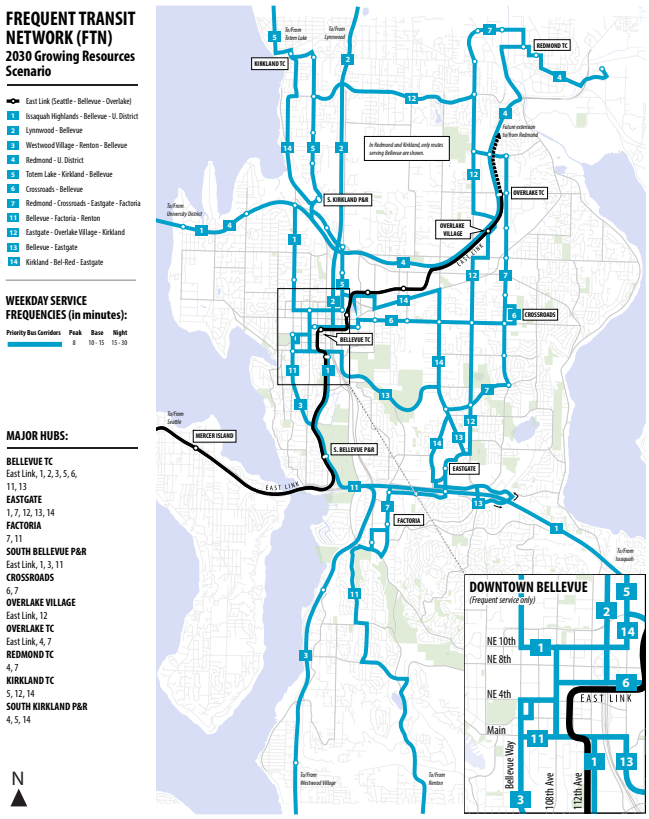

Figure 13. 2030 Frequent Transit Network.

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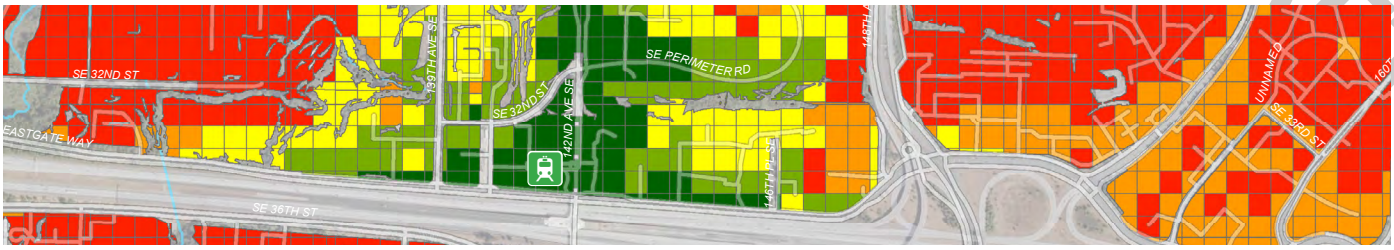

Task 3.1 – Transit Accessibility and Connectivity Analysis

The most fundamental quality affecting the utility of a transit service is how effectively it connects people from origin to destination. In Task 3.1, the PBII Team will use geographic information systems (GIS) to complete an analysis of the relationship between the pedestrian and bicycle environment and transit service quality begun as part of the Transit Master Plan. This analysis will quantitatively assess the current utility of existing transit services for all properties in Bellevue based on the two aspects comprising most transit trips: non-motorized access to transit and transit network connectivity. It will then determine how transit utility would be affected by the implementation of planned service restructuring proposed by the Transit Master Plan and planned non-motorized projects and improvements identified by the 2009 Pedestrian and Bicycle Transportation Plan, the Eastgate/I-90 Transportation Plan, the Downtown Transportation Plan, and East Link station area plans.

In this analysis, accessibility is measured according to the travel distance and route directness afforded by pedestrian and bicycle infrastructure connections from trip origins and destinations to transit stops, while connectivity reflects the availability, frequency, and point-to-point travel time of transit service between all stops in Bellevue's transit network. By comparing the relative impact on service utility of accessibility and connectivity, this assessment offers the ability to more effectively pursue solutions that will afford the greatest benefit to transit users based on the factor(s) limiting transit's usefulness in a given location—lacking non-motorized facilities or inadequate transit service.

A primary outcome of this analysis will be the development of a list of pedestrian and bicycle projects whose implementation would have the greatest impact on improving the usefulness of existing transit services as well as those proposed for long-term network restructuring by the Transit Master Plan, with the highest priority given to projects that benefit the Frequent Transit Network. This list of projects will be further assessed in Task 3.2. Also, by identifying areas where inadequate transit service is the factor limiting the usefulness of transit, this analysis is expected to benefit Transit Master Plan implementation by providing additional quantitative support for service restructuring proposals identified therein.

Deliverable – *A technical report detailing the results of Task 3.1 and identifying the highest priority pedestrian and bicycle projects from the perspective of improving the usefulness of Bellevue's existing and proposed Frequent Transit Network.*

Figure 14. (top) Asssesment of pedestrian and bicycle access to Eastgate Park-and-Ride.

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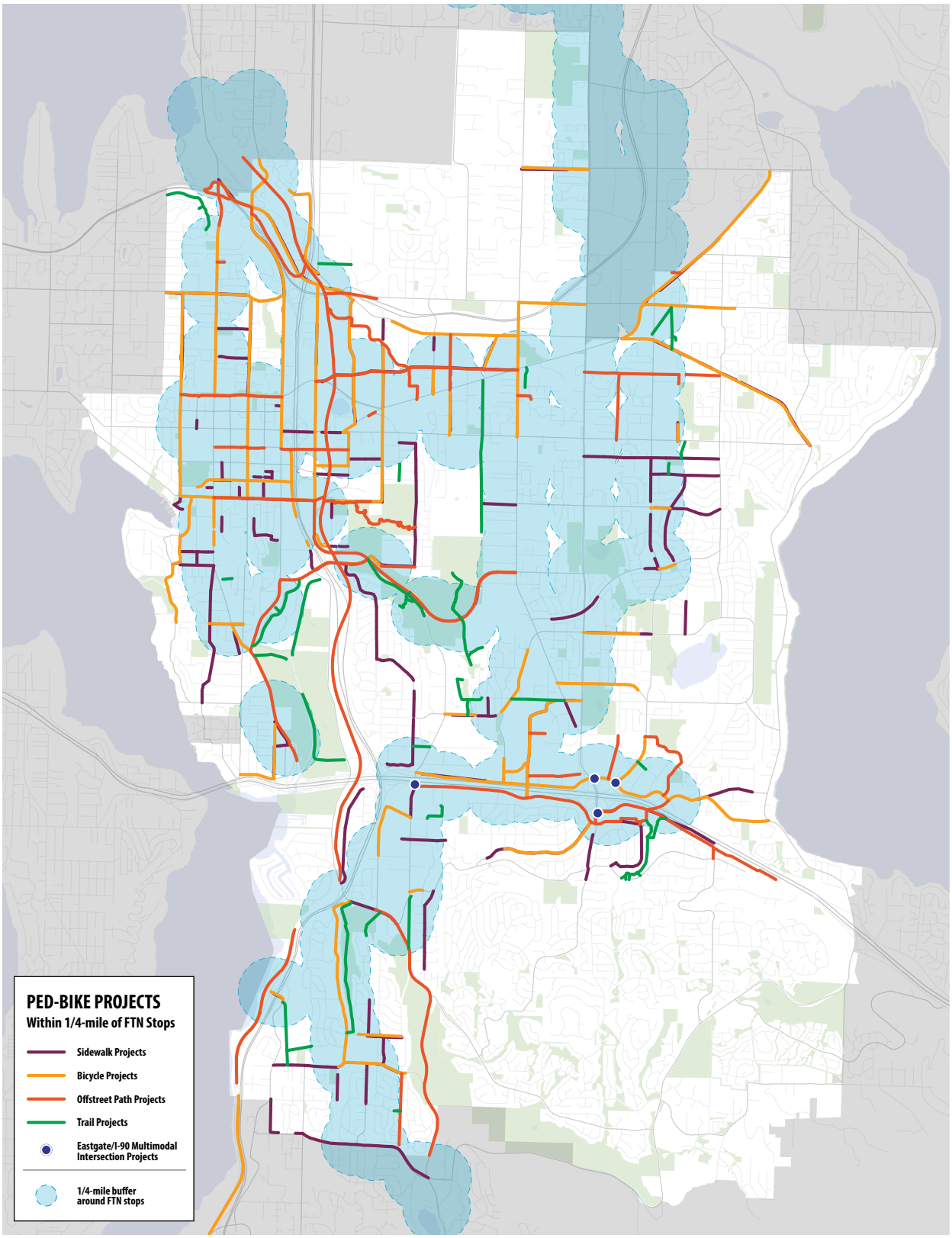
Figure 15. Preliminary transit priority pedestrian and bicycle projects identified by the TMP.



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Task 3.2 – Analysis of Non-Motorized Impact on Transit Ridership

Leveraging the list of high priority projects developed in Task 3.1, the PBII Team will complete an analysis that projects the amount of additional ridership that can be anticipated as a result of implementing those facilities. This analysis will be accomplished primarily using the suite of tools developed by King County Metro and Sound Transit in 2014 for the Non-Motorized Connectivity Study (NMCS); however, recognizing that this model was calibrated using region-wide datasets, supplemental data, analysis, and field verification may be incorporated as needed to ensure that results are reflective of local conditions.

The NMCS model considers five metrics to forecast the impact of non-motorized investments on transit travel demand: route directness index (RDI), the presence and proximity of signalized arterial crossings, walkway density, intersection density, and bicycle level of traffic stress (LTS). The pedestrian, bicycle, and offstreet path projects that constitute the vast majority of the projects to be assessed using the NMCS tool can impact three of these metrics—RDI, walkway density, and bicycle LTS—which together account for 56 percent of the total variation in transit ridership attributable to non-motorized network connectivity in this model. The remaining 44 percent of ridership variation in the NMCS model is explained by the arterial crossing and intersection density metrics, which will be impacted by future improvements to the roadway network, such as those related to redevelopment of the Bel-Red corridor, the development of new through-block connections in Downtown, and the installation of new mid-block crossings. To account for both the variation external to pedestrian and bicycle improvements in the long-term and the changes proposed to transit services by 2030, the NMCS model will assess the ridership impacts of non-motorized projects for the existing and future transit networks separately.

Similar to PBII Task 3.1, the outcome of Task 3.2 will be the development of a list of high priority pedestrian and bicycle projects, in this case ranked according to the projects' estimated potential to increase transit ridership in the short- and long-term.

Deliverable – *A technical report detailing the results of Task 3.2 and identifying the pedestrian and bicycle projects whose implementation is projected to result in the greatest increases to transit ridership.*

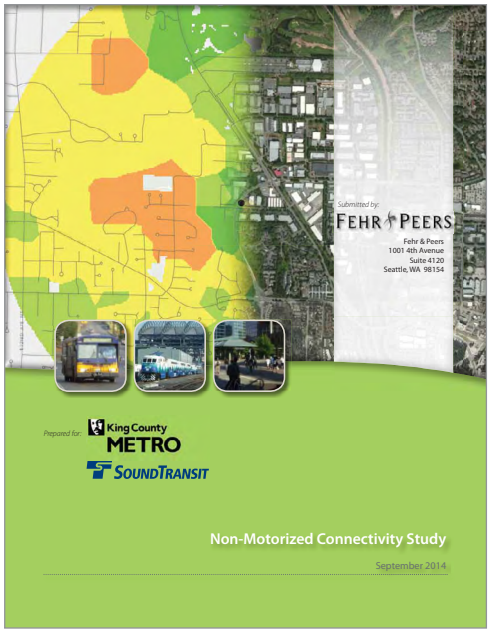

Figure 16. King County Metro and Sound Transit Non-Motorized Connectivity Study.

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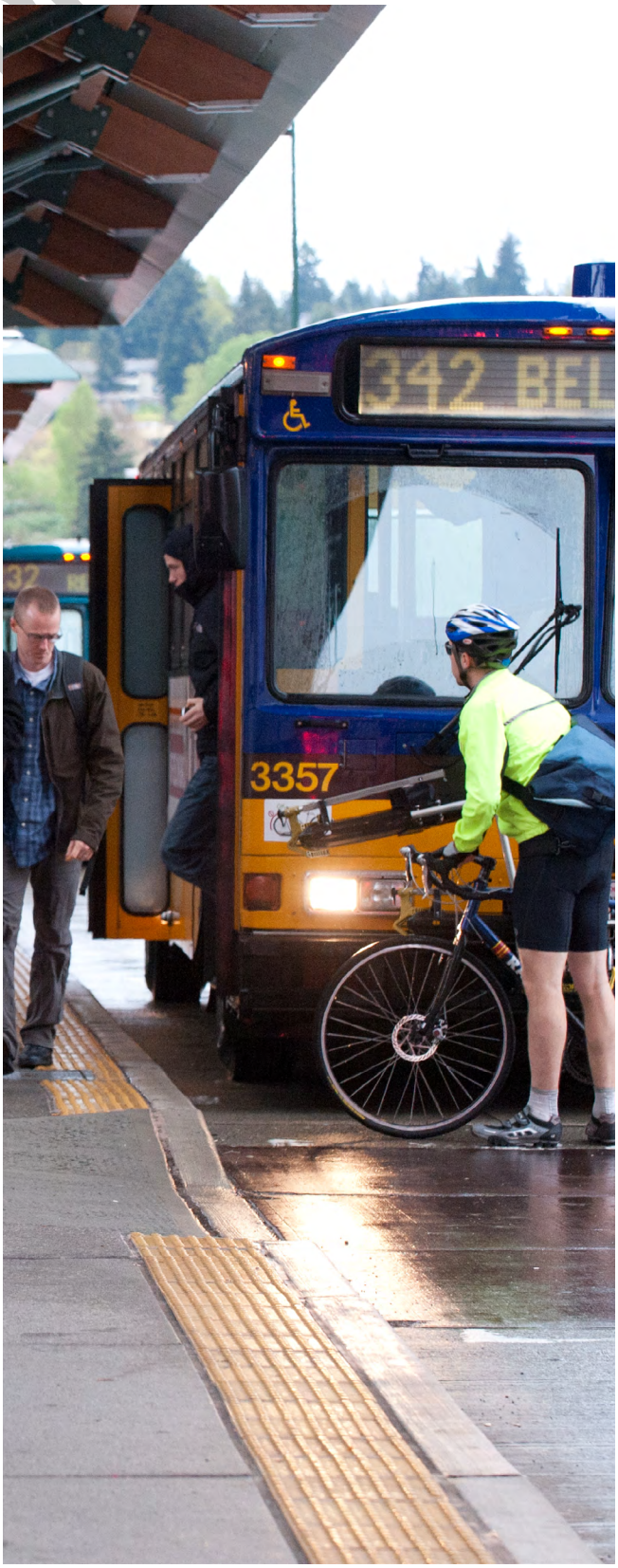

Task 3.3 – Transit–Pedestrian and Bicycle Integration Report

The PBII Team will compile and publish a Transit–Pedestrian and Bicycle Integration Report that summarizes for a general audience the technical reports developed in Tasks 3.1 and 3.2 and compares the project rankings in both lists, prioritized according to transit utility and projected impact on ridership, respectively. A single list will be developed of the highest priority pedestrian and bicycle projects from the perspective of transit, which will weigh these two approaches to project prioritization. Planning-level estimates of the cost per unit of improvement for these projects will be developed for consideration in the Pedestrian and Bicycle Implementation Strategy (see Task 4). A few select projects will be highlighted in this report to demonstrate the characteristics and/or locations of non-motorized projects that are considered to be the most valuable to advancing the goals of the Transit Master Plan.

Deliverable – *Publish a Transit–Pedestrian and Bicycle Integration Report that summarizes the technical analyses completed in Tasks 3.1 and 3.2 for a general audience in a reader-friendly format and develop a single list of highest-priority pedestrian and bicycle projects that support the goals of the Transit Master Plan.*

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Figure 17. The SE 28th Pl stairs to 112th Ave NE dramatically reduce the walking distance to the South Bellevue Park-and-Ride for portions of the Enatai neighborhood.

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BELLEVUE PEDESTRIAN & BICYCLE IMPLEMENTATION INITIATIVE

TASK 4: PEDESTRIAN AND BICYCLE IMPLEMENTATION STRATEGY REPORT

Introduction

The 2009 Pedestrian and Bicycle Transportation Plan regards investments in non-motorized transportation systems as integral to the City of Bellevue's economic health, environmental quality, and social and community fabric. Recognizing that Bellevue is currently falling short of the 2009 Plan's targets for investments in active transportation infrastructure, the Pedestrian and Bicycle Implementation Initiative (PBII) aims to expedite the realization of non-motorized facilities and support programs identified by that plan.

Efforts to improve walking and bicycling conditions in Bellevue must be balanced with competing priorities and sensitivity to available funding. It is in this context that the PBII will present a prudent and pragmatic solution set of projects, programs, and policies that fits within the Bellevue context, is affordable, and can be implemented in a reasonable time frame. In Task 4, the PBII Team will determine how best to advance a package of pedestrian and bicycle improvements—as identified by the six other PBII task elements—that will attract and leverage investments from public and private sources. Completion of PBII Task 4 is anticipated in 2016.

Task 4.1 – Pedestrian and Bicycle Investment Priorities

In Task 4.1, the PBII Team will document with narrative, spreadsheets, maps, and graphics the consolidated investment priorities identifed by the six other PBII task elements. This documentation will include planning level cost estimates for implementing the pre-design, design, property acquisition, construction, outreach and encouragement campaigns, targeted safety and data collection investments, the inauguration of bike share service, and other activities to advance the 2009 Plan's identified needs.

As indicated in their respective scopes of work in the other sections of this document, the PBII Teams charged with the six other tasks will be responsible for prioritizing and documenting their respective project and program recommendations. Task 4.1 will not revisit those investment prioritizations barring some unanticipated circumstance and/or specific direction from the Transportation Commission or City Council. The primary responsibilities of this PBII Team 4 for Task 4.1 are to:

1. review the investment priorities from each of the other PBII task elements;
2. consider the relationships between the various recommended projects and programs, including those that (i) are critical to the success of any individual components or the advancement of the vision overall, (ii) are

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mutually advantageous or present strategic opportunities, and (iii) anticipated to offer unique efficiencies related to cost or funding if their implementation is coordinated;

3. evaluate the relative priority of projects and programs between (but not within) the various PBII task elements;
4. provide recommendations for how projects and programs should be prioritized without regard to available financial resources and organized into modules that can be assembled into thematic, financially constrained packages in subsequent tasks.

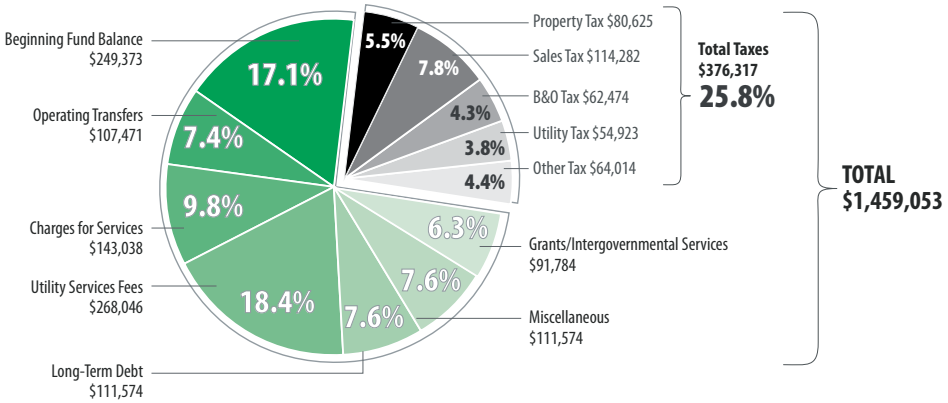
Deliverable *– A technical memo that documents and prioritizes the recommended projects, programs, and policies from the six other PBII task elements.*

Task 4.2 – Existing Funding Strategy

To develop an action-oriented plan that is implementable in a reasonable time frame, a clear understanding is required of the financial resources that are presently and will continue to be available to implement the proposals. In Task 4.2, the PBII Team will summarize the current approach to funding pedestrian and bicycle facilities and programs in Bellevue, including consideration of established municipal funding sources, recently secured external grant programs, and the typical scale of private developer contributions to progress implementing the 2009 Plan.

Deliverable *– A technical memo documenting the existing approach to funding pedestrian and bicycle projects in Bellevue.*

Figure 18.
2015–2016 Total City Budget Resources ($000s), from the *2015–2016 Adopted Biennial Budget*.



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Task 4.3 – Potential Funding Strategy

A variety of potential sources and strategies exist to fund the investment priorities documented in Task 4.1, such as the City's general fund, bond revenue, developer contributions, assessments and fees, and federal and state funds. In Task 4.3, the PBII Team will examine both conventional and creative revenue options that offer the potential to support the implementation of the projects, programs, and policies recommended in the six other PBII task elements.

With respect to conventional revenue options, the PBII Team will review the wide range of federal funding resources for pedestrian and bicycle project implementation, such as those compiled by Advocacy Advance and the Alliance for Biking and Walking. Some such resources include:

- programs to fund improved bicycle and pedestrian connections to transit (see Bicycling and Walking in the United States: 2014 Benchmarking Report pages 136-137 and Federal Funding for Bicycling and Pedestrian Improvements);
- Transportation Alternatives Program funds to expand travel choice, strengthen the local economy, improve quality of life, and protect the environment;
- the Highway Safety Improvement Program (see case studies);
- Recreational Trails Program funds to develop and maintain recreational trails and related facilities;
- Congestion Mitigation and Air Quality Improvement Program funds to implement transportation projects to improve air quality and reduce traffic congestion in areas that do not meet air quality standards.

In Task 4.3, the PBII Team will also consider how other jurisdictions are increasing locally generated funding to support non-motorized programs. For example, the City of San Luis Obispo recently amended its transportation plan with a policy that allocates general fund transportation spending by mode at the same ratio as their mode share goals—thus 20 percent of general fund transportation spending will go to their bicycling program. Other jurisdictions are proposing ballot measures; for example, Move Seattle is a nine-year $900 million levy that "will take care of the basics, maintaining our streets, bridges, and sidewalks, while also investing in the future with improvements that give us more transportation choices to move growing numbers of people efficiently and reliably through our city and between our neighborhoods." Investments in pedestrian and bicycle projects and programs figure prominently in the spending breakdown for the Move Seattle proposal.

With respect to more creative revenue options, the PBII Team will document case studies of:

- Public/Private partnerships (e.g., Amazon funds cycle tracks on Seventh Avenue; Microsoft funds Overlake Pedestrian/Bicycle Bridge over SR-520; Alaska Airlines funds Puget Sound Bike Share);

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- Crowdfunding (from Memphis to Kansas City to Denver, crowdfunded bike infrastructure has been gathering momentum);
- Ballot measures (e.g. numerous case studies are documented in Success at the Ballot Box: Winning Bicycle-Pedestrian Ballot Measures).

There might also be opportunities to partner with the region's transit agencies to secure funding for non-motorized investments from the Washington State Legislature. For example, King County submitted for inclusion into the Draft Senate Transportation Funding Package a $5.5 million request to fund an expansion of Pronto Cycle Share in Bellevue, Kirkland, Redmond, and Issaquah.

The extent to which these various resources are available at any given time, to fund capital projects or increase staffing, has a large impact on when the investment priorities documented in Task 4.1 can be implemented. In Task 4.3, the PBII Team will determine which of these funding options offer the most promising opportunities for the City of Bellevue to expedite the implementation of its 2009 Plan mid-term objectives and long-term vision.

Deliverable *– A technical memo documenting both conventional and creative funding options that offer the potential to support the implementation of the investment priorities consolidated in Task 4.1.*

Figure 19. These are two of many resources that will help to inform the PBII about conventional and innovative means by which Bellevue may seek to fund pedestrian and bicycle projects and programs.

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Task 4.4 – Community Consultation

Approved by the Bellevue City Council on February 17, 2015, the PBII Program Principles represent the Council's guidance to the Transportation Commission, which is tasked with overseeing the Pedestrian and Bicycle Implementation Initiative. Among these principles is the directive to: "Engage community stakeholders in setting the priorities for investment in non-motorized facilities." In response to this directive, the PBII Team will undertake a targeted engagement strategy that solicits input on non-motorized priorities (Task 4.1) and funding strategies (Task 4.2 and 4.3) to inform the development of financially-constrained implementation strategies (Task 4.5).

The following proposed objectives will guide the community engagement process:

- Work with a broad audience (including residents, businesses, major institutions, neighboring cities, transportation agencies, and other organizations) to encourage participation and interest in the PBII.
- Create focused opportunities for community members to discuss issues and ideas directly with the Transportation Commission, Transportation Department staff, and elected officials.
- Provide easy and convenient ways for people to get information and provide comment.
- Educate on the Bellevue Transportation Department's responsibilities related to the design, construction, and maintenance of non-motorized facilities.
- Identify key values that motivate the public to care (safety, mobility, environment, health, cost stewardship).
- Gauge level of interest in specific investments (capital projects, maintenance, etc.).
- Develop a pedestrian and bicycle implementation package that has broad public support.

To address these outreach objectives, the PBII Team will consult with a wide range of partners, including the Bellevue Downtown Association, Chamber of Commerce, Cascade Bicycle Club, and Feet First, to arrive at a preferred public engagement strategy that informs the Pedestrian and Bicycle Implementation Strategy Report (see Task 4.5). Decisions about when and how to involve the public will be guided by a clear sense of purpose. A variety of options will be considered to solicit the public's input on an investment strategy. For example, the PBII Team might consider employing a budget simulation tool to solicit thoughts on spending priorities via an online form (see the City of Seattle Levy Builder and the "Thousand Visions Game" employed by the City of Spokane as highlighted on page 23 of Using Online Tools to Engage—and be Engaged by—The Public).

Deliverable *– A technical memo documenting the consultative process with, and investment priorities of, community stakeholders.*

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Task 4.5 – Implementation Strategy Report

In Task 4.5 the PBII Team will leverage information garnered from Tasks 4.1 through 4.4 and develop an implementation strategy report to advance project designs and programs identified in the 2009 Plan. Because there is considerable uncertainty about how much funding might be available in the future, the establishment of funding scenarios (i.e. Stable Resources, Moderate Growth, Aspirational Growth) provides a means to plan for this uncertainty and develop alternative implementation strategies that apply the City's vision and goals to different potential financial situations. For example, coordination with the Pavement Overlay Program will help inform short-term investment opportunities, while consideration of potential funding strategies that could contribute to the implementation of pedestrian and bicycle facilities and programs in the medium- and long-term (e.g. grant eligibility, CIP competitiveness, public-private partnership and sponsorship opportunities, bond measures, crowdfunding) will lend credibility to the two growth-based scenarios. The Seattle Bicycle Master Plan Implementation Plan 2015 - 2019 serves as an instructive example of the purpose and approach anticipated for the report produced in PBII Task 4.5.

An important consideration when framing the *Pedestrian and Bicycle Implementation Strategy Report* is how best to communicate the investment strategy in a compelling way. In the case of Move Seattle, there are four key themes driving the levy: A Safe City, An Affordable City, An Interconnected City, and A Vibrant City. Perhaps in Bellevue the messaging on a strategy should be linked to the significant investments already taking place with the East Link program. In this context, a potential increase in funding would target investments in station catchment areas that would improve the synergy between public transportation and biking and walking. The PBII Team will engage the Finance Department and the Transportation Commission in determining how best to package and when to best pursue the various components of the pedestrian and bicycle investment strategy. For its part, the Transportation Commission would use this information when advising the Bellevue City Council on transportation funding alternatives and priorities.

Deliverable – *A report documenting short- and long-term investment priorities that aim to improve bicycle and pedestrian mobility in Bellevue. The final report will include an evaluation of funding options paired with an annual work plan specifying when each of the prioritized improvements might be implemented. This deliverable will inform the next round of updates to the City's Transportation Facilities Plan (TFP), Capital Investment Program (CIP), biennial operating budget, and a potential ballot measure.*

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BELLEVUE PEDESTRIAN & BICYCLE IMPLEMENTATION INITIATIVE

TASK 5: PEDESTRIAN AND BICYCLE COUNT ASSESSMENT REPORT

Introduction

Measuring bicycle and pedestrian activity is a key element to achieving the goals of Bellevue's 2009 Pedestrian and Bicycle Transportation Plan, which directs Transportation Department staff to "[develop] procedures to collect data in order to measure pedestrian and bicycle usage on an ongoing basis." Meeting the 2009 Plan's implementation targets, which include a 10 percent increase in walking and bicycling trips over 2009 levels within ten years (i.e., by 2019), requires a quantifiable base of knowledge.

Without an ongoing, standardized count methodology in place, city officials must rely on anecdotal evidence, census estimates, or short-term counts in limited and inconsistent locations to understand pedestrian and bicycle activity citywide. The result is a limited understanding of the role of walking and bicycling as transportation modes, difficulty in projecting future use, and a lack of understanding of how factors such as facility type, climate, topography, land use, and income influence activity levels. Data serves as a solid foundation on which to make smart decisions about how and where to prioritize municipal investments in pedestrian and bicycle facilities.

In Task 5, the PBII Team will develop a proposed pedestrian and bicycle count program with planning level cost estimates that, if implemented, would provide the City of Bellevue a more complete citywide baseline for non-motorized travel patterns. The purpose of this analysis is to provide fundamental information needed to make sound, data-driven policies and programming decisions. Completion of PBII Task 5 is anticipated in 2015.

Mode of Travel	% of Commuters		% of All Trips Nationwide (3)
	Nationwide (1)	52 Large U.S. Cities (2)	
	2.8%	5.0%	10.4%
	0.6%	1.0%	1.0%
	5.0%	17.2%	2.2%
(4)	91.6%	76.7%	86.4%
All Modes	100%	100%	100%

Sources: (1) ACS 2011 (2) ACS 2009–2011 (3) NHTS 2009 **Notes**: The term "mode share" is used to describe the percentage of all trips or percentage of trips to work by each mode of transportation. (4) This includes trips by private car and "other" means that are not public transportation, bicycling, or walking—such as taxi, motorcycle, recreational vehicle, school bus, etc.

Figure 20. Overview of mode share in the United States, as published in the *Bicycling and Walking in the United States: 2014 Benchmarking Report*.

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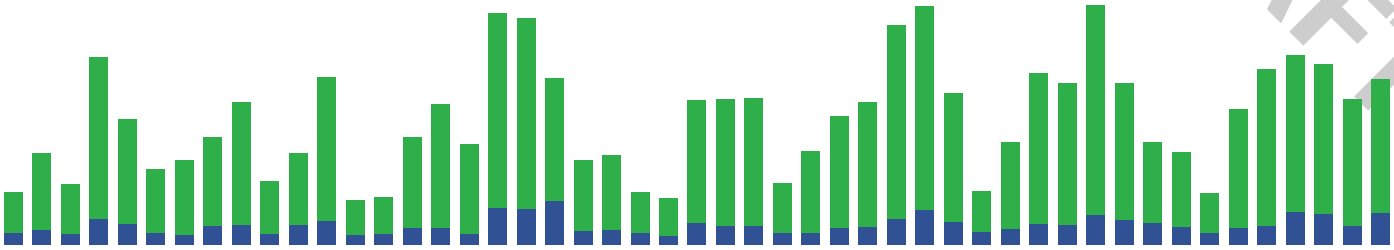

Task 5.1 – Trends in Walking and Bicycling

In Task 5.1, the PBII Team will summarize walking and bicycling usage data from sources such as the U.S. Census Journey-to-Work and the National Household Travel Survey that document aspects of walking and biking—mostly as they relate to work commute trips of employed adults or national/regional travel behavior. For example, The 2009 National Household Travel Survey estimates that about 10 percent of all trips nationally are made by foot and about 1 percent are made by bicycle. From 2000 to 2009, the average length of walking trips made by commuters increased from 0.83 miles to 0.98 miles, and the average travel time for walking trips increased from 9.8 minutes to 16.2 minutes. There also has been an increasing trend in bicycle commuting: about 0.38 percent of workers regularly commuted to work by bike in 2000, and that rate grew to 0.53 percent in 2010 (see NHTS website).

When documenting this information, it is important to recognize the limitations of these data sets, which miss much of the actual walking and bicycling activity in our communities—such as trips made by students, utilitarian trips, and linked trips. They also do not indicate where pedestrians and bicyclists could be expected to be found (trip distribution) or how many pedestrians and bicyclists would likely be found at any specific location (travel demand). The data sources also may not represent a true cross section of user groups or provide sufficient detail about background elements (e.g. origins, destinations, trip frequency) that could provide insight into behavior. Without accurate and consistent information about demand and usage, it is difficult to measure the positive benefits of investments in these modes or to compare them to other transportation modes (e.g. private automobile).

Deliverable – *A technical memo summarizing walking and bicycling trends in Bellevue.*

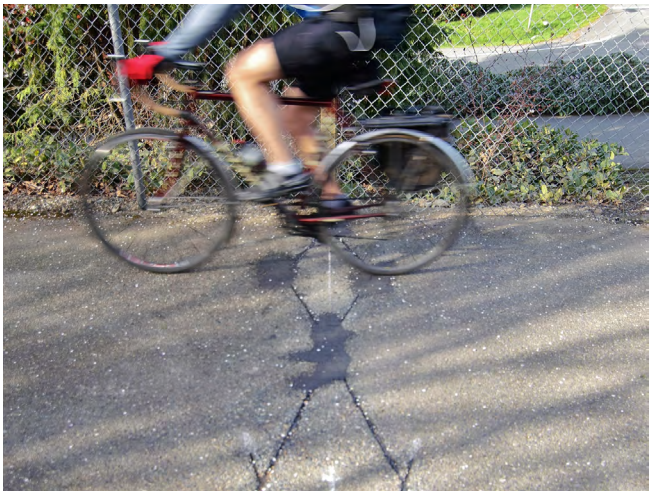

Figure 21. (top) Trends in daily pedestrian (blue) and bicycle (green) usage data recorded between April 1 and May 20, 2015 at the I-90 Trail counter (pictured above), installed in 2015 as part of a pilot program in partnership with WSDOT.

Fifty-day statistics (daily low/high):
Pedestrians: 66/320 | Bicycles: 258/1,567

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Task 5.2 – Bellevue's Existing Count Program

In Task 5.2, the PBII Team will assess the City of Bellevue's approach to completing annual counts of walking and bicycling, documenting changes in methodology from 2009 to 2014. Reflected below are links to the annual count reports from 2009 through 2013 (a 2014 report is in production):

- 2013 Pedestrian and Bicycle Count Report: 5 sites documented October 1-3, 2013.
- 2012 Pedestrian and Bicycle Count Report: 11 sites documented September 25-27, 2012.
- 2011 Pedestrian and Bicycle Count Report: 4 sites documented the week of September 29, 2011.
- 2010 Pedestrian and Bicycle Count Report: 13 sites documented on October 5, 2010.
- 2009 Pedestrian and Bicycle Count Report: 13 sites documented on September 29, 2009.

These counts are undertaken in support of the Washington State Documentation Project, which occurs annually in the early fall. Bicycle and pedestrian usage of specific intersections in cities throughout the state are counted and documented, similar to the National Documentation Project.

When assessing the existing count program, it is important to recognize that "these very short-duration counts can introduce significant overall error when non-motorized traffic use is low and inherently variable. If short-duration non-motorized counts are to be used, then it is essential that longer counts be taken to establish hourly patterns and a statistical basis for extrapolation of these counts" (see the FHWA Traffic Monitoring Guide). For example, statistics such as annual average traffic cannot be accurately measured during a short duration count. Instead, data collected during short duration counts are factored or adjusted to create these annual average estimates (see approach taken by the Minneapolis Public Works Department in their annual count reports).

In undertaking Task 5.2, the PBII Team will evaluate the existing continuous count program installed in March 2015 at locations along the I-90 and SR-520 Trails by WSDOT in collaboration with the Bellevue Transportation Department. The data will be reviewed to inform the group's understanding of typical traffic profiles in several ways: (1) How do counts vary throughout the day? (2) How do counts vary by day of the week? (3) How do counts vary by month or season?

Deliverable *– A technical memo documenting the approach used by the City of Bellevue to conduct walking and bicycling counts from 2009 to 2014.*

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Task 5.3 – Count Program Vision, Goals, and Objectives

It is important to define at the start why data will be collected and how it will be used, as this information drives subsequent decisions about where, when, and how to collect data. The following quote from the FHWA Traffic Monitoring Guide highlights the importance of clarifying the objectives of a monitoring program upfront:

> *"The number and location of the counters, type of equipment used, array, sensor technology, and the analysis procedures used to manipulate data supplied by these counters are functions of these objectives. As a result, it is of the utmost importance for each organization responsible for the implementation of the continuous count program to establish, refine, and document the objectives of the program. Only by thoroughly defining the objectives, and designing the program to meet those objectives, will it be possible to develop an effective and cost-efficient program"* (page 3-3).

Task 5.3 begins with a consideration of Bellevue's 2009 Pedestrian and Bicycle Transportation Plan implementation targets, which include a 10 percent increase in walking and bicycling trips over 2009 levels by 2019. The 2009 Plan does not specify what metric should be referenced when evaluating this high-level community/outcome target—for example, *Annual Average Daily Bicycle* (AADB) traffic—nor does it present a methodology for tracking performance over time. In Task 5.3, the PBII Team will revisit the target and current count protocols.

Both current and potential future uses of data should be considered when setting goals for the count program. For instance, does Bellevue want to align its count program with WSDOT's intentions of tracking statewide Bicycle and Pedestrian Miles Traveled (BMT/PMT) metrics (see Methods for Estimating Bicycling and Walking in Washington State)? If this is regarded as the performance metric to track, the PBII Team will evaluate various methods for estimating bicycle and pedestrian miles traveled at the local jurisdictional level (see the paper Applying a Vehicle-miles of Travel Calculation Methodology to a County-wide Calculation of Bicycle and Pedestrian Miles of Travel).

In Task 5.3, the PBII Team will work with the Transportation Commission to establish a vision and articulate the goals and objectives for a count program in Bellevue. The vision statement will describe what a count program in Bellevue should achieve, the data needs that the program seeks to fulfill, and what key attributes are necessary for the program to be considered successful. Specific goals and objectives will guide the planning and implementation of a count program in Bellevue toward the established vision.

In preparing for these discussions with the Transportation Commission, the PBII Team will consult a variety of reference documents, including the Guidebook on Pedestrian and Bicycle Volume Data Collection, which provides examples of applying non-motorized count data in the following ways:

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- tracking changes in pedestrian and bicycle usage over time;
- evaluating the effects of new infrastructure on pedestrian and bicycle activity;
- monitoring travel patterns at automated count sites, for use in developing factors to expand short-term bicycle and pedestrian counts at other locations;
- counting non-motorized volumes to quantify exposure and develop crash rates and to identify the before-and-after safety effects of upgrading a facility;
- identifying high-priority locations for pedestrian and bicycle facility improvements;
- developing and calibrating multimodal travel demand models.

In the case of San Diego County, recognized for being one of the most extensive regional bike counting networks in the nation, there was an interest in using count data to:

- analyze how bicycle and pedestrian activity levels relate to facility quality, and other factors such as land use and demographics;
- identify factors that are highly correlated with increased bicycling and walking;
- evaluate how the transit-linkage can be improved.

These goals informed the County's approach of developing a bicycle and pedestrian counting network that represents a variety of volumes, land uses, and demographics. A list of criteria based on these factors was used to prioritize bicycle and pedestrian counting sites in the network in San Diego County (see Seamless Travel: Measuring Bicycle and Pedestrian Activity in San Diego County and its Relationship to Land Use, Transportation, Safety, and Facility Type).

Deliverable *– A technical memo documenting the vision, goals, and objectives for the proposed count program in the City of Bellevue.*

Figure 22. (opposite) An Eco-TOTEM bicycle counter and display installed on Laurier Avenue in Montréal, Canada.

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Task 5.4 – Proposed Bellevue Count Program

In Task 5.4, the PBII Team will develop a proposed count program based on the review of the existing program (Task 5.2) and what is envisioned (Task 5.3). As a starting point, a method for determining locations for permanent, continuous counting and short-term counting sites needs to be developed. FHWA's Traffic Monitoring Guide states:

> *"Although it may be tempting to select the most heavily used locations for permanent monitoring, one should focus primarily on selecting those locations that are most representative of prevailing non-motorized traffic patterns (while still having moderate non-motorized traffic levels). In some cases, permanent count locations may be installed at low-use locations if higher use is expected after pedestrian or bicycle facility construction. The primary purpose of these continuous monitoring locations is to factor/annualize the other short-duration counts. Continuous counts at a high-pedestrian or high-bicyclist location may look impressive, but may not yield accurate results when factoring short-duration counts"* (page 4-33).

The PBII Team will then select the most appropriate technologies to support the program, which is dependent on the purpose and locations of the counts to be conducted. Many methods and technologies for counting pedestrians and bicyclists are available, and technologies are improving rapidly. Key factors to consider in selecting counting methods relative to bicyclists

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and pedestrians include the purpose of the count, the level of accuracy needed, and the overall cost. The PBII Team will reference the latest research evaluating automated count technologies that capture pedestrian and bicycle volume data to better understand which tools are best suited in different count settings (e.g. roadways, multiuse paths) and to determine their accuracy and reliability in different contexts (see Methods and Technologies for Pedestrian and Bicycle Volume Data Collection for examples of how organizations have used non-motorized count programs to fulfill these goals).

In Task 5.4, the PBII Team will document a proposed approach to counting pedestrians and bicyclists in Bellevue. The reporting from this task will identify what count technologies are proposed at specific locations in Bellevue. In producing this report, the PBII Team recognizes that budgetary constraints are key factors informing what the feasible number of permanent counting sites is and the rate of deployment (or phasing) of counting stations in the coming years.

A component of this task is to determine how best to communicate Bellevue's count management program to the public, which might include an online map interface that facilitates monitoring and communicating progress. In Task 5.4, the PBII Team will consider the feasibility of maintaining an interactive online map system; the following represents a starting point for consideration: Delaware Valley Regional Planning Commission, City of Arlington, and City of Seattle.

Additionally, it must be recognized, as stated in the FHWA Traffic Monitoring Guide: "the systematic monitoring of pedestrians and bicyclists is still an emerging area that requires more research." With so many emerging technologies for counting pedestrians (e.g. Placemeter) and bicycles (e.g. Knock Software), it is important to take a measured approach to advancing Bellevue's non-motorized count program.

Deliverable – *A Count Strategy Report documenting a proposed approach to counting pedestrians and bicyclists that, if implemented, would provide the City of Bellevue a more complete citywide baseline for non-motorized travel patterns. The final report will include a budget proposal for a proposed count program with planning level cost estimates for Council consideration.*

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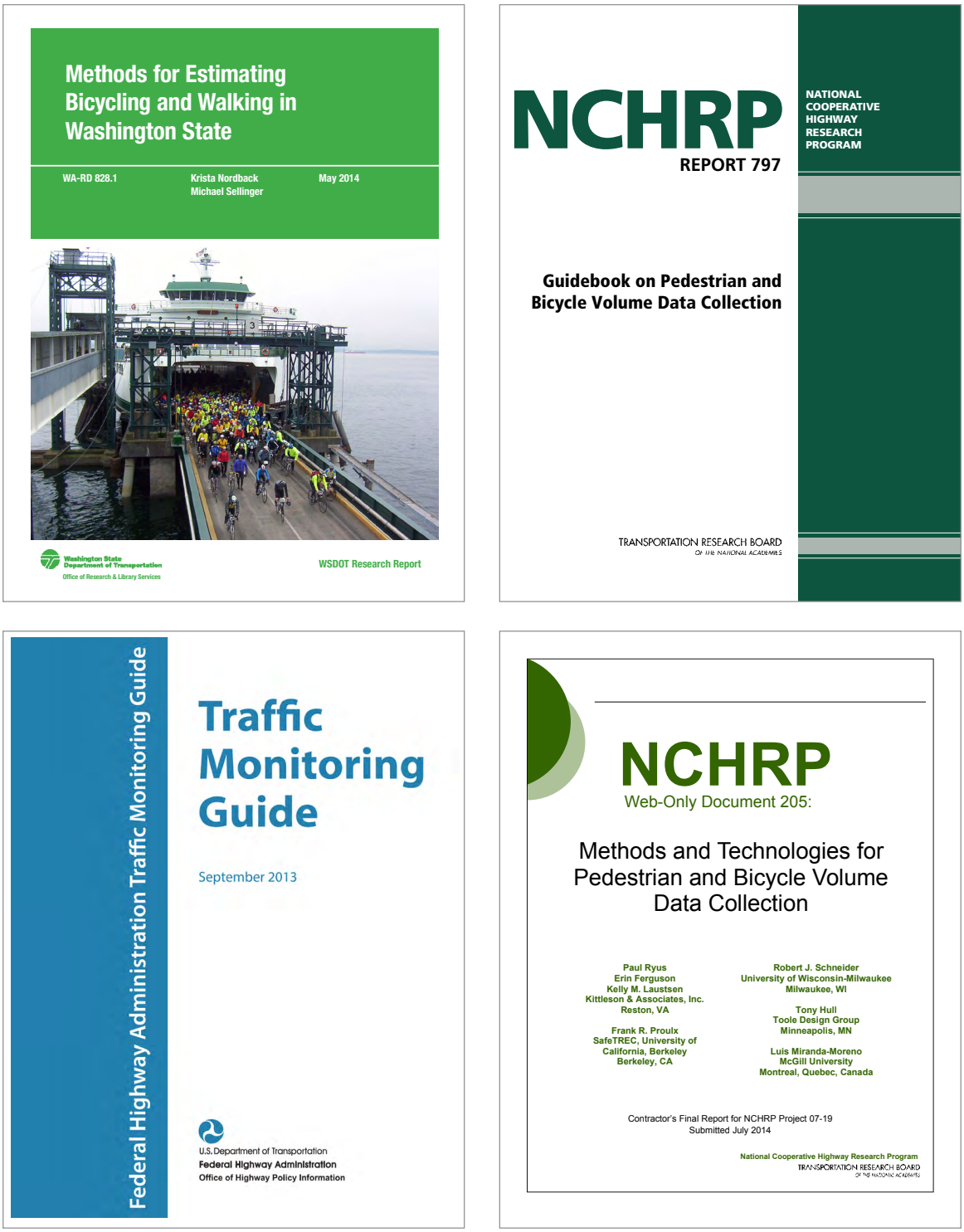

Figure 23. The PBII will draw on numerous sources for guidance on the collection and application of pedestrian and bicycle usage data, including reports from the state and federal governments, other jurisdictions, and the latest methodological and technological research.

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BELLEVUE PEDESTRIAN & BICYCLE IMPLEMENTATION INITIATIVE

TASK 6: BIKE SHARE FEASIBILITY ANALYSIS AND IMPLEMENTATION STRATEGY

Introduction

The draft 2015 Comprehensive Plan includes policies to "evaluate and facilitate… bike sharing programs" (TR-18) and to "support the establishment and operation of bicycle sharing program in Bellevue" (TR-X21). The Downtown Transportation Plan (DTP) Update recommends that this be accomplished through an expansion of the Pronto Cycle Share service, the first phase of which was launched in fall 2014 in Seattle. PBII Task 6 will build on the efforts of the DTP Update by completing a bike share feasibility analysis that assesses demand, costs, potential sources of funding, system size and phasing, and operational requirements, develops supporting community outreach and local marketing strategies, and establishes an implementation timeline. The result of these efforts will be a comprehensive implementation strategy that will subsequently be carried out by the City of Bellevue, Pronto Cycle Share, and their partners identified through this process based on the availability of funding and the scenarios identified by the Implementation Strategy Report (see Task 4).

Pronto is the established non-profit owner and administrator of bike share services in the central Puget Sound region. Motivate is the consultant contracted to deploy and manage those services already implemented in Seattle and future system expansions. It will therefore not be necessary for Bellevue to develop all aspects of a bike share business plan from the ground up; rather, only those components specific to expansion of the service locally must be addressed by this analysis. Factors like the organizational and contracting structure, asset ownership, and the financial model need not be planned, nor do details like the type and manufacture of bicycles, docking stations, and rental kiosks; the procurement and distribution of helmets; the administration of memberships and processing of single-use and short-term passes; the maintenance of bicycles and station hardware; the redistribution of bicycles throughout the system; or the branding and overall marketing direction of services.

To the extent that they apply to the topics requiring consideration by Bellevue's bike share feasibility study, staff will consult studies and guidelines produced by other jurisdictions and organizations for inspiration and guidance to ensure that all necessary components are addressed by this effort. This will include, but will not be limited to, referencing sources that include Bike Sharing in the United States: State of the Practice and Guide to Implementation (2012), The Bike Share Planning Guide (2013), the Eugene Bike Share Feasibility Study (2014), the Memphis Bike Share Feasibility Study (2013), and the Raleigh Bike Share Feasibility Study (2014). Completion of Task 6.1 through 6.5 is anticipated in 2015.

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Task 6.1 – Vision, Goals, and Measures of Effectiveness

Before any aspects of system planning or consideration of potential funding strategies are undertaken, it is important to first ascertain what purpose bike share is meant to serve in Bellevue. The potential benefits of bike share are well understood from the experiences of other cities across the United States and around the world. Some reasons for implementing bike share include making bike travel in urban areas available to a wider range of people, increasing the rate and improving the image of bicycling, increasing the accessibility of public transit by providing first and last mile connections, improving public health by making active transportation more convenient, reducing carbon emissions, and supporting a variety of economic development initiatives. Identifying which of these or other outcomes are most valued for bike share in Bellevue will help to determine the target audience, where the system should be deployed, and what other projects bike share can help to support and benefit from.

Task 6.1 will therefore establish a vision, articulate goals and objectives, and define measures of effectiveness for a bike share service operating in Bellevue. The vision statement will describe what a bike share service in Bellevue should achieve, the mobility needs that the service seeks to fulfill, and what key qualities are necessary for the service to be considered successful. Specific goals and objectives will guide the planning and implementation of Pronto Cycle Share in Bellevue toward the established vision. Measures of effectiveness will be defined to facilitate future assessment of the degree to which the system ultimately implemented achieves its vision and goals. Recognizing that the findings of Task 6.2 may influence the articulation of realistic system goals, portions of Task 6.1 may be completed in conjunction with or amended following the completion of Task 6.2.

Deliverable *– A technical memo documenting the vision, goals, and measures of effectiveness established for Pronto Cycle Share in Bellevue.*

Figure 24. (top) Pronto Cycle Share station on the University of Washington campus in Seattle, at 15th Ave NE and NE 40th St.

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Task 6.2 – Market Analysis

Higher use bike share stations tend to be located in higher density areas with mixed land uses and abundant pedestrian activity. These characteristics and an abundance of frequent transit service make Downtown a natural place to target early implementation of bike share in Bellevue. However, it is less readily apparent what parts of Downtown will exhibit the greatest demand, whether other activity centers may also be capable of supporting bike share in the short term, and where it might be appropriate to expand the system in future phases.

In Task 6.2, the PBII Team will complete an assessment of the market potential for bike share service in Bellevue, which will be informed by both community outreach and technical analysis. This will include consideration of anticipated total ridership and its variability by season, the likely ratio of annual members to single-use and short-term users, and the areas with the greatest potential to attract bike share use based on an assortment of land use, demographic, and urban form characteristics.

The outreach portion of this task will involve engaging the community to determine the level of awareness of and interest in bike share among residents and workers in Bellevue. To the extent possible, opportunities for the public to learn about and experience bike share first-hand will be incorporated into the outreach strategies employed. These strategies may include but need not be limited to:

- a web-based survey seeking input from a broad cross-section of the community;
- targeted outreach to major employers and commute trip reduction (CTR) sites in Downtown and Bellevue's other activity centers;
- a community planning workshop at City Hall that informs attendees about Pronto Cycle Share service, demonstrates the bicycles, and collects recommendations for docking station locations;
- streetside outreach events, which may include coordination with Cascade Bicycle Club Eastside Commuter Appreciation Days, an open streets event, and any similar occasions during the PBII process;
- a field trip with City Councilmembers and Transportation Commissioners to Seattle to experience the Pronto Cycle Share service firsthand.

Figure 25. Pronto users can find stations and locate available bicycles and open docks while on the go via mobile applications.

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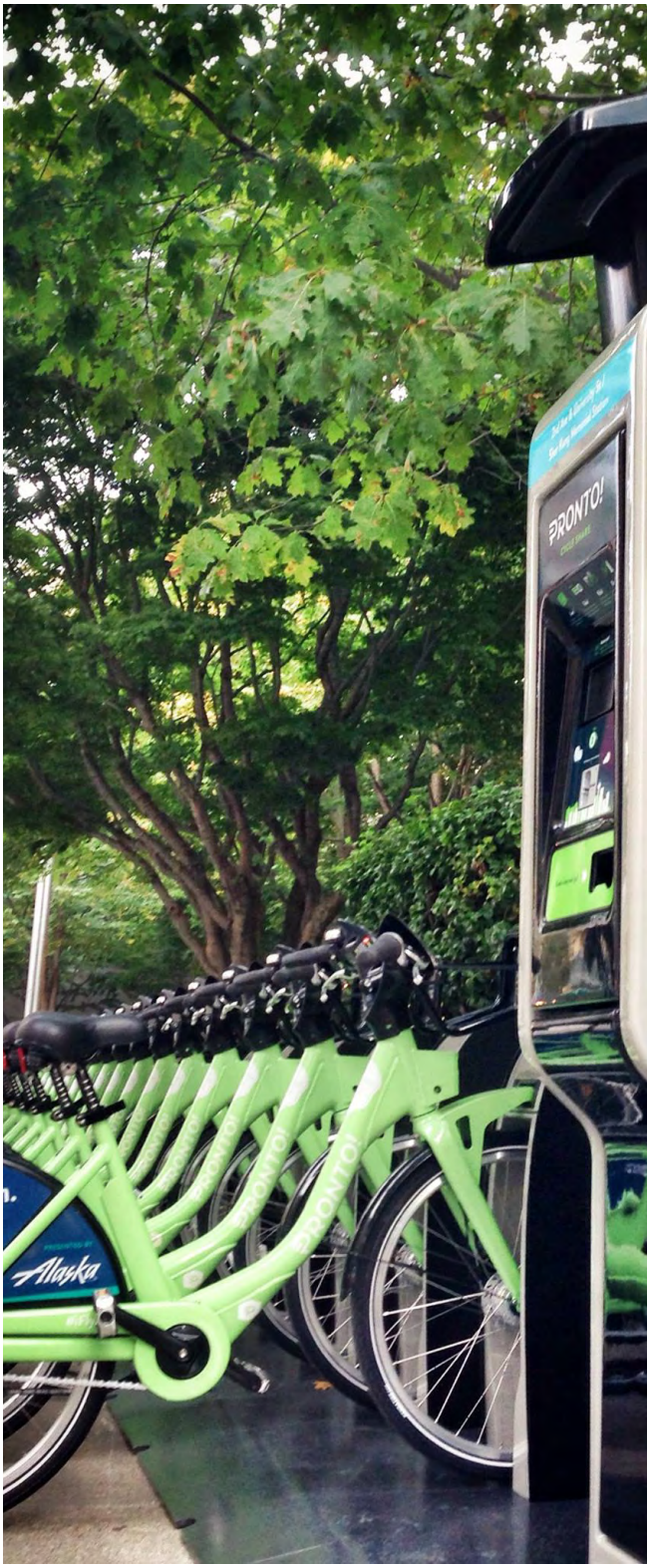
The Transportation Department will also complete a market analysis of Bellevue's activity centers to estimate anticipated membership, annual ridership, and the areas with significant potential to generate bike share use. This analysis will at minimum include consideration of the number and density of residents, employees, and students in Bellevue's activity centers, the number of activity sites and major destinations that may be attractive to short-distance, bicycle-based travel (e.g. residences, offices, retail, restaurants, cafes, shopping centers, parks), and existing and planned bicycle, pedestrian, and transit networks that would provide bike share users with safe and convenient means of access to stations, travel between stations, and connections to the multi-modal transportation system.

Deliverable *– A technical memo summarizing the outcomes of the community outreach and technical analyses conducted in support of the bike share demand analysis, including the types of outreach employed, the themes of community feedback received, and maps indicating the areas that exhibit the greatest potential to support a successful bike share service.*



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Task 6.3 – Bellevue Bike Share System Plan

Task 6.3 will develop the system plan for the implementation of Pronto Cycle Share in Bellevue, including the service area, system size and phasing, station locations, and guidelines for station permitting. This plan will also identify potential risks and barriers to the service's success and recommend bicycle projects within the service area that can help to facilitate the safe use of bike share by a wide range of people. Finally, the plan will assess the operational implications of the proposed system.

Leveraging the results of the market analysis, the PBII Team will identify the areas with significant projected demand for bike share in Bellevue and define the desired long-term (10-year) service area. This service area should be large enough to provide useful, walkshed-extending connections yet dense enough to provide walkable station spacing that ensures convenience and reliability for users. This will require collaborative work between staff in multiple departments, divisions, and external agencies to identify viable bike share docking station locations and any limitations that might restrict the installation or operation of bike share in locations with particular characteristics. A key outcome of this process will be the development of guidelines for station permitting and siting that are based on the outcomes of the following processes:

- Consultation with staff in Development Services and in Planning and Community Development to review codes that may relate to the siting of docking stations, including any permitting limitations for vending uses, signage, advertising, setbacks, pedestrian circulation, and ADA accessibility that might apply to public rights-of-way, private easements, and public parks.
- Consultation with staff in Transportation Engineering to identify locations in the public right-of-way that may be suitable for docking stations, including such possibilities as wide sidewalks, on-street parking spaces, and striped no-parking areas on streets.
- Consultation with Parks staff to identify locations in public parks that, if permitted, may be suitable for docking stations.
- Consultation with King County Metro and Sound Transit to identify opportunities and limitations to locating bike share stations on their property or adjacent to their facilities, including the Bellevue Transit Center, bus stops, and future East Link station areas.

After a comprehensive list of viable bike share station locations has been compiled, the PBII Team will leverage community input and technical analysis to determine which candidate locations should be included in the long-term system plan and in which phase they should be implemented. Community input may be obtainedfrom an online mapping tool that allows respondents to vote for and comment on candidate locations (e.g. the Pronto Bike Share Station Public Input Tool, Bellevue's 2009 Pedestrian and Bicycle Plan project list public input tool); this may be

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supplemented by feedback obtained at streetside outreach events. Technical analysis will examine how the candidate station locations relate to areas with significant projected demand, the level of convenience and connectivity provided by various alternatives, the contiguity of service areas within and between phases, station density and spacing, and factors that may affect the appropriate timing of docking station installation and use (e.g. major construction projects, forthcoming bicycle facility investments).

For the first phase of implementation, the plan will determine the target number of docks to be provided at each bike share station and the resulting overall system size at launch based on projected demand and the associated bicycle-to-population ratio. For future phases of implementation, the plan will consider whether conditions should be established for population, employment, and/or activity density in the area as a prerequisite to proceeding with system expansion.

The system plan will also identify potential risks and barriers to successfully attracting people to use bike share in Bellevue, including the presence and quality of existing non-motorized facilities, motor vehicle volumes, traffic signal timing and other factors that will influence the travel time competitiveness of bike share compared with walking and transit, and known safety issues (refer to the results of PBII Task 1). The bicycle and off-street project lists in the 2009 Pedestrian and Bicycle Transportation Plan Report and bicycle-related recommendations from the Downtown Transportation Plan will be reviewed to identify facilities that are critical to ensuring the safety and comfort of bike share users traveling between stations and throughout the service area.

Finally, through consultation with Pronto Cycle Share and Motivate, the PBII Team will assess the operational implications of the proposed system plan. To the extent that other Eastside jurisdictions (i.e. Redmond, Kirkland) are similarly prepared to engage in bike share system planning and implementation, the PBII Team will work with peers in those jurisdictions to identify opportunities to improve operational efficiency by coordinating the provision of system maintenance for the various Eastside services (in contrast to utilizing the existing Pronto facility in Seattle).

Deliverable *– A technical report documenting the system plan for Pronto Cycle Share service in Bellevue that includes system parameters for the first phase of implementation and future expansions, recommended bicycle facility improvements that should be coordinated with bike share, and the operational implications of the proposed system.*

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Task 6.4 – Cost Estimate and Funding Strategy

In Task 6.4, the PBII Team will develop an estimate for the capital and operating costs associated with the Bellevue bike share system plan developed in Task 6.3, which can be calculated based on the per-unit costs associated with existing Pronto service in Seattle. The team will then identify potential sources of revenue generation and supplemental funding and develop a budget proposal to cover the difference between estimated costs and anticipated external funding if necessary.

The cost estimate will include all costs associated with equipment procurement and installation, system launch, marketing, payment for administrative services provided by Pronto Cycle Share, payment for operations for the first five years provided by Motivate, and performance monitoring, analysis, and ongoing planning by City staff through the first five years following implementation. If it is determined in Task 6.3 that other Eastside jurisdictions may be prepared to coordinate bike share operations locally, the estimate should account for potentially reduced costs due to operational efficiencies. The funding strategy should consider all potential sources of revenue generation and supplemental funding, including:

- a projection of the revenue that will be generated from the sale of annual memberships and single-use and short-term passes, including low and high revenue estimates based on Pronto's experience to date in Seattle and the market analysis conducted in Task 6.2;
- the potential for generating revenue from advertising on bicycles, docking stations, and elsewhere, and how that revenue-generating potential could be influenced by existing city codes or potential changes to them;
- the $5.5 million allocated to bike share expansion in Bellevue, Kirkland, and Redmond by the April 13, 2015 version of the Washington State House's 2015-17 Transportation Budget Proposal (note that this House budget is not adopted law);
- all federal, state, and local grants for which the expansion of Pronto Cycle Share to Bellevue—and potentially to the greater Eastside if pursued as a joint venture with other jurisdictions—would be eligible;
- all major employers, local businesses, and organizations interested in serving as corporate partners or sponsors for the system as a whole, individual stations, or any aspect of marketing, promotions, or operation of the service;
- city funding options, including the viability of applying existing allocated Capital Investment Program (CIP) funds to bike share and the development of a budget proposal specifically related to the implementation of bike share services consistent with this plan.

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Based on the estimated costs and the likelihood of securing each of the potential sources of funding and revenue, the PBII Team will develop at least three financial scenarios for advancing implementation of Pronto Cycle Share in Bellevue consistent with the system plan developed in Task 6.4, with the scenarios reflecting ideal, likely, and worst-case financial plans.

Deliverable – *A technical memo that (i) comprehensively documents the costs of implementing Pronto Cycle Share in Bellevue, the revenues projected to be generated by the service, and potential supplemental funding sources and (ii) presents scenario-based financial plans for realizing the bike share system plan developed in Task 6.3.*

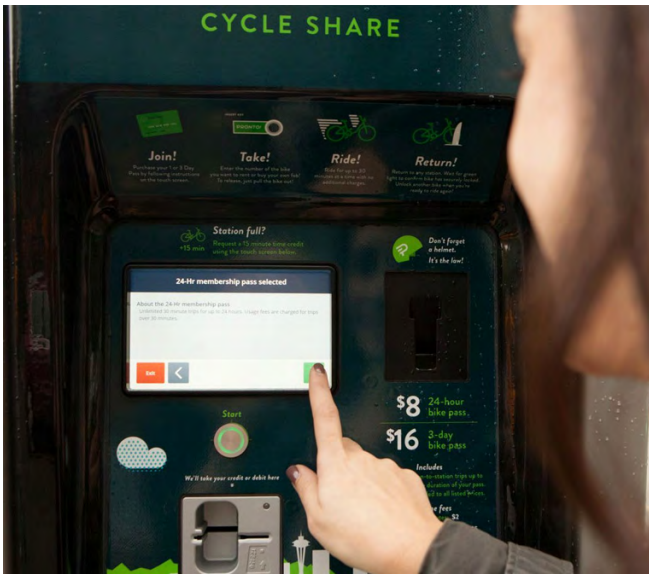

Figure 26. Short-term passes ($8/24-hr pass or $16/3-day pass) and helmets ($2) are available for purchase at Pronto kiosks at every station.

Task 6.5 – Feasibility and Implementation Report

The PBII Team will compile and publish a Bellevue Bike Share Feasibility and Implementation Report that summarizes the Task 6 technical reports in a reader-friendly format intended for public consumption and to be used to attract financial partnerships to help advance the implementation strategy.

This report will begin by reviewing the services offered by the region's established bike share administrator, Pronto Cycle Share, as well as its organizational and contracting structure, asset ownership, and financial model. It will then summarize the results of Tasks 6.1 through 6.4, describing the vision, goals, and measures of effectiveness for bike share in Bellevue, the anticipated demand for the service, the long-term system plan and phasing, the recommended associated bicycle facility improvements, and the estimated cost of and potential financial plans for implementation of the system. The report will also recommend an implementation timeline and suggest outreach and marketing proposals to attract users and identify partnership opportunities with businesses and non-profit organizations.

Deliverable – *Publish a Bellevue Bike Share Feasibility and Implementation Report that assesses the potential for and defines the process, parameters, costs, funding strategies, and timeline by which Pronto Cycle Share would be implemented in Bellevue if funding sources are secured.*

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TASK 7: PROGRESS MEASUREMENT AND MANAGEMENT REPORT

Introduction

Across the nation, government agencies are working to meet residents' demands to be more responsive, transparent, and accountable in decisions and investments. People want to know that transportation funds are being spent in ways that create value, support long-term job growth, make their communities more attractive to business and talent and contribute to their economic health and resilience. They are looking for a transportation system that provides not just movement but safe, reliable, affordable access to necessities like jobs, education, health care and groceries.

New strategies for transportation require new measurements of success. Measuring the impact of transportation investments in a way that resonates with the public is critical going forward. For elected leaders and residents, these metrics can demonstrate how well a project achieved its intended goals. For transportation planners and engineers, measuring the actual results of projects can help inform choices for future projects. For both, these measures can help make clear the impact of an annual transportation budget and how well a community is achieving its transportation vision. As noted in *Measuring What We Value: Setting Priorities And Evaluating Success In Transportation*:

"Performance measures give agencies the tools to measure and report return on investment in terms that policymakers and the public can understand and appreciate. Other sectors and programs are doing this already and, in some cases, have been for years. In a time when government is coming to their constituents asking for more support for a wide array of government services, transportation leaders must quantify the benefits of their programs in order to compete effectively."

The City of Bellevue's 2009 Pedestrian and Bicycle Transportation Plan incorporates goals, objectives, and performance targets aimed at improving decision making by linking the plan to specific actionable strategies and providing agency accountability for following through on the plan. The 2009 Plan directs the City to "work towards specific short- and mid-term implementation objectives" and identifies the following five measurable targets following plan adoption (see Policy PB-2):

1. Within 10 years, implement at least two completed, connected, and integrated north-south and at least two east-west bicycle routes that connects the boundaries of the city limits, and connects to the broader regional bicycle system.
2. Within 5 years, implement at least one completed and connected east-west and north-south bicycle route through Downtown Bellevue.

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3. Within 10 years, reduce pedestrian/vehicle and bicycle/vehicle accidents by 25 percent from 2007 levels.
4. Within 10 years, construct 25 more miles of sidewalks along arterial streets including collector arterials above 2007 levels.
5. Within 10 years, increase trips by bicycle and foot by 10 percent over 2009 levels.

One of the Bellevue City Council's PBII Program Principles is that staff "should review progress toward these established targets, define additional metrics deemed beneficial to achieving the City's goals, and leverage these insights to inform how existing goals can more readily be realized. Additionally, this initiative should recognize the broader context within which Bellevue can promote walking and cycling through "the Five E's"—engineering, education, encouragement, enforcement, and evaluation. To that end, reflecting Bellevue's commitment to its One City initiative, this initiative should facilitate coordination across City departments to measure and manage progress toward the 2009 Plan's goals." In response to this direction, Task 7 explores measures of effectiveness for monitoring progress in achieving Bellevue's pedestrian and bicycle vision. Completion of Task 7.1 through 7.3 is anticipated in 2016.

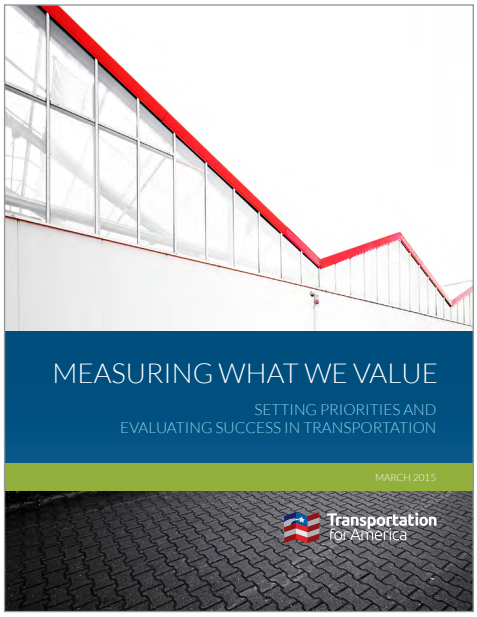

Figure 27. (top) The Pedestrian and Bicycle Information Center (PBIC) has designated Bellevue a Silver-level community for its excellent engineering practices, planning programs, and high mode share for transit and walking. Sponsored by the U.S. Department of Transportation Federal Highway Administration and FedEx, Walk Friendly Communities (WFC) is a national program that recognizes communities that have demonstrated a commitment to improving and sustaining walkability and pedestrian safety through comprehensive programs, plans and policies.

Figure 28. (above) *Measuring What We Value: Setting Priorities And Evaluating Success In Transportation.*

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Task 7.1 – Benchmarking Analysis

As a High Performance Organization (HPO) that promotes evidence-based practices, the City of Bellevue leverages the best technologies and innovative tools that are successful elsewhere and applicable to Bellevue. In Task 7.1 the PBII Team will explore how other North American cities use performance metrics to deliver high-quality pedestrian and bicycle environments.

Although each city is unique, the similarities and differences in the cities evaluated in Task 7.1 will provide useful insight into successful pedestrian and bicycle initiatives that might be emulated in Bellevue.. While size will be a consideration in selecting peers, greater weight will be placed on choosing peers that are industry leaders and are implementing projects or initiatives that will be instructive as Bellevue makes decisions about investments in walking and bicycling.

As a starting point, the PBII Team will consider the Alliance for Biking and Walking Bicycling and Walking in the United States: 2014 Benchmarking Report which provides examples of how peer agencies are measuring their progress in bicycling and walking. Additional resources for PBII Team consideration include:

- the Pedestrian and Bicycle Information Center's (PBIC) Walk Friendly Community (WFC) Community Report Card and Feedback report to Bellevue,
- the Walk Friendly Communities website,
- the League of American Bicyclists website, and
- the programs in place at jurisdictions participating in the USDOT's Challenge for Safer People and Safer Streets.

Through benchmarking, new goals, targets, and metrics can be set that keep agency staff focused on City priorities. In doing so, the PBII Team has the opportunity to show greater, broader benefits for non-motorized transportation investments and build a coalition of support toward making Bellevue a great place to walk and bicycle.

Deliverable *– A technical memo documenting how other North American cities promote coordinated pedestrian and bicycle solutions in engineering, education, encouragement, evaluation, and enforcement. The memo will also inform which metrics Bellevue might want to use to assess its program investments over time. The City's performance monitoring goals will be formalized in the Progress Measurement and Management Report (see Task 7.3).*

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Task 7.2 – Complete Streets Policy Discussion

The City of Bellevue recently committed to the U.S. Department of Transportation Mayor's Challenge which contains seven key strategies to improve pedestrian and bicycle safety, including Challenge Activity 1 calling for the adoption of a Complete Streets planning approach that considers walking and bicycling with other transportation modes. Complete Streets policies formalize a community's intent to plan, design, and maintain streets so they are safe for all users of all ages and abilities. Communities that have embraced this policy framework have seen favorable results from their Complete Streets projects. These projects have made streets safer, increased the number of people biking, walking, and taking transit, and have been related to broader economic gains.

While not called a "Complete Streets" policy, the City of Bellevue has adopted in its Comprehensive Plan policies (e.g., TR-77 & TR-78) that provide direction to ensure that multimodal mobility is considered in all roadway corridor projects, and implements a Design Manual that integrates pedestrian and bicycle facilities into roadway projects. In Task 7.2 the PBII Team builds on Bellevue's HPO journey through targeted engagement with the Transportation Commission, City Council, and other stakeholders on the applicability of a Complete Streets policy framework to the City of Bellevue.

Task 7.2 might include hosting a "Complete Streets Workshop" – an interactive daylong event that builds local capacity to implement Complete Streets approaches and strengthens relationships between transportation practitioners, other departments, and the community. Lessons learned from jurisdictions that have adopted Complete Streets policies, and input from organizations like AARP and Smart Growth America that are actively involved in promoting this approach, will inform stakeholder discussions.

Deliverable *– A technical memo documenting the consultative process with community stakeholders. If the City Council formalizes its Complete Streets approach, through policy adoption, the memo will also document how staff might institutionalize this new directive.*

Figure 29. Lessons learned from Evaluating Complete Streets Projects: A guide for practitioners, and other resources, will inform how to monitor performance within this policy framework.

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Task 7.3 – Progress Measurement and Management Report

In Task 7.3 the PBII Team references work completed in both Task 1 and Task 5 that arrives at recommended crash and usage count targets and performance metrics. Before committing to these or other targets or metrics identified in Task 7.1 and 7.2, the PBII Team should evaluate whether there are adequate resources to track the metrics and whether the measures provide meaningful information about the agency's progress toward meeting a stated objective in the 2009 Plan.

In producing a framework from which to evaluate the 2009 Plan's progress, the PBII Team defines why data will be collected, how the data will be used. The progress measurement and management report also specifies where, when, and how to collect data. If data on performance is simply collected but not analyzed or used to influence future decisions, planning and programming is not performance-based. For performance to inform future decisions about priorities and investments, data must be collected, evaluated, and reported on an on-going basis.

In Task 7.3 the PBII Team determines how best to communicate Bellevue's progress to the public. In completing this task, the PBII Team will consider the annual pedestrian and bicycle reporting templates from other jurisdictions. For example, San Francisco's Street Score: 2015 Annual Report Card on Walking evaluates walkability and progress toward the City's Vision Zero goal by looking at everything from policy and engineering to education and legislation. In Wichita the focus is on bicycles with the publication of Wichita Bicycle Master Plan: 2014 Annual Implementation Program Report. In Tucson, progress reporting includes both pedestrian and bicycle indicators in the 2015 Annual Report: Bicycle and Pedestrian Program. Finally, the County of Kaua'i produces a Complete Streets Indicators Report.

Deliverable – *A Progress Measurement and Management Report documenting a proposed approach and reporting template to evaluating the 2009 Plan's progress. The final report will include a budget proposal for the proposed performance management approach with planning level cost estimates for Council consideration.*

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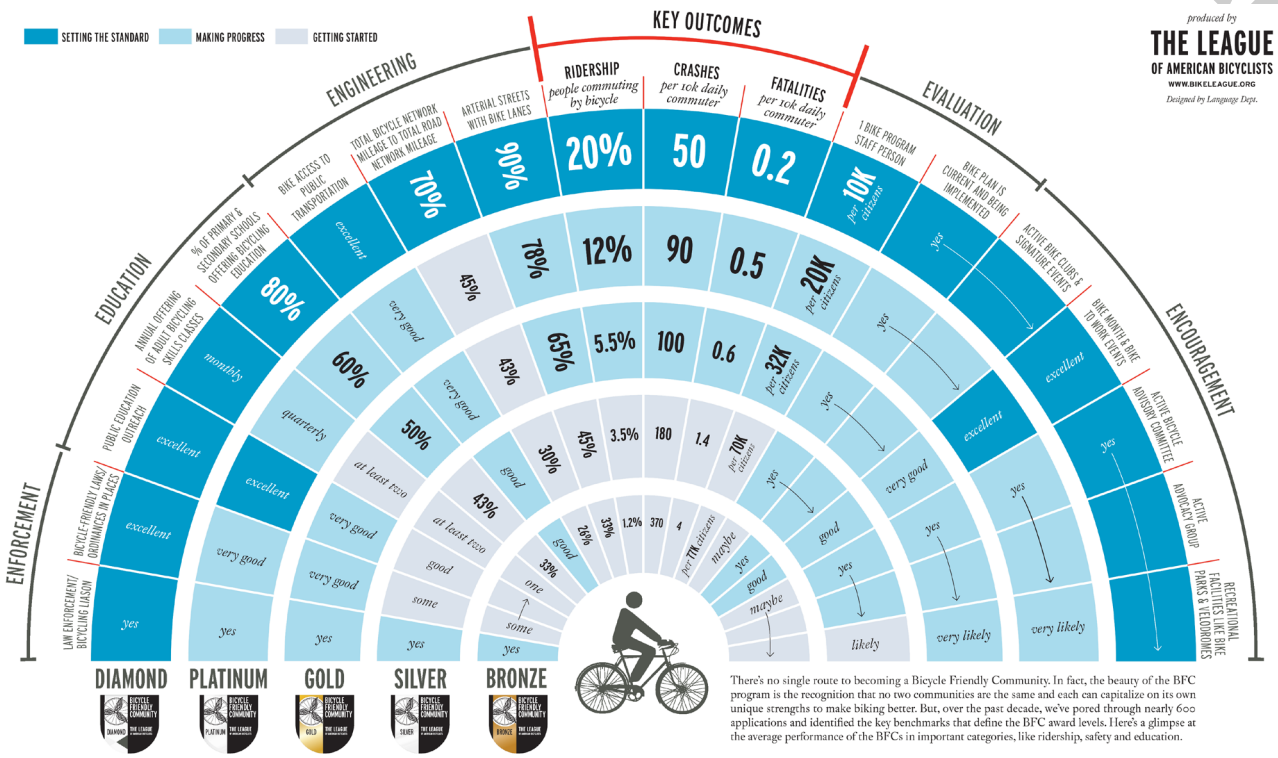

Figure 30. (top) The building blocks of a bicycle friendly community, according to the League of American Bicyclists. Applicants to the Bicycle Friendly Communities program are rated according to these metrics, providing clear targets for those aspiring to improve their rating over time. The City of Bellevue is a first-time applicant to the program in February 2015 and is awaiting the results of that submission.

Figure 31. (bottom) City Councilmembers with Director of Transportation Dave Berg accept a plaque from PBIC designating Bellevue as a Silver-level Walk Friendly Community in 2014.