BELLEVUE SAFE ACCESS FOR EVERYONE

Multijurisdictional Applicants

City of Bellevue Washington

King County

Financial Contributors

University of Washington

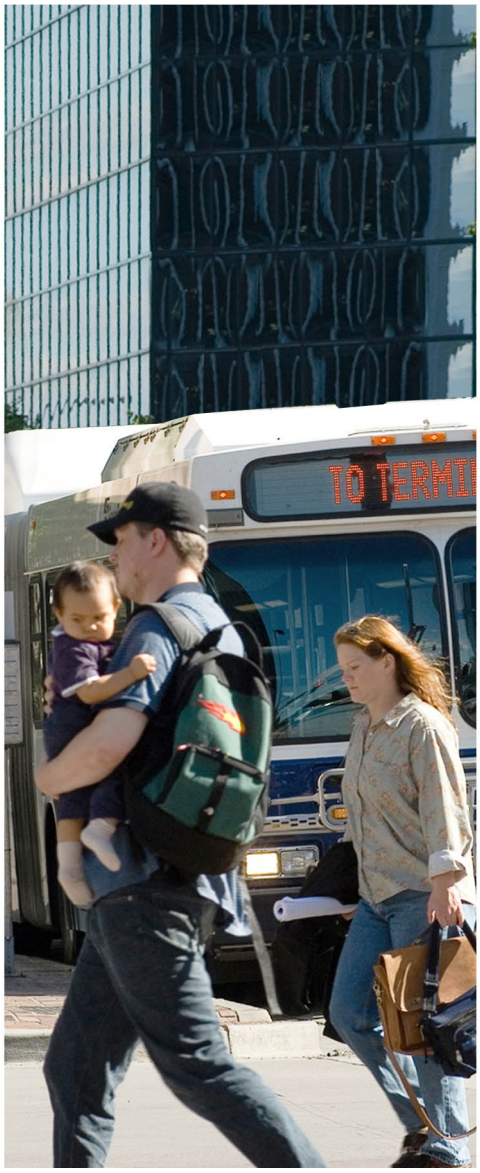
T-Mobile

IIHS HLDI Insurance Institute for Highway Safety Highway Loss Data Institute

Applied Information

Qualcomm

SS4A IMPLEMENTATION GRANT PROPOSAL - 2023



July 2023

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I. OVERVIEW

The City of Bellevue, Washington (city), as the lead applicant on a multijurisdictional application including King County, is submitting a Safe Streets and Roads for All (SS4A) Implementation Grant proposal bundled with supplemental planning and demonstration activities. Additional financial contributors to the projects and strategies include the Insurance Institute of Highway Safety, University of Washington, T-Mobile, Qualcomm, and Applied Information. The activities identified in this application arise from Safe System projects and strategies in the city's Vision Zero Strategic Plan (2020) and annual Action Plans (2021, 2022, 2023).

Safety Context. Safe mobility for vulnerable road users (VRUs) – people walking, rolling, and bicycling – is the city's highest road safety priority given that 51% of fatal and serious injury crashes involve a VRU even though they represent just 5% of all crashes on city streets (2017-2021).

Jurisdiction. This proposal – Bellevue Safe Access for Everyone (B-SAFE) – combines proven safety countermeasures and innovative technologies for Bellevue's Downtown, Wilburton, BelRed, and Crossroads neighborhoods – each a rapidly developing transit hub. Collectively, these neighborhoods represent just 12% of the city's land area but account for 45% of the city's fatal and serious injury crashes involving a VRU.

B-SAFE Activities. The following B-SAFE implementation (IMP), supplemental planning (SP), and demonstration (D) projects, strategies, and activities were selected to reduce fatal and serious injury crashes in the City of Bellevue and King County.

Implementation	Supplemental Planning	Demonstration
• ***IMP-1 Eastrail*** shared-use path separated from vehicle traffic and intersection crossing improvements for improved VRU safety • ***IMP-2 Bike Bellevue*** infrastructure including separated bike lanes and road diets to fill network gaps and provide safe connections to transit • ***IMP-3 Retroreflective Signal Backplates*** to improve intersection conspicuity for all road users • ***IMP-4 High Visibility Crosswalks*** to improve pedestrian safety and comfort	• ***SP-1 Road Safety Audits*** on High Injury Network to inform the city's Action Plan • ***SP-2 Speed Studies*** to identify context-sensitive safety recommendations for speed management • ***SP-3 Separated Bike Lane Design Guidance*** to evaluate Bike Bellevue (see ***IMP-2***) with near-miss analytics to inform future projects • ***SP-4 Speed Safety Camera Procedures*** to expand the city's existing automated enforcement program	• ***D-1 Protected Turn Phasing for Pedestrians Demonstration*** to test turn phasing operations at signalized intersections using near-miss analytics and inform the city's Action Plan • ***D-2 Adaptive Pedestrian Signal Control Demonstration*** to evaluate signal operations responsive to pedestrian activity using near-miss analytics and inform future implementation • ***D-3 Paint the Pavement Safety Demonstration*** to assess the effectiveness of aesthetically treated crosswalks using near-miss analytics and inform future implementation • ***D-4 Cellular Vehicle-to-Everything Demonstration*** to evaluate an innovative vehicle-pedestrian detection and warning system to inform broader roll-out of technologies

II. LOCATION

The City of Bellevue is the fifth largest city in Washington State (2020 ACS pop: 151,854). **This population number differs from the ETC Tool population of 240,600 which includes additional Census tracts.**

Bellevue's High Injury Network (HIN) – constituting 83% of serious injury and fatal crashes on just 8% of the city's street mileage – served as an initial screening tool to identify higher-risk locations. To achieve maximum safety impact, the HIN was cross-referenced with the highest geographic concentration of population, job opportunities, transit use, and safety risk for pedestrians and bicyclists. The result is the B-SAFE project area, which includes the Downtown, Wilburton, Bel-Red, and Crossroads neighborhoods *(see Figure 1)*. The B-SAFE proposal includes just 12% of the city geography, yet represents the following notable attributes:

- **62%** of citywide transit trips
- **58%** of citywide jobs
- **48%** of citywide High Injury Network corridor mileage
- **45%** of the city's pedestrian- and bicyclist-involved fatal and serious injury crashes
- **20%** of citywide residents (note: 57% of residents in the B-SAFE project area are people of color)

The B-SAFE proposal reflects the city's safety priorities and advancement of the most effective set of projects and strategies *(see Appendix A Implementation Project Maps)*.

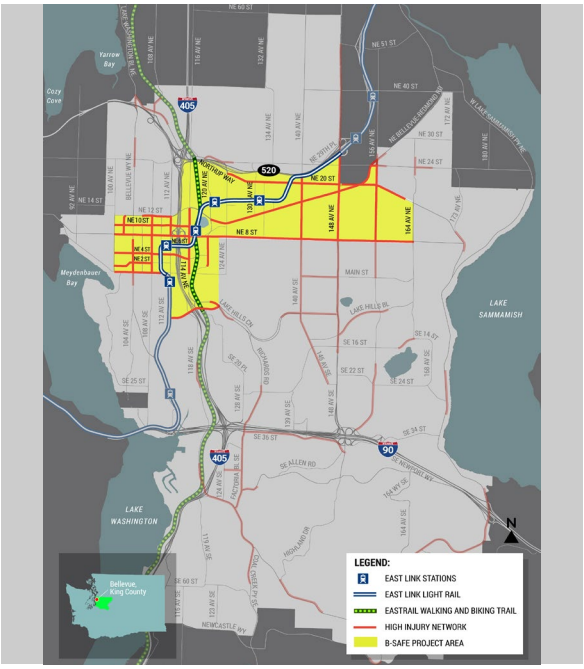


Figure 1: *B-SAFE Project Area*

III. RESPONSE TO SELECTION CRITERIA

III.1. SAFETY IMPACT

The City of Bellevue analyzed crash trends, roadway features, near-miss conflicts, and the results of Road Safety Audits (RSAs) to select high-impact projects and strategies.

› Description of the Safety Problem

The city's Safe System approach to identify and prioritize safety needs includes analysis of historical trends, roadway features, multi-disciplinary RSAs, and risk evaluations. This technical analysis was complemented by a series of "working backwards" exercises that started with a problem definition roundtable followed by a workshop to design-think solutions. The result is a comprehensive understanding of safety needs, providing information needed to identify problem areas matched with tailored safety countermeasures.

Historical Crash Data Trends. From 2017 to 2021, 103 fatal or serious injury crashes occurred on city streets: 45% of citywide VRU-involved crashes occurred in the B-SAFE area. The increased exposure of people walking and bicycling is an immediate safety risk, given the B-SAFE project area is a rapidly urbanizing geography with light rail transit stations opening in 2024.

High-Risk Roadway Features. From 2017 to 2021, 48% of the citywide HIN (by mileage) was within the B-SAFE project area. Most VRU crashes in Bellevue occur at intersections: 72% of pedestrian-involved and 33% of bicyclist-involved fatalities and serious injuries. High-risk roadway features identified through RSAs include signal heads that are difficult to see, legacy pedestrian crosswalk markings, and (along Eastrail) a lack of safe trail crossings.

Proactive Safety Analysis. The city uses decision-support systems and risk models to diagnose conflict types and inform selection of safety countermeasures.

- Near-miss video analytics at 40 intersections revealed that bicyclists were 8.7 times more likely to be involved in a conflict than a motor vehicle, and 73% of bicyclist-vehicle conflicts were with through-movement drivers. Identified safety improvements: implementation of a connected network of separated bicycle lanes and protected signal phasing operations at intersections.
- Analysis of 2023 citywide motor vehicle operating speeds (see *Appendix B Citywide Arterial Speed Study*) show a 10% increase in speeds on ***IMP-2 Bike Bellevue*** arterials from 2019 pre-COVID-19 levels. A 5 mph increase in speeds (observed on multiple streets in the B-SAFE geography) correlates to a 10-15% increase in the risk of fatal and serious injuries.
- Recent RSA findings in the B-SAFE project area include excessive speeding, lack of stop bars at intersections, lack of bicycle facilities, and motor vehicle-pedestrian conflicts at intersections.

Safety Impact Assessment

B-SAFE projects address the identified safety problems with low-cost, high-impact projects and strategies whose safety benefits will persist over time (see *Appendix C Endnotes* for references in *Table 1*).

Safety Treatment	Safety Problem Targeted
IMP-1 Eastrail. 0.3 miles of paved trail and one high-conflict road crossing. Crash Modification Factors (CMF) = 0.79, injury crashes[i].	**51%** of fatal and serious injury crashes involve a vulnerable road user.
IMP-2 Bike Bellevue. 14.6 lane miles of bicycle infrastructure. CMF = 0.51-0.70, all crashes[ii]. FHWA PSC	**13%** of fatal and serious injury crashes involve a bicyclist.
IMP-3 Retroreflective Signal Head Backplates. 1,152 improved signal heads at 126 locations. CMF = 0.85, all crashes[iii]. FHWA PSC	**52%** of fatal and serious injury crashes occur at signalized intersections.
IMP-4 High Visibility Crosswalks. 288 improved crossings at 134 locations. CMF = 0.60, pedestrian injury crashes[iv]. FHWA PSC	**41%** of all pedestrian fatalities and serious injuries involve failure to yield.

Table 1. *B-SAFE Implementation Projects and Strategies*

IMP-1 Eastrail. When completed, the Eastrail shared use path will be an uninterrupted 42-mile trail providing safe and comfortable connections to transit, jobs, and green space. Implementing 0.3 miles of paved trail and one intersection crossing improvement in the B-SAFE area will address a significant gap in this regional facility. Eastrail represents a transformative safety improvement that provides the public an off-street pathway separated from traffic that will increase travel on foot and by bicycle.

IMP-2 Bike Bellevue. Bike Bellevue streets were selected with safety as the top priority; 66% of streets associated with the project are on the HIN. In an online questionnaire of 1,200 people, 57% reported feeling unsafe riding a bicycle in Downtown, and 62% would ride a bike more often if streets had safe and comfortable bike lanes. Today, 66% of Bike Bellevue corridors have high stress LTS 4 conditions, suitable for only those cyclists classified as "strong and fearless." When fully implemented, Bike Bellevue will eliminate all LTS 4 conditions along project corridors. Cyclists of all ages and abilities will have access to a network that is more than double the current system – from 7.3 miles to 15 miles of separated bike lanes.

IMP-3 Retroreflective Signal Head Backplates. In 2022-23, the city completed RSAs along HIN corridors adjacent to 12 schools. Retroreflective signal head backplates were a high-priority systemic recommendation from the RSA team. A FHWA Proven Safety Countermeasure (PSC), this treatment improves conspicuity of intersections in both daytime and nighttime conditions. This low-cost, high-impact solution will provide a 15% reduction in total crashes at 126 locations.

IMP-4 High-Visibility Crosswalks. Bellevue's RSA along an HIN corridor in the B-SAFE project area recommended high-visibility crosswalks; crash analysis showed 41% of all pedestrian fatalities and serious injuries are attributable to failure to yield. High-visibility crosswalks, a FHWA PSC, will replace older two-line parallel markings with a "ladder-style" pavement marking at 288 crossings. This low-cost, high-impact solution will provide improved conspicuity for motor vehicle drivers to see where pedestrians cross the roadway.

Implementation Cost

Detailed cost information for B-SAFE projects and strategies is available on Form SF-424C, Budget Information. An assessment of the expectation of safety benefits is included in the Project Location Crash Data worksheet.

III.2. EQUITY, ENGAGEMENT, AND COLLABORATION

The City of Bellevue is recognized as the region's largest majority-minority city. With over 39% of its population having been born outside the U.S., 43% of residents speak a language other than English at home. And, in the B-SAFE project area 57% of residents are people of color. The USDOT Equitable Transportation Community Explorer Map Tool identifies the percentage of disadvantaged census tracts at 19% for King County.

Equity in Existing Action Plan

Bellevue's Comprehensive Plan policies advance equity as a foundational element of the city's Vision Zero initiative. Bellevue's Vision Zero Strategic Plan asserts that the starting point for improving equity outcomes is to: "Employ meaningful and accessible community engagement toward Vision Zero with a focus on equity." Developing the Strategic Plan included: online question-naires and mapping tool, Vision Zero pledge engagement (see *Figure 3*), a Vision Zero Summit, and input from people with disabilities, seniors, and low-income individuals.

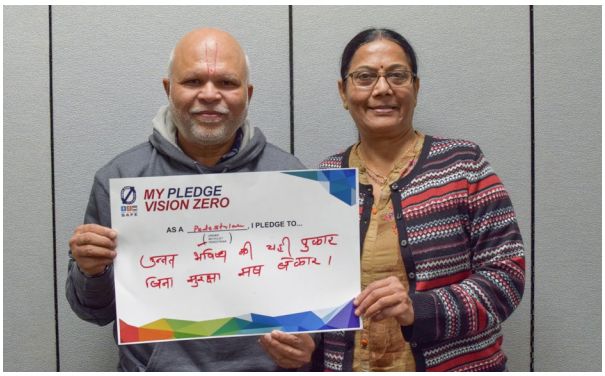


Figure 3: *Pledges informing Bellevue's 2020 Vision Zero Strategic Plan.*

The Bellevue Fatal and Serious Injury Crash Dashboard includes two equity-focused layers to support safety needs analysis: Race by Census Block and Economic Hardship Index. In the B-SAFE project area, the Crossroads neighborhood (census tract 232.02) includes a significant older community (25% are 65 years old or older), and the rate of poverty (14.8%) is more than double the rate for Bellevue as a whole.

B-SAFE Decreases Disparities for Underserved Travelers

Underserved communities are less likely to have reliable access to a personal motor vehicle, and they tend to walk, bike, and use transit more than people in other parts of the city. Responding to the 2022 Bellevue Human Services Needs Update survey, 41% of respondents identified lack of transportation options as a major community problem.

Based on 2019 data from the city's travel demand model, low-income residents are 30% more likely to travel by walking or bicycling and 77% more likely to take transit in Bellevue. *Figure 4* reflects how ***IMP-1 East rail*** and ***IMP-2 Bike Bellevue*** increase access to civic life:

- **Safe Routes to Transit.** The projects will enable 54% more people to walk or bike on a low-stress connection to transit; and an even more significant 59% increase for low-income residents.
- **Safe Routes to Schools.** The projects will allow 61% more people to access schools on a low-stress walking or biking route.

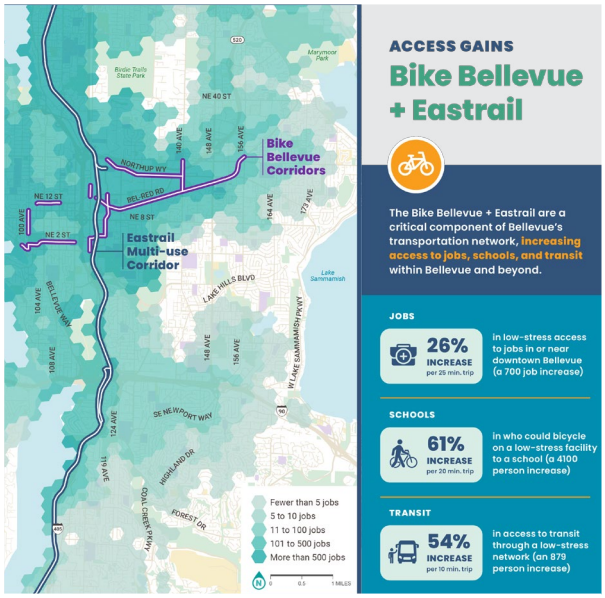


Figure 4: *Bellevue Accessibility Modeling Analysis (Alta Planning + Design).*

Leveraging Partnerships

The City of Bellevue is the lead applicant on this multijurisdictional application that includes King County. Additional financial contributors include the Insurance Institute for Highway Safety, University of Washington, T-Mobile, Qualcomm, and Applied Information (see *Appendix D Letters of Support*). The city received endorsements for B-SAFE from more than 20 entities including community-based organizations, public agencies, and businesses. The city will leverage these partnerships to ensure completion of B-SAFE within five years of SS4A grant execution.

III.3. EFFECTIVE PRACTICES AND STRATEGIES

B-SAFE implementation (IMP) projects and strategies are bundled with supplemental planning (SP) and demonstration (D) activities that collectively address these effectiveness criteria and attributes:

- **B-SAFE supplemental planning activities will update policies, guidelines, and standards to improve safety decision making.** ***SP-3 Separated Bike Lane Design Guidance*** includes before/after conflict analysis to inform new guidelines for future bike lane projects. ***SP-4 Speed Safety Camera Procedures*** expands the city's current program.

- **B-SAFE projects and strategies are supported by a Complete Streets Ordinance that prioritizes safety solutions.**
- **B-SAFE incorporates practices that promote efficiency within the planning and road management lifecycle.** ***IMP-3 Retroreflective Signal Head Backplates*** standardizes backplates citywide for efficient maintenance and replacement.
- **B--SAFE considers the impacts of land use and the built environment to promote transportation efficient design.** ***IMP-2 Bike Bellevue*** includes road diets to reconfigure the roadway within existing ROW to match current travel mode needs.
- **B-SAFE leverages the Safe System Approach, encompassing all five elements in the National Roadway Safety Strategy to address the identified safety problem.**
  - » **Safer Roads.** ***IMP-1 Eastrail, IMP-2 Bike Bellevue, IMP-3 Retroreflective Signal Head Backplates,*** and ***IMP-4 High Visibility Crosswalks*** improve roadway safety.
  - » **Safer Speeds.** ***IMP-2 Bike Bellevue*** includes road diets to reduce vehicle operating speeds. ***SP-2 Speed Studies*** assesses posted speed limits citywide to develop context-sensitive recommendations. ***SP-4 Speed Safety Cameras Procedure***s expands the city's current program to enforce regulatory speeds.
  - » **Safer People.** ***SP-1 Road Safety Audits*** along 13.7 miles of HIN corridors includes community walk audits and meaningful public engagement. ***SP-4 Speed Safety Camera Procedures*** addresses road user behavior by encouraging safe speeds.
  - » **Safer Vehicles.** ***D-4 Cellular Vehicle-to-Everything Demonstration*** supports near real-time safety communications between cars, traffic infrastructure, and VRUs.
  - » **Post Crash Care.** ***SP-2 Speed Studies*** incorporates collaboration with EMS, Fire, and Law Enforcement first responders to account for emergency response time considerations.
- **B-SAFE includes a mix of infrastructure, behavioral, operational, and/or post-crash safety activities.**
  - » **Infrastructure.** ***IMP-1 Eastrail, IMP-2 Bike Bellevue, IMP-3 Retroreflective Signal Head Backplates***, and ***IMP-4 High Visibility Crosswalks*** improve roadway infrastructure.
  - » **Behavioral.** ***SP-4 Speed Safety Camera Procedures*** addresses road user behavior by encouraging safe speeds through automated enforcement.
  - » **Operational.** ***D-1 Protected Turn Phasing for Pedestrians Demonstration*** determines pedestrian and vehicle thresholds to deploy protected signal phasing. ***D-2 Adaptive Pedestrian Signal Control Demonstration*** adjusts signal operations for pedestrian demand.
  - » **Post-Crash.** ***SP-2 Speed Studies*** includes first responder collaboration to incorporate emergency response needs.
- **B-SAFE involves widely implemented improvements based on high-risk roadway features correlated with particularly severe crash types, including design features that reinforce appropriate motor vehicle speeds.** ***IMP-1 Eastrail, IMP-2 Bike Bellevue,*** and ***IMP-4 High Visibility Crosswalks*** focus on VRUs who represent 51% of all fatal and serious injury crashes in Bellevue. ***IMP-2 Bike Bellevue*** includes road diets that can reduce motor vehicle speeds.
- **B-SAFE incorporates technologies that promote safety and/or equity.** ***D-1 Protected Turn Phasing for Pedestrians Demonstration*** and ***D-2 Adaptive Pedestrian Signal Control Demonstration*** incorporate video analytics of conflicts in a before/after study. ***D-4 Cellular***

Vehicle-to-Everything Demonstration evaluates an innovative vehicle-pedestrian detection and warning system supporting near real-time safety sharing.

- **B-SAFE improves safety for all road users along a roadway by providing accessible facilities (e.g., PROWAG) and correcting barriers to individuals with disabilities.** ***IMP-4 High Visibility Crosswalks*** includes ADA ramps at high usage pedestrian locations.
- **B-SAFE improves multimodal networks for people outside of a motor vehicle, including people who are walking, biking, rolling, public transit users, and have disabilities.** ***IMP-1 Eastrail*** trail and crossing improvements provide improved access to transit. ***IMP-2 Bike Bellevue*** fills network gaps with 14.6 miles of separated bike lanes.

III.4. OTHER DOT STRATEGIC GOALS

> Climate and Sustainability

IMP-2 Bike Bellevue supports the city's Environmental Stewardship Plan goal of reducing total GHG emissions and VMT by 50% over the next 10 years. When built out in 2035, ***IMP-2 Bike Bellevue*** will accommodate up to 4.1 million bike trips a year which would reduce VMT by up to 10.1 million miles per year and reduce GHG emissions by up to 4,600 metric tons per year[v]. This is equivalent to permanently eliminating the GHG emissions of nearly 900 cars[vi]. Over a 20-year project lifetime, the climate benefits are up to 115,000 metric tons of GHG emissions eliminated, equivalent to nearly 13 million gallons of gasoline burned or the planting of 137,500 acres of forest.

> Economic Competitiveness

Ensuring safe access for all travelers is critical as the B-SAFE project area prepares for an estimated 30,000 new jobs and 27,000 new residents by 2026. B-SAFE complements these developments by providing safe mobility options for VRUs and connecting more people to more places.

The geographic impact of ***IMP-1 Eastrail*** and ***IMP-2 Bike Bellevue*** investments reach a regional population. The number of people who would be able to access civic life along a low-stress pedestrian and bicycle route increases with project implementation[vii] :

- **109,000** people in **Bellevue** will see an increase in job access via a low-stress pedestrian or bicycle route (75% of the population)
- **308,000** people in **King County** will see an increase in job access via a low-stress pedestrian or bicycle route (14% of the population)

> Workforce

Skilled Labor and Fair Hiring Practices. The City of Bellevue complies with the federal fair labor standards act and all required provisions. In support of Title VI, ADA, and best practice, the city supports staffing and outside vendor selection with inclusive criteria in contracting, training practices, public and internally facing communications, public infrastructure, messaging, and employee support. Bellevue adheres to prevailing wage and supports apprenticeship programs, paid internships, and training for people of all abilities.

Apprenticeship and Training. Bellevue's apprenticeship program is set by the Washington State Department of Transportation (WSDOT) for all projects of any size. The percentage is identified by the WSDOT Local Programs Division. Each contractor is fully vetted through their training

program submittal and choice of trainees who must meet required criteria. All hours are tracked, and the contractor invoices for hours used. The training hours are then verified by certified payroll reports prior to payment.

Tracking Workforce Data. To assure compliance with Title VI, as well as ADA and overall accessibility for underserved communities, the city collects and annually reports data on workforce, hiring, and contracting. Outreach and sharing of hiring opportunities is supported through "Mini City Hall" in Bellevue's Crossroads Neighborhood, the area of highest disadvantage within the city. Located near high-capacity transit service, Mini City Hall offers opportunities presented with in-person staff in 9 different languages.

Inclusive Economic Development and Entrepreneurship. For all federal and state contracts, the city complies with goal assignments for DBE, WBE, Minority, and Veterans set by the state Office of Equal Opportunity for consultants and contractors in all phases of work (design, ROW, and construction). Once established, the city works with consultants and contractors to track monthly compliance through the state online tracking portal. The city supports DBE goal assignment levels within the region which typically range between 16-20%.

III.5. SUPPLEMENTAL PLANNING AND DEMONSTRATION ACTIVITIES

B-SAFE includes supplemental planning and demonstration activities to inform future Action Plan updates and support implementation of safety projects and strategies.

- **B-SAFE supplemental planning (SP) and demonstration (D) activities will lead to a significant reduction or elimination of roadway fatalities and serious injuries involving various road users.** As with any systemic problem, there is no single solution. Bundling B-SAFE activities supports the USDOT's National Roadway Safety Strategy's call to create layers of protection that help keep roadway users safe.
- **B-SAFE employs low-cost, high-impact strategies to improve safety over a wide geographical area.** B-SAFE builds on the city's practice of implementing cost-effective projects. ***SP-1 Road Safety Audits*** identifies systemic treatments to improve safety citywide. ***D-3 Paint the Pavement Safety Demonstration*** includes evaluation that could lead to citywide improvements.
- **B-SAFE involves engaging with a variety of public and private stakeholders.** B-SAFE builds on the city's past Vision Zero online engagement, community events, and targeted outreach to underserved communities. ***SP-1 Road Safety Audits*** engages the public during community walk audits. ***SP-4 Speed Safety Camera Procedures*** seeks public input on policies and practices. ***D-3 Paint the Pavement Safety Demonstration*** invites the community to identify art concepts. ***D-4 Cellular Vehicle-to-Everything Demonstration*** conducts a campaign that encourages public use of the TravelSafely application.
- **B-SAFE adopts innovative technologies to promote safety and equity.** B-SAFE builds on the city's innovative safety work. In B-SAFE, the city – with its partner the Insurance Institute for Highway Safety (IIHS) – advances ***D-1 Protected Turn Phasing for Pedestrians Demonstration*** and ***D-2 Adaptive Pedestrian Signal Control Demonstration*** that incorporate traffic signal technologies and evaluation using near-miss analytics. The city – with its partners the University of Washington, T-Mobile, Qualcomm, and Applied Information – advances ***D-4 Cellular Vehicle-to-Everything Demonstration*** that evaluates vehicle-pedestrian detection and warning systems.

- **B-SAFE is evidence-based and builds evidence around what works.** B-SAFE builds upon the city's commitment to evaluating the safety effectiveness of its practices such as expanding use of Leading Pedestrian Intervals following a 42% reduction in vehicle-pedestrian conflicts. In B-SAFE, the city advances ***SP-1 Road Safety Audits***, an FHWA PSC, that generate life-saving recommendations. ***SP-2 Speed Studies*** develops context-sensitive safety recommendations. ***SP-3 Separated Bike Lane Design Guidance***, ***D-1 Protected Turn Phasing for Pedestrians Demonstration***, and ***D-2 Adaptive Pedestrian Signal Control Demonstration*** include statistical analysis by IIHS to assess benefits and share findings nationally.

Scope of Work to be Performed: Supplemental Planning

SP-1 Road Safety Audits

Safety Issue Necessitating Further Action Plan Development. The city uses RSAs to evaluate safety issues along HIN corridors. Staff implements RSA identified safety countermeasures through the Vision Zero Rapid Build Data Driven Safety Program.

Planning Activity Description. Funding ***SP-1 Road Safety Audits*** enables the city to conduct RSAs along 13.7 miles of HIN corridors in the B-SAFE project area to inform VRU safety improvement recommendations in the city's Action Plan list of projects.

SP-2 Speed Studies

Safety Issues Necessitating Further Action Plan Development. Bellevue's streets with a posted speed limit of 30 mph or more account for 85% of fatalities and serious injuries but represent only 25% of total street mileage. Excessive speeding has increased in Bellevue from pre-Covid-19 pandemic levels (see *Appendix B Citywide Arterial Speed Study*).

Planning Activity Description. Funding ***SP-2 Speed Studies*** builds on Bellevue's Speed Management Plan, enabling the city in 2025-26 to conduct speed studies, input data into the city's speed limit setting tool, interpret results, and develop context-sensitive safety recommendations.

SP-3 Separated Bike Lane Design Guidance

Safety Issues Necessitating Further Action Plan Development. Although there is evidence that separated bike lanes reduce bicyclist-motor vehicle crashes along corridors, research on the safety benefits of bicycle countermeasures at intersections is limited.

Planning Activity Description. Funding ***SP-3 Separated Bike Lane Design Guidance*** enables IIHS to develop a separated bike lane design guidance report following Bike Bellevue build-out (see ***IMP-2***). The design guidance – informed by a before-after study design – can serve as a model for Bellevue and other cities intent on making streets safer for everyone (see *Appendix D Letters of Support*).

SP-4 Speed Safety Camera Procedures

Safety Issues Necessitating Further Action Plan Development. Driving at excessive speeds increases the frequency of crashes and leads to more severe injury outcomes. Speeding contributes to 13.6% of fatal and serious injury crashes in Bellevue. The city has utilized speed safety cameras (SSCs) for school zone speed violations at three locations since 2015.

Planning Activity Description. Recent Washington State legislation provides cities expanded authority to install SSCs to enforce speed limits. Bellevue's Speed Management Plan identifies SSCs as a proven safety countermeasure for potential expanded use in the city's Safe System approach to Vision Zero. Funding ***SP-4 Speed Safety Camera Procedures*** enables the city to

develop criteria to identify and prioritize SSC locations and engage with stakeholders including law enforcement and the public. Further, it enables the city to expand on its current SSC policies and practices.

Scope of Work to be Performed: Demonstration Activities

D-1. Protected Turn Phasing for Pedestrians Demonstration

Safety Problem. Failing to yield to pedestrians has contributed to 41% of all pedestrian fatalities and serious injuries in Bellevue. At signalized intersections, one strategy for separating pedestrians and turning vehicles in time is using protected signal phasing. In 2023, Bellevue developed guidelines for pedestrian signal operations. One takeaway is a need for research into when protected turn phasing is warranted for pedestrian safety.

Demonstration Project and Approach to Measuring Potential Benefits. This demonstration evaluates the relationship between pedestrian volumes and pedestrian/vehicle near-miss events using video analytics. After executing a grant agreement, the city anticipates a one-year collaboration with IIHS (see *Appendix D Letters of Support*) on a project that: (i) arrives at threshold determinations based on volume (vehicles and pedestrians) that would trigger additional signal operations protections/warnings [months one to five]; (ii) tests both protected and protected-permissive phasing and collects data to analyze impacts [months five to nine]; and (iii) prepares an assessment report that will inform the city's updated Action Plan [months nine to twelve]. This research has the potential to inform national guidance.

D-2 Adaptive Pedestrian Signal Control Demonstration

Safety Problem. From 2017 to 2021, 72% of pedestrian-related fatalities and serious injuries occurred at city intersections. At traffic signals, pedestrians are often accommodated in a way that causes the least amount of interruption to motor vehicle traffic. As a result, signal cycle times can be long, leading to long pedestrian waiting times. This can lead to frustration, causing pedestrians to violate the signals and use their own judgment to cross, resulting in safety risks.

Demonstration Project and Approach to Measuring Potential Benefits. This demonstration evaluates the effectiveness of Adaptive Pedestrian Signal Control (APSC) through an assess-ment of intervention with control groups that leverages conflict analytics before and after installation of TrafiSense AI sensors at study sites. After executing a grant agreement, the city anticipates a one-year collaboration with IIHS (see *Appendix D Letters of Support*) on a project that: (i) integrates sensors into the city's adaptive signal control system [months one and two]; (ii) defines the thresholds for pedestrian priority where APSC is installed and monitors/refines the levels of priority for varied pedestrian volumes at study intersections [months three to six]; (iii) evaluates pedestrian delay and determines whether APSC reduces instances of pedestrians crossing outside the pedestrian phase [months six to ten]; and (iv) finalizes an assessment report that will inform future APSC implementation through the city's updated Action Plan [months ten to twelve]. This project has potential to inform the Manual on Uniform Traffic Control Devices with respect to signal timing/phasing in support of pedestrian safety.

D-3 Paint the Pavement Safety Demonstration

Safety Problem. Failing to yield to pedestrians has contributed to 41% of all pedestrian fatali-ties and serious injuries in Bellevue. To address this problem, the city seeks to understand the extent to which asphalt art projects can improve safety by increasing visibility of pedestrian spaces and encouraging drivers to slow down and be more alert for VRUs.

Demonstration Project and Approach to Measuring Potential Benefits. This demonstration project assesses the effectiveness of aesthetically treated (i.e., artistic painting on pavement) crosswalks as a safety improvement using video-based conflict analytics (observing road user behaviors) before and after installation at study sites. After executing a grant agreement, the city anticipates an eighteen month project that: (i) requests FHWA experimentation approval to test the use of asphalt art at crosswalks and, separately, hires a consultant [months one to three]; (ii) invites the community to identify concept ideas for four existing crosswalk locations and engages with an artist to develop designs [months four to six]; (iii) conducts before conflict analytics monitoring [months five to six]; (iv) designs and procures an asphalt striping contractor (includes developing bid package, securing ROW permit, advertising, and selecting contractor) to install the painted asphalt art [months seven to thirteen]; (iv) conducts after conflict analytics monitoring [month fourteen]; (iv) conducts community outreach [month fifteen to sixteen]; and (v) produces a Paint the Pavement guid-ance report to inform future implementation through the city's Action Plan [months seventeen to eighteen].

D-4 Cellular Vehicle-to-Everything Demonstration

Safety Problem. A devastating crash can happen in an instance of speeding, distraction, failing to yield to pedestrians, or not granting right-of-way to vehicles. These four behaviors contribute to 58% of all fatal and serious injury crashes in Bellevue. To address these problems, the city will evaluate the safety effectiveness of cellular vehicle-to-everything (C-V2X) technologies that notify people driving of the presence of a pedestrian at an upcoming crosswalk and encourage drivers to slow down to avoid a potential crash.

Demonstration Project and Approach to Measuring Potential Benefits. This demonstration evaluates an intelligent rectangular rapid flashing beacon (RRFB) and vehicle-pedestrian detection and warning system. The city – in partnership with the University of Washington (UW), T-Mobile, Qualcomm, and Applied Information – evaluates 27 RRFB-equipped crosswalks (see *Appendix D Letters of Support*). During this one-year demonstration: (i) the city receives and installs Applied Information road-side units capable of direct vehicle communication at 5.9 GHz for safety warnings to motorists along with complementary network-based communication, equipped with T-Mobile 5G communications. Qualcomm delivers 5.9 GHz "safety spectrum" aftermarket safety devices to demonstrate the safety benefits of direct infrastructure-to-vehicle communication using this spectrum [months one and two]; (ii) the city conducts a media campaign encouraging residents to download the TravelSafely smartphone application that provides alerts to road users [month three and four]; (iii) the UW team evaluates the TravelSafely data logs to assess safety effectiveness of these complementary short range direct safety-of-life and network communication modes (e.g., did drivers reduce their speed following an alert) and conducts focus groups with app users to better understand user experience [months five to ten]; and (iv) the UW team prepares an assessment report that will inform the city's Action Plan for broader roll-out of C-V2X technologies [months eleven to twelve].

IV. PROJECT READINESS

B-SAFE implementation and supplemental planning activities will be completed (see *Appendix E Detailed Activity Schedule*) over the five-year time period, and demonstration activities will be set up within 18 months, because:

- **B-SAFE staff know the federal process.** Bellevue staff provide over 30 years of experience delivering federal grant projects and associated compliance with federal contracting/ procurement, disadvantaged business enterprise goals, ADA, NEPA, ROW certification, public

advertisement, federal contracting/specifications, periodic reporting, audits, and other features that comprise a federalized transportation project.

- **B-SAFE staff is experienced and ready to administer federal funds.** The city is ready to expeditiously complete acceptance of the grant award by the City Council and initiate inclusion of projects in the Washington Statewide Transportation Improvement Program (STIP) with the regional Metropolitan Planning Organization. Following STIP publication, the city will execute the SS4A grant funding agreement with USDOT, allowing B-SAFE to initiate planning and demonstration activities as well as accelerate design of implementation grant projects. Over the past decade, the city has successfully received 68 federal project awards representing over $57 million in federal transportation grant funding. In addition, the city is actively delivering a package of projects funded in part by a $99.6 million Transportation Infrastructure Finance and Innovation Act (TIFIA) loan, issued directly by the USDOT Build America Bureau.
- **B-SAFE accounts for NEPA.** On June 15, 2023, the city hosted a National Environmental Policy Act (NEPA) kickoff meeting with WSDOT environmental and Local Programs staff to initiate evaluation of environmental analysis for the B-SAFE projects and strategies. No significant limitations were identified, and staff expect to continue developing material to complete a documented Categorical Exclusion for the combination of implementation, supplemental planning, and demonstration projects within the project footprint. Given the project plans to convert pavement within the curb-line with no additional impervious surface, there are no changes to stream or water conveyance, little excavation is planned, and the work is within previously disturbed area, WSDOT staff is cautiously optimistic that the B-SAFE proposal could proceed smoothly through the NEPA process, including cultural resources, stormwater, and environmental justice documentation. The project team is prepared to work directly with FHWA to complete the NEPA process.
- **B-SAFE accounts for ROW.** City staff have completed a detailed review of the entirety of the B-SAFE right of way (ROW) footprint and determined that no parcel acquisitions are anticipated. Once NEPA is complete, the city is prepared to request ROW phase funding authorization, acquire temporary construction easements, and certify ROW prior to construction.
- **B-SAFE is ready to go.** B-SAFE rapid implementation projects and strategies will begin immediately following execution of the SS4A grant agreement. Using local funding, the City of Bellevue has started ***IMP-2 Bike Bellevue*** preliminary design and anticipates community endorsement by Q1 2024. Construction permits are within control of city Public Works.
- **B-SAFE partners are prepared to sign agreements.** A Letter of Intent from partner agency King County is included in *Appendix D Letters of Support*. King County Parks possesses all rights and authorities for the Eastrail property to commence design.

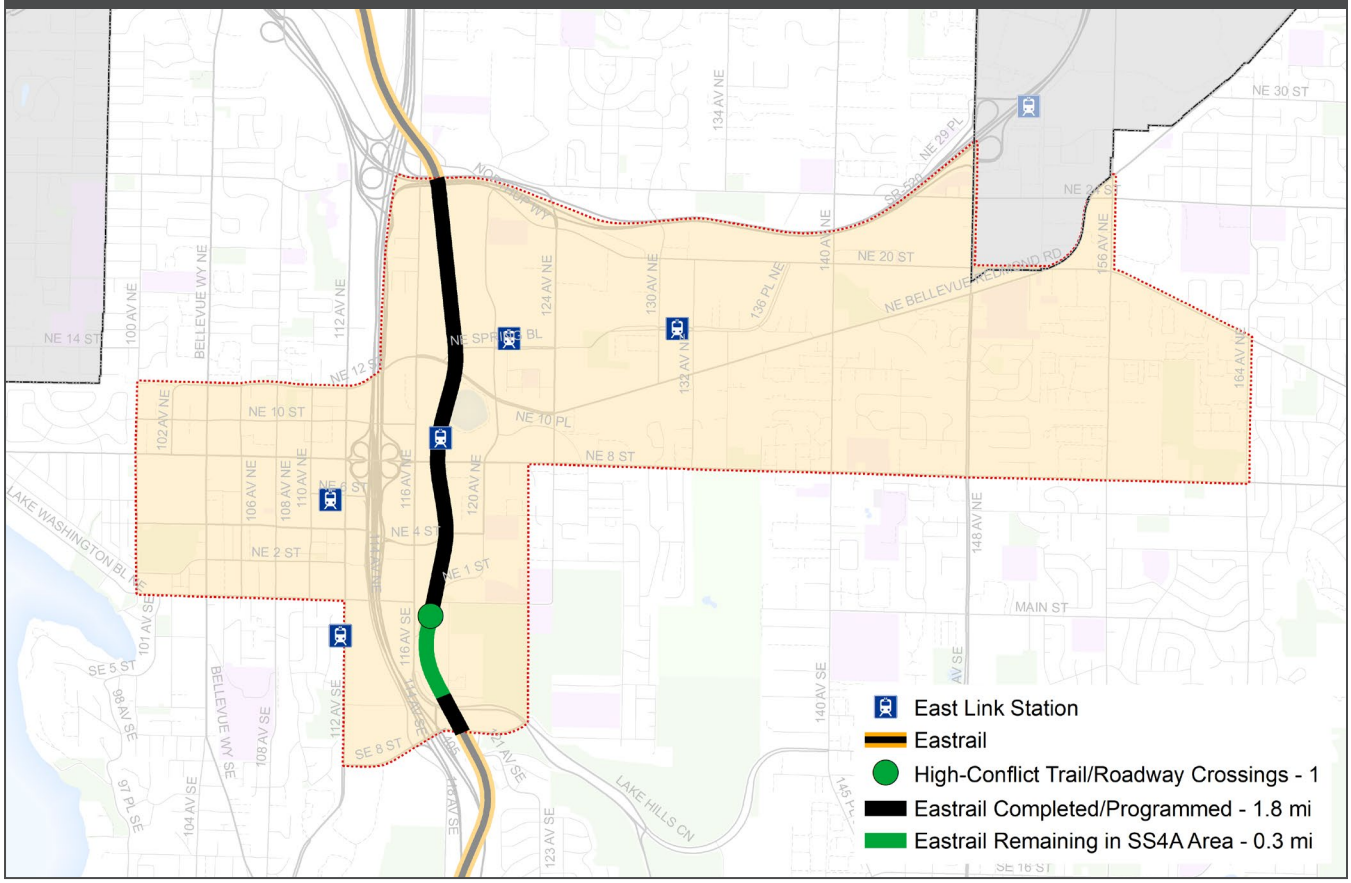
Activity Schedule. See *Appendix E* for the B-SAFE detailed activity schedule that identifies all major project milestones.

V. ADDITIONAL CONSIDERATIONS

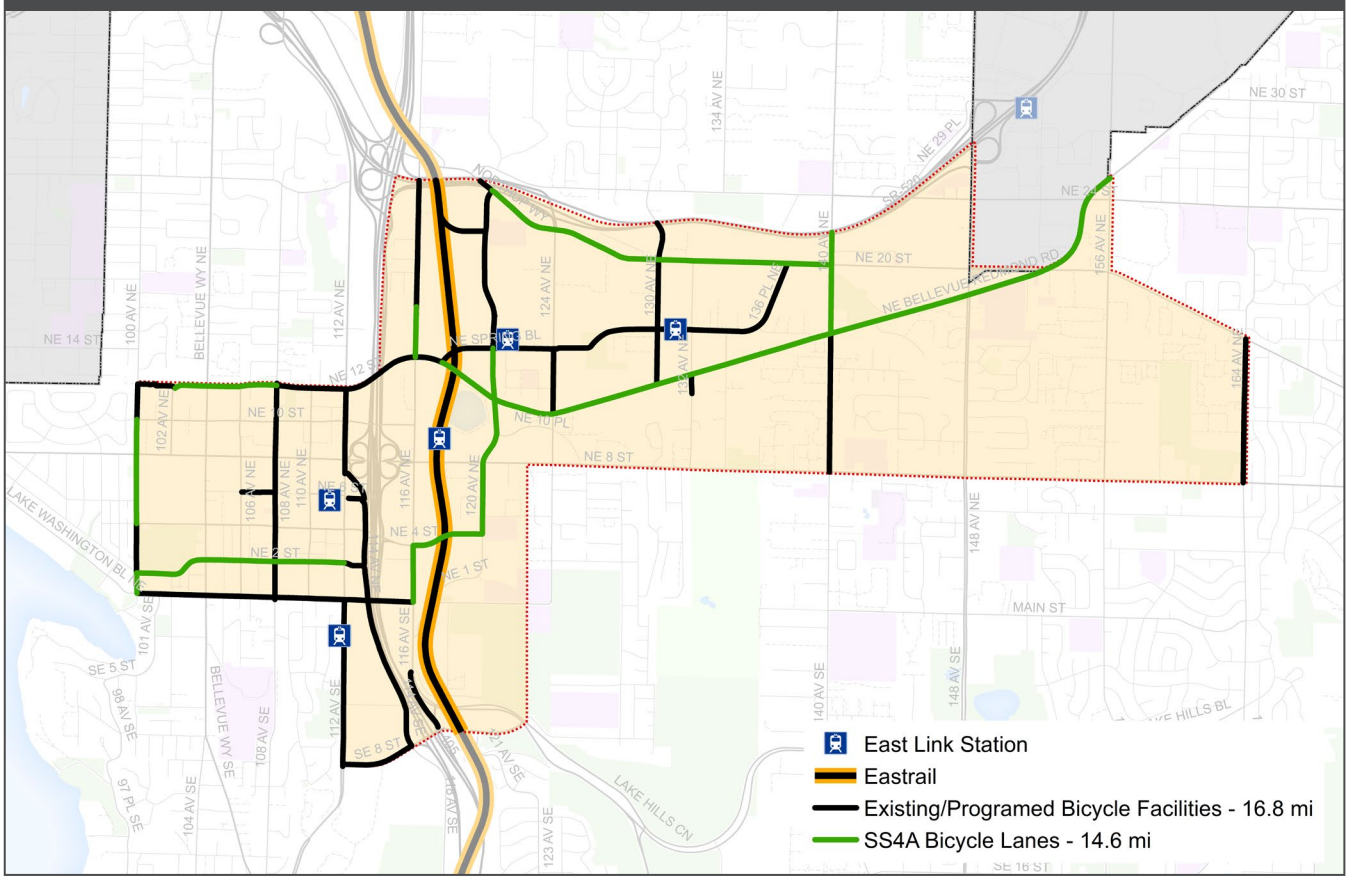
Bellevue is committed to implementing a safer transportation system for all travelers, especially underserved communities. The USDOT Equitable Transportation Community (ETC) Explorer Map Tool identifies the percentage of disadvantaged census tracts at 19% for King County. The percentage of Implementation Grant funds that will be spent in, and provide safety benefits to, locations in Census tracts designated as underserved communities is 7%.

Appendix A
IMPLEMENTATION PROJECT MAPS

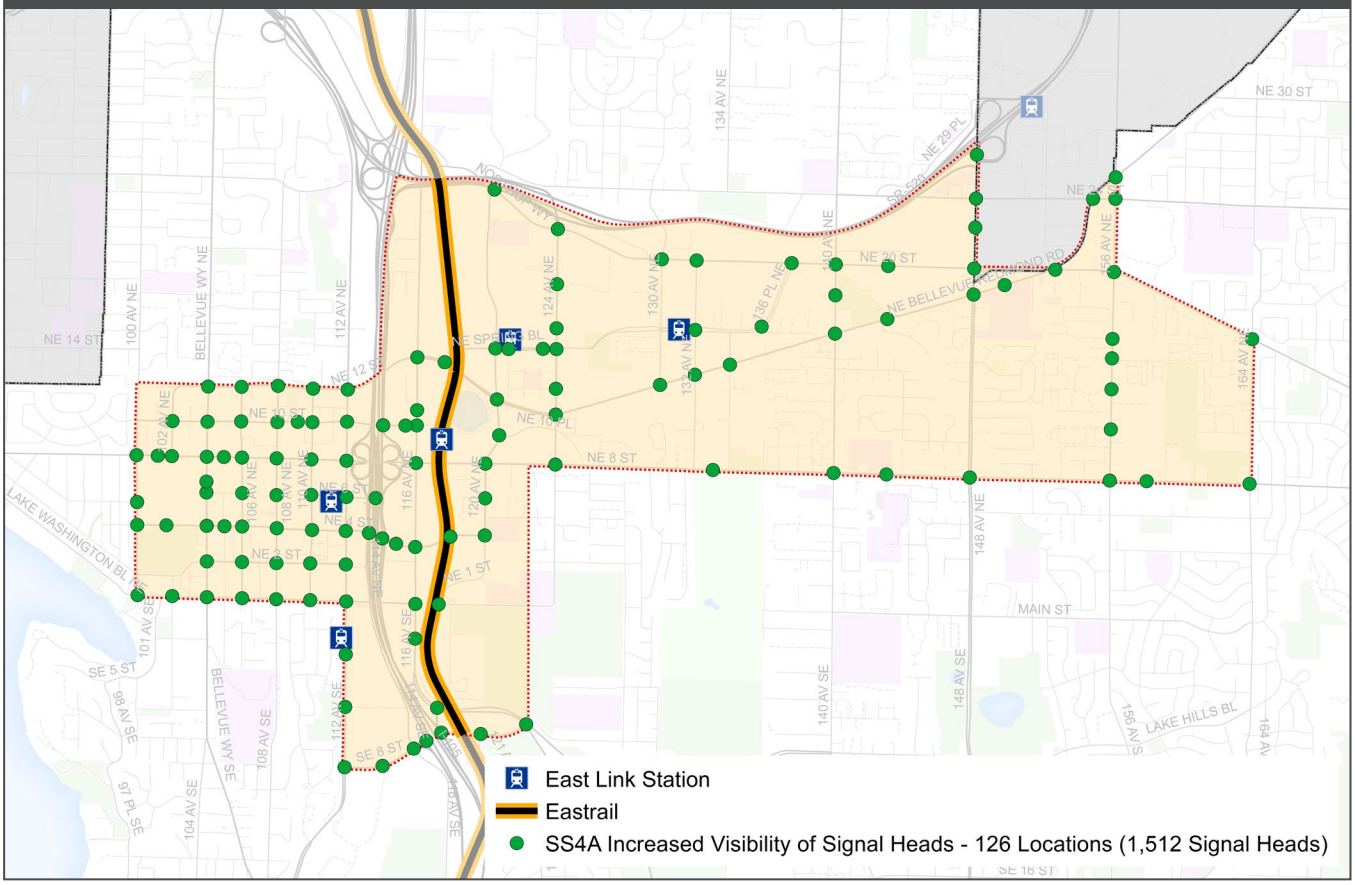
IMP-1 Eastrail



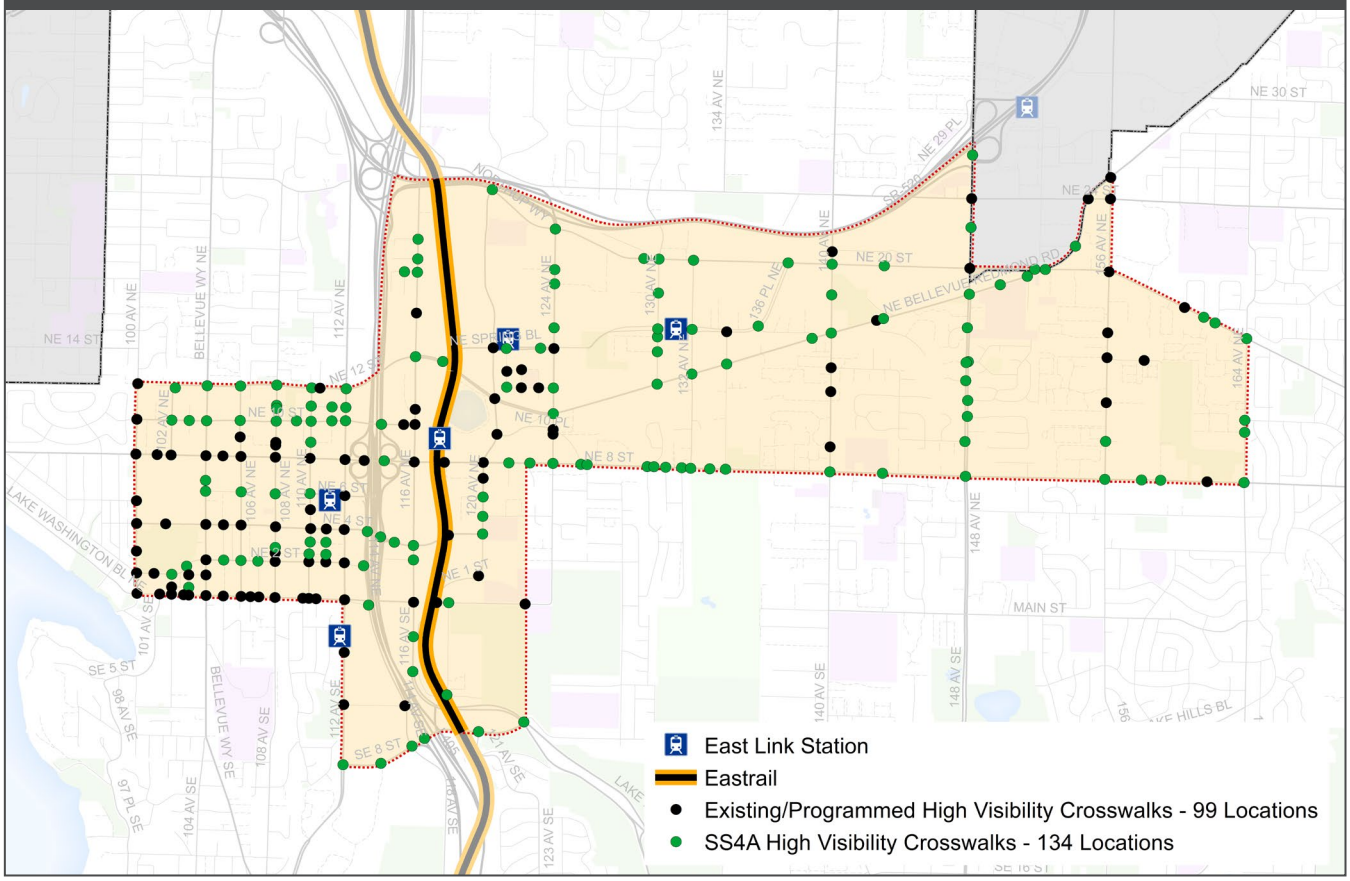
IMP-2 Bicycle Network



IMP-3 Signal Head Backplates with Retroreflective Borders



IMP-4 High Visibility Crosswalks



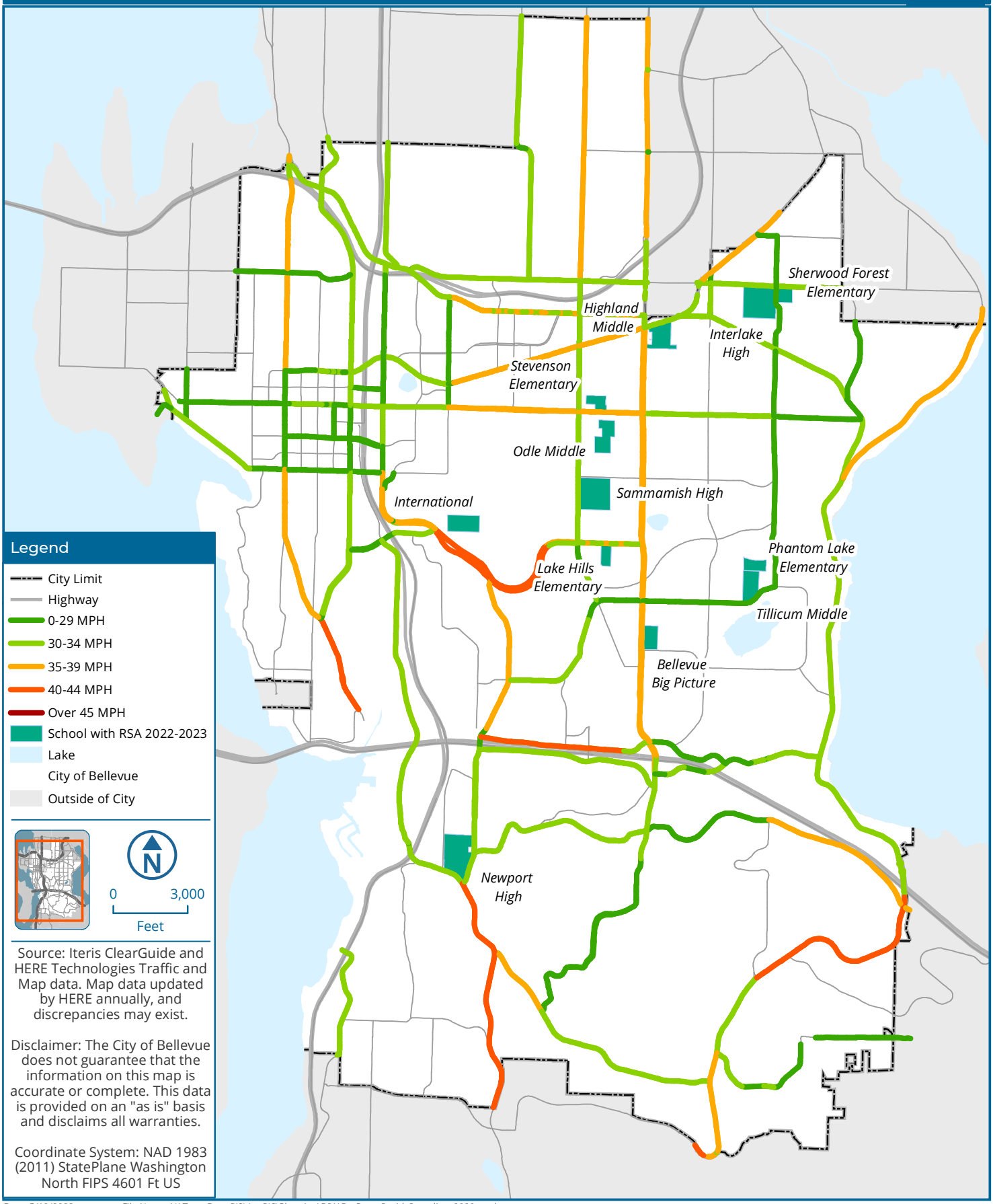
There are no maps for the B-SAFE supplemental planning or demonstration activities. Actions for these activities will include selecting locations for set up.

Appendix B

CITYWIDE ARTERIAL SPEED STUDY

2020 Bellevue Speed Map

85th Percentile Speeds for Select Arterial Roadways in Bellevue



Legend

- City Limit
- Highway
- 0-29 MPH
- 30-34 MPH
- 35-39 MPH
- 40-44 MPH
- Over 45 MPH
- School with RSA 2022-2023
- Lake
- City of Bellevue
- Outside of City

N

0 3,000

Feet

Source: Iteris ClearGuide and HERE Technologies Traffic and Map data. Map data updated by HERE annually, and discrepancies may exist.

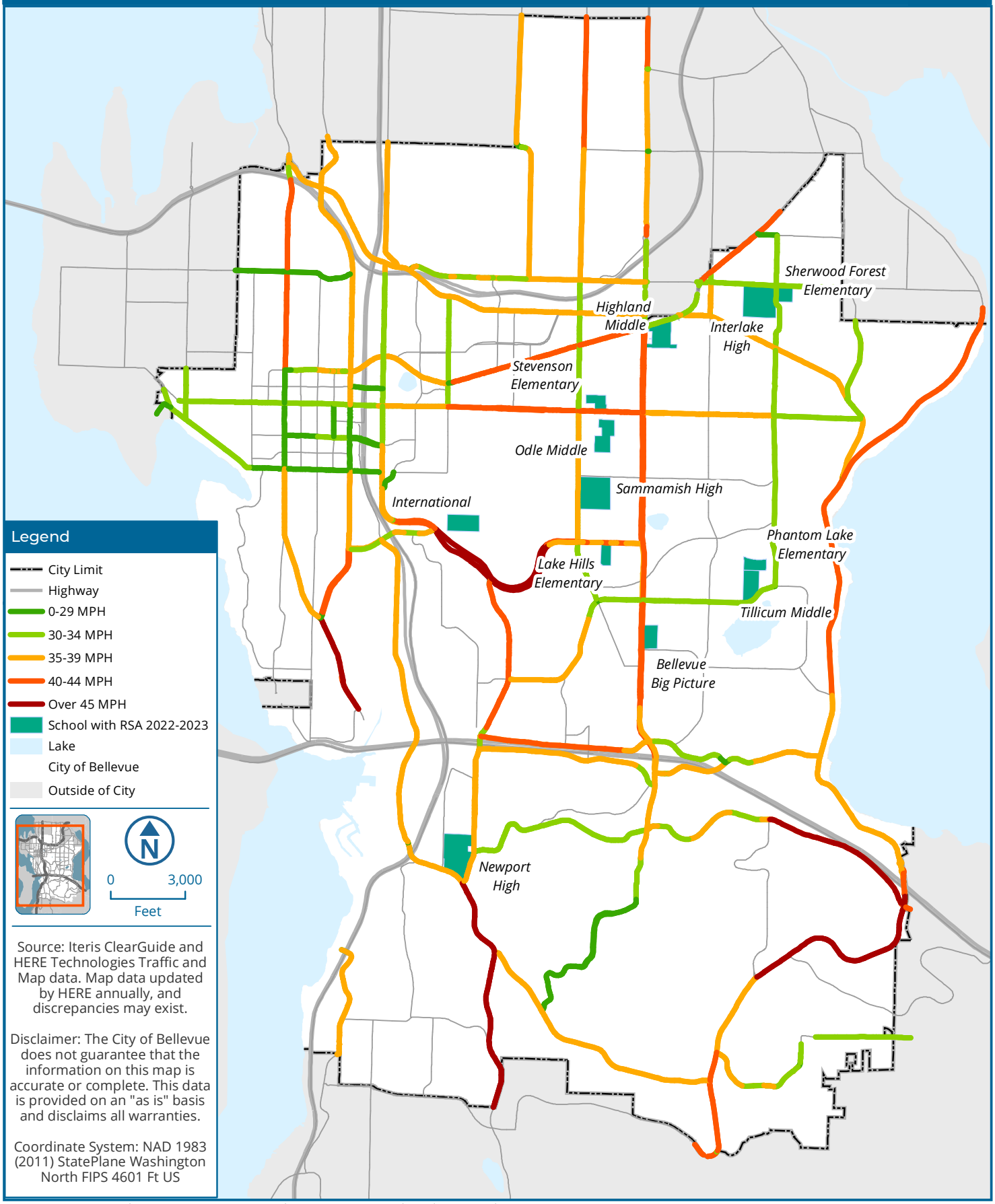
Disclaimer: The City of Bellevue does not guarantee that the information on this map is accurate or complete. This data is provided on an "as is" basis and disclaims all warranties.

Coordinate System: NAD 1983 (2011) StatePlane Washington North FIPS 4601 Ft US

Date: 5/19/2023 File Name: V:\TransDeptGIS\ArcGIS\Planning\RSA\PrePost_Covid_Speeding_2020.mxd

2023 Bellevue Speed Map

85th Percentile Speeds for Select Arterial Roadways in Bellevue



Legend

- City Limit
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Date: 5/19/2023 File Name: V:\TransDeptGIS\ArcGIS\Planning\RSA\PrePost_Covid_Speeding_2023.mxd

Appendix C
ENDNOTES

[i] *A Mead et al. Evaluation of Bicycle-Related Roadway Measures: A Summary of Available Research. DTFH61-11-H-00024, FHWA, 2014 (Table 8, p.38).*

[ii] *Avelar et al. Development of Crash Modification Factors for Bicycle Lane Additions While Reducing Lane and Shoulder Widths. FHWA, (2021).*

[iii] *Sayed, T., Leur, P., and Pump, J., "Safety Impact of Increased Traffic Signal Backboards Conspicuity." 2005 TRB 84th Annual Meeting: Compendium of Papers CD-ROM, Vol. TRB#05-16, Washington, D.C., (2005).*

[iv] *Chen, L., C. Chen, and R. Ewing. The Relative Effectiveness of Pedestrian Safety Countermeasures at Urban Intersections - Lessons from a New York City Experience. (2012).*

[v] *ICLEI Local Governmental for Sustainability Greenhouse Gas Protocols. GHG Protocols | ICLEI USA*

[vi] *United States Environmental Protection Agency. Greenhouse Gas Equivalencies Calculator. Greenhouse Gas Equivalencies Calculator | US EPA*

[vii] *Alta Planning + Design. Eastrail and Bike Bellevue Accessibility Analysis Memo. (2023).*

Appendix D
LETTERS OF SUPPORT

King County
Department of
Natural Resources and Parks
Parks & Recreation Director's Office
King Street Center
201 S. Jackson St, Suite 5702
Seattle, WA 98104-3855

July 3, 2023

The Honorable Pete Buttigieg
Secretary of Transportation
1200 New Jersey Ave SE
Washington, DC 20590

Subject: King County Letter of Intent as Partner Applicant for the Bellevue Safe Access For Everyone (B-SAFE) proposal to the 2023 USDOT / SS4A grant program

Dear Secretary Buttigieg:

King County is excited to partner with the City of Bellevue for the 2023 "Bellevue Safe Access For Everyone" (B-SAFE) grant proposal to the U.S. Department of Transportation Safe Streets and Roads for All (SS4A) program. King County Parks is the owner and operator of the Eastrail regional nonmotorized trail and will contribute approximately $1.9 million toward the Eastrail (project IMP-1) design and construction as part of the Implementation package. This funding from King County can be provided as a result of a prior donation to King County from Amazon in support of the completion of the Eastrail trail in this area of Bellevue.

Built on a railbanked railroad line, the Eastrail corridor stretches over 42 miles on the east side of Lake Washington - starting on the south end at the City of Renton in King County, the pathway advances northward through the City of Bellevue and terminates in Snohomish County. Located in the heart of Bellevue's growing business and commercial area, the B-SAFE project segment will construct the Eastrail shared-use path and crossing improvements from SE 5th to SE 1st, providing nonmotorized travelers with a paved trail with wayfinding signage and other user amenities. This grant also includes funding for an enhanced critical street crossing at the north end of the proposed trail segment which will improve user safety at a potential conflict location.

Completion of this B-SAFE section of the path creates unique access and opportunities for our diverse communities and businesses through connections to transit (bus and light rail), employment hubs, green space, and more. Completion of this segment of the

Eastrail corridor provides a transformative safety improvement to nonmotorized travelers with a separated, ADA accessible, off-street multimodal pathway that will increase travel on foot, by bicycle and supportive mobility aids in the B-SAFE project area.

There have been very few safety incidents associated with the Eastrail regional trail system and its documented injury rate has been exceptionally low compared to that of on-street bicycle and pedestrian facilities. The completion of this core pathway segment in the center of the eastside urban area will open tremendous access to this critical growth area for good paying jobs, densifying housing, and regional transit while providing space for travelers to avoid the risk of injury. We are excited at the opportunity to develop a segment of Eastrail that will fill a major nonmotorized gap in our growing system.

A federal investment in the B-SAFE proposal will be well-supported by local investments in active transportation. King County and our public and private funding partners have invested over $75 million in Eastrail projects near the B-SAFE project area, including the pathway segment proposed for funding. King County has a long history of successful, collaborative partnership with the City of Bellevue and is looking to strengthen that commitment by advancing this project.

Eastrail will complement Bellevue's on-street non-motorized safety improvements included in the B-SAFE proposal with a dedicated, active transportation facility. The opportunity to partner with the City of Bellevue in the deployment of cutting-edge solutions for roadway crossings serving high-volume trails is exciting both for the continued development of the Eastrail and in demonstrating best practices for other shared-use trails.

King County Parks is fully committed to this B-SAFE proposal as well as the continued development and maintenance of the Eastrail corridor to serve our diverse and growing communities. The County owns and maintains over 175 miles of shared use paths and is well versed in the successful operation and maintenance of the system. The County anticipates finalizing an Interagency Agreement with the City of Bellevue on this endeavor and looks forward to working with the City for timely and effective implementation of this joint project.

Sincerely,

DocuSigned by:
A1498C6DA09E46F...

Warren Jimenez
Director, King County Parks and Recreation Division

cc:
Franz Loewenherz, City of Bellevue
Frank Overton, Capital Improvements Program Section Manager, King County Parks and Recreation Division

Insurance Institute for Highway Safety
Highway Loss Data Institute

4121 Wilson Boulevard, 6th floor
Arlington, VA 22203
+1 703 247 1500

iihs.org

June 20, 2023

The Honorable Pete Buttigieg
Secretary of Transportation
1200 New Jersey Ave SE
Washington, DC 20590

Subject: IIHS Letter of Support for the City of Bellevue's Bellevue – Safe Access for Everyone (B-SAFE) proposal to the 2023 USDOT / SS4A grant program Safe Streets and Roads for All Grant Application

Dear Secretary Buttigieg:

The Insurance Institute for Highway Safety (IIHS) would like to express our support and financial commitment to the City of Bellevue "Bellevue Safe Access For Everyone" (B-SAFE) grant proposal application to the U.S. Department of Transportation Safe Streets and Roads for All (SS4A) program. In support of the B-SAFE application, IIHS will contribute **up to $238,000**, including $123,000 in in-kind staff hours and $115,000 in cash funding, towards three proposed demonstration and implementation projects: **D-1 Protected Turn Phasing for Pedestrians** Demonstration ($55,000 total contribution), **D-2 Adaptive Pedestrian Signal Control Demonstration** ($48,000 total contribution), and the evaluation of the Bike Bellevue bicycle infrastructure network to inform the development of **SP-3 Separated Bike Lane Design Guidance** ($135,000 total contribution, pending award of project IMP-2). This financial contribution is equal to approximately 22% of the amount associated with these three proposals.

IIHS looks forward to establishing a relationship with the City of Bellevue as a living lab that allows us to evaluate innovative technology and infrastructure solutions designed to protect vulnerable road users. IIHS is an internationally recognized traffic safety research organization with a long history of identifying effective countermeasures for safer people, safer vehicles, and safer roads. Our evaluation efforts will be led by Dr. Raul Avelar, who has nearly two decades of experience spanning highway safety and design, roadway operations, traffic control devices, bicyclists and pedestrian topics, and technical assistance for agencies to implement research results. Relevant to the proposed projects, Dr. Avelar has performed research evaluating the effectiveness of pedestrian crossing traffic control devices in multiple projects for the Federal Highway Administration (FHWA) and the Texas Department of Transportation (Avelar, Fitzpatrick, & Brewer, 2018; Fitzpatrick, Avelar, & Turner, 2018; Fitzpatrick, Brewer, & Avelar, 2014). More recently, he led a project that quantified the safety benefits of constructing bicycle lanes in the urban setting (Avelar, Dixon, Ashraf, Jhamb, & Dadashova, 2021) and played a significant role in a similar project that further estimated the safety benefits of buffered bicycle lanes (Dixon, Avelar, & Mousavi, 2023), both projects that were sponsored by FHWA.

The three evaluation projects will leverage rigorous analyses of vehicle conflicts with pedestrians and bicyclists (i.e., "near misses") extracted from video footage by the Advanced Mobility Analytics Group. The goal of D-1 Protected Turn Phasing for Pedestrians Demonstration is to examine how conflicts between vehicles and pedestrians vary with pedestrian volume to determine potential thresholds at which to deploy protected turn phasing at intersections. In a first phase, this study will observe and analyze pedestrian conflicts with both left and right turning vehicles at eight intersections for two weeks. The goal of this first phase will be to determine appropriate pedestrian and vehicle volume thresholds at which to deploy protected turn phasing at intersection to enhance pedestrian safety. For the second phase, the city

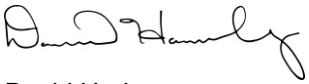
will modify signal phasing and timing at three of the eight intersections [protected-permissive left turn (LT) at a site with permissive LT only and protected right-turn (RT) at two locations currently without this feature] and researchers will measure the change observed on types and frequency of conflicts for an additional four weeks at both treated and non-treated intersections. A few months will be allowed to elapse between the two phases so that the novelty effect of the change fades out. A key element of the study design is the use of comparable intersections as a control group, in addition to the intersections where the signal phasing and timing modifications will be applied. Control intersections will be carefully selected to match the treated ones on key geometric characteristics (number of lanes, presence of turn pocket, etc.) and phasing (protected or permissive), in order to produce valid comparisons. Researchers will then develop recommendations for deploying pedestrian countermeasures at similar locations. Because the language on current guidance for pedestrian countermeasures at signalized intersections is somehow limited (i.e., it is unknown what exactly constitutes “high pedestrian activity”), this research could potentially inform future developments in national guidance documents on traffic control devices.

When traffic control signals operate as intended, they facilitate the systematic movement of the greatest amount of traffic in the least amount of time with the greatest amount of safety and with the least amount of congestion. IIHS will assist the City of Bellevue in evaluating D-2 Adaptive Pedestrian Signal Control Demonstration, an artificial intelligence-based deployment to improve sensitivity to pedestrian needs at signalized intersections using a similar study design (longitudinal assessment of intervention with control group). The study will monitor vehicle-pedestrian conflicts, proportion of pedestrians crossing during the walk phase, and average signal cycle length. Two intersections will be treated with the technology while four additional intersections with similar characteristics will be used as control sites in the evaluation. Data will be collected for two weeks before and two weeks after the interventions at all six sites. In addition to benefits to pedestrians, widespread benefits to all intersection users are expected from this implementation because of the further optimization of operations cycle-by-cycle at the treated signals. The technology will prioritize and determine the appropriate pedestrian phase length while explicitly considering the number of pedestrians waiting to cross and the observed time it takes them to clear the intersection at each cycle. The results of this demonstration project will be of interest to other cities across the country looking for new ways to improve safety and operations for pedestrians.

The third effort in this IIHS-Bellevue collaboration is the development of SP-3 Separated Bike Lane Design Guidance for the City of Bellevue that can serve as a model for other cities. This guidance will follow from an evaluation of the City of Bellevue’s deployment of a connected network of separated bicycle infrastructure, project IMP-2 Bike Bellevue. While recent evidence from FHWA supports that separated bike lanes reduce bicyclist-motor vehicle crashes, evidence in the U.S. for safety benefits of bicycle countermeasures at intersections is limited. Since Bellevue intends to apply multiple countermeasures at 11 corridors, this evaluation will require a large number of segments and intersections in order to produce robust and credible results. IIHS will collect one week of near-miss data at 29 locations prior to receiving bicycle countermeasures (such as reallocation of roadway for new bicycle lanes, separation buffers from motor vehicles, pavement markings at segments and intersections, etc.) and one week of data after the countermeasures are in place. Similar data will be collected during the same periods at 48 intersections to be used as a comparison group in the evaluation. Frequency of conflicts before and after the interventions will be compared to determine the resulting safety effectiveness of the deployments. IIHS will also perform an assessment of further benefits (e.g., changes in bicycle volumes, changes in vehicle speeds, etc.) that could potentially indicate an emergent benefit of expanding the network of bicycle facilities, and not necessarily from individual site interventions only.

We are excited to work with the City of Bellevue to test solutions that can improve safety for vulnerable road users and be brought to additional communities throughout the nation.

Sincerely,



David Harkey
President, Insurance Institute for Highway Safety and Highway Loss Data Institute

References

Avelar, R., Dixon, K., Ashraf, S., Jhamb, A., & Dadashova, B. (2021). *Development of Crash Modification Factors for Bicycle Lane Additions while Reducing Lane and Shoulder Widths.* McLean, VA: FHWA. Retrieved from https://www.fhwa.dot.gov/publications/research/safety/21013/21013.pdf

Avelar, R., Fitzpatrick, K., & Brewer, M. (2018). Comparison of Analytical Methods on Staged Pedestrian Crossing at Crosswalks with a Rectangular Rapid Frashing Beacon. *Transportation Research Record, 2661*, pp. 1-11. doi:10.3141/2661-01

Dixon, K., Avelar, R., & Mousavi, M. (2023). *Developing Crash Modification Factors for Separated Bicycle Lanes. TechBrief.* McLean, VA: FHWA.

Fitzpatrick, K., Avelar, R., & Turner, S. (2018). *Guidebook on Identification of High Pedestrian Crash Locations.* Washington, DC: Federal Highway Administration. Retrieved from https://www.fhwa.dot.gov/publications/research/safety/17106/17106.pdf

Fitzpatrick, K., Brewer, M., & Avelar, R. (2014). Driver Yielding to Traffic Control Signals, Pedestrian Hybrid Beacons, and Rectangular Rapid Flashing Beacons in Texas. *Transportation Research Record, the Journal of Transportation Research Board.*(2463), pp. 46-54.

June 15, 2023

The Honorable Pete Buttigieg
Secretary of Transportation
1200 New Jersey Ave SE
Washington, DC 20590

Re: Letter of Support – Safe Streets and Roads for All (SS4A) Grant Program
Project: D-4 Cellular Vehicle-to-Everything (C-V2X) Demonstration

Dear Secretary Buttigieg,

On behalf of Applied Information Inc., we are pleased to provide this letter of support for the City of Bellevue, WA to support their Grant application for the project "D-4 Cellular Vehicle-to-Everything (C-V2X) Demonstration" which proposes to demonstrate/evaluate C-V2X Pedestrian Protection Technologies at a network-wide level.

Applied Information (AI) is an industry-leading developer of Smart Cities, connected, and intelligent transportation system (ITS) solutions designed to save lives, improve traffic, drive commerce, and help the environment. We support City of Bellevue's proposed efforts as they align with our organization's purpose and objectives.

To that end, Applied Information commits to the following:

- AI will provide the RRFB Crosswalk RSU equipment (hardware and software) with C-V2X capability for the 19 proposed locations.
- Total value of In-Kind Services AI will provide is $148,000.

    - 38 x CV-PED (CV System using Cellular for Pedestrian Safety Signals)
    - 19 x AI-500-095 (RSU units with PC5)
    - 2 x On-site installation and commissioning support

We are pleased to be a contributing partner in the development of this project and look forward to working together in the future.

Sincerely,

Peter Ashley
VP Business Development
Applied Information Inc.

OFFICE OF SPONSORED PROGRAMS
UNIVERSITY of WASHINGTON

June 22, 2023

The Honorable Pete Buttigieg
Secretary of Transportation
1200 New Jersey Ave SE
Washington, DC 20590

Subj: Letter of Support for "D-4 Cellular Vehicle-to-Everything Demonstration" – a component of the City of Bellevue's 2023 USDOT/SS4A grant proposal

Dear Honorable Buttigieg,

The University of Washington (UW) with Professor Linda Ng Boyle as the UW lead, provides their strongest support for the City of Bellevue, WA's proposed project titled, "**D-4 Cellular Vehicle-to-Everything Demonstration.**" This demonstration project proposal is being submitted in response to the U.S. Department of Transportation Safe Streets and Roads for All (SS4A) program. After reading the proposal objectives, we see that there are strong implications for urban areas with high pedestrian density and will serve as a role model for other US cities.

The overall objective of this study is to examine the effectiveness of an intervention that can inform drivers of high pedestrian areas and alert them of the need to reduce speed if appropriate. The system will be designed for use inside the vehicle on a portable device. It will be integrated into off-the-shelf navigation systems to minimize the number of distractions to the driver. As part of this project, the UW will evaluate data from 27 pilot RRFB-equipped crosswalks. This includes information on vehicle-pedestrian conflicts, number of pedestrians crossings, and signal phasing. Data from the app will also include speed profiles.

Linda Boyle is a Full Professor in the College of Engineering at the University of Washington. She has a joint appointment in Industrial & Systems Engineering and Civil & Environmental Engineering. She has an extensive background in human factors, modeling road user behavior, and pedestrian-vehicle safety.

Linda plans to contribute 60 hours of in-kind support (approximately $15,000) for this project. She will be responsible for the work that is completed as part of the UW. This will include supervising the work of the graduate student assistant on this project, who will be participating as follows:

- Preparing the app data for statistical analysis (this includes reviewing, cleaning, and data aggregation as needed).
- Conduct statistical analysis to examine effectiveness of system to enhance pedestrian safety. More specifically, examine whether drivers are more likely to reduce speed following an alert.

- Conduct a focus group to gain insights on the usability, acceptance, and trust in the system.
- Preparation of an assessment report for the City of Bellevue.

Linda's team is well qualified to participate in these activities. She has worked on several related projects that include studies on pedestrian-vehicle crash risks (WSDOT), pedestrian exposure (NHTSA), driver behavior at high pedestrian areas (FHWA), and driver's situational awareness of pedestrian (Toyota, Honda). She has examined various pedestrian crosswalk types including rectangular rapid flashing beacon (RRFB) and advanced driver assistance systems (ADAS). Her research has produced several publications in this area; five of the most relevant publications include:

1. Zou, T., Guo, H., Khaloei, M., MacKenzie, D., Boyle, L.N. (2022). Examining the Relationships between Multimodal Environments and Multitasking Driving Behaviors, *Transportation Research Record*, 2677, 2, 944-957.
2. Douglas, G., Boyle, L. Saelens, B, et al. (2022) A Framework to Assess Pedestrian Exposure Using Walking Bouts, In *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*, 66, 1, 320-324.
3. Kang, M., Moudon, AV, Kim, H., Boyle, L.N. (2019). Intersections and non-intersections: A protocol for identifying pedestrian crash risk locations in GIS. *International J. of Environmental Research and Public Health*, 16(19), 3565
4. Bradbury, K., Stevens, J., Boyle, L.N., Rutherford, S. (2012). To go or not to go: Pedestrian behavior at intersections with standard pedestrian call buttons. *Transportation Research Record*, 2299,174-179.
5. Guo, H., Li, N., Boyle, LN, Lenneman, J., Sayer, T. (2019). The impact of crosswalk design on driver performance: implications for pedestrian safety, In *Proceedings of the 10th International Driving Symposium on Human Factors in Driver Assessment, Training, and Vehicle Design*, pp. 57-63.

Linda's research team is part of the College of Engineering at the University of Washington (UW) in Seattle, WA. The UW is a public R01 institution set in an urban area. It was founded in 1861 and is one of the oldest state-supported institutions of higher education on the West Coast. The university is one of the preeminent research universities in the world with over 46,000 students and a comprehensive university teaching hospital (UW Medical Center). It has a long-standing history in transportation research with several labs focused on safety, traffic operations, and urban mobility.

Linda also directs the Human Factors and Statistical Modeling Laboratory (http://depts.washington.edu/hfsm), where basic and applied research in road user behavior and safety is extensively examined. The lab has a strong emphasis on study design, high quality research, and data integrity. We are well versed in all facets of study design and have conducted studies using focus groups, contextual inquiries, usability testing, survey instruments, driving simulators, and instrumented vehicles.

In summary, we are very excited to work with the City of Bellevue and provide our strongest support for this important project.

Sincerely,

Jessica Parker

Jessica Parker, Authorized Signatory
Contract & Grant Analyst
Office of Sponsored Programs

June 30, 2023

The Honorable Pete Buttigieg
Secretary of Transportation
1200 New Jersey Ave SE
Washington, DC 20590

Re: Letter of Support – Safe Streets and Roads for All (SS4A) Grant Program
Project: D-4 Cellular Vehicle-to-Everything (C-V2X) Demonstration

Dear Secretary Buttigieg,

T-Mobile continues to enthusiastically support the Bellevue Safe Access for Everyone (B-SAFE) application for a USDOT Safe Streets and Roads for All (SS4A) grant to advance the City of Bellevue's Vision Zero Strategic Plan.

T-Mobile is a proud member of the Bellevue community. T-Mobile has maintained its headquarters in Bellevue since the company's inception, in 1999. We employ over 7,000 people within the City, including employees at our Headquarters buildings in Factoria and Eastgate economic growth centers, as well as employees at our 5G Hub in Central Bellevue, and of course retail employees throughout the City. T-Mobile has built a robust national wireless network, including in our hometown of Bellevue, and our plans call for additional network investment in Bellevue in the amount of approximately $4 million in 2023.

T-Mobile is committed to public safety, and we bring that commitment to the City of Bellevue and to the B-SAFE proposal as outlined in the City's 2023 SS4A grant application for the project "D-4 Cellular Vehicle-to-Everything (C-V2X) Demonstration".

To demonstrate our commitment to the City of Bellevue, T-Mobile will provide the following services in support of this project:

- 5G connectivity for the 19 proposed locations as outlined in the City's grant proposal
- Utilization of a C-V2X test bed in T-Mobile's 5G Hub located in the B-Safe project area
- Technical and project management resources throughout the term of the project
- We expect the combined value of the above components from T-Mobile to be approximately $50,000

T-Mobile is America's supercharged Un-carrier, delivering an advanced nationwide network that will offer reliable connectivity for all. T-Mobile is committed to building a transformative nationwide 5G network, better products at unmatched value, increased competition, and access to underserved communities. We are committed to achieving our vision – to be #1 in customer choice and #1 in customers' hearts. We're committed to giving back to our communities in bold ways that bring our

values to life, leverage our technology for the greater good, and empower our employees to create meaningful change.

The City of Bellevue has set an aggressive goal in its Vision Zero Strategic Plan of eliminating traffic deaths and serious-injury collisions by 2030. T-Mobile supports the City's vision and leadership in traffic safety innovation, and we support the goal itself. T-Mobile expresses its appreciation and support by committing its resources to the City of Bellevue's application for a USDOT SS4A grant to support the City's Zero Vision Strategic Plan, as described in this letter. We are committed to the City's vision of improved traffic safety.

Sincerely,

T-Mobile

Qualcomm Technologies, Inc.
5775 Morehouse Drive, San Diego, CA 92121

July 3rd, 2023

The Honorable Pete Buttigieg
Secretary of Transportation
1200 New Jersey Av SE
Washington, DC 20590

Re: Letter of Support – Safe Streets and Roads for All (SS4A) Grant Program Project: D-4 Cellular Vehicle-to-Everything (C-V2X) Demonstration

Dear Secretary Buttigieg:

Qualcomm Technologies, Inc. (QTI) is pleased to provide this letter of support for the City of Bellevue, WA "D-4 Cellular Vehicle-to-Everything (C-V2X) Demonstration (collectively the "Demonstration"). This C-V2X Demonstration proposes to demonstrate and evaluation C-V2X Pedestrian Protection Technologies.

As the world's leading wireless technology innovator, QTI is committed to enabling a world where everyone and everything can be intelligently connected. An important part of this intelligently connected world is direct connectivity to help improve motor vehicle safety on US roads. QTI, along with many proponents across the transportation ecosystem, has developed the underlying cutting-edge technology and work to showcase and deploy direct communication: C-V2X in the 5.9 GHz safety spectrum.

Working toward the large-scale use of the safety spectrum is an essential part of QTI's commitment to safety for all drivers, pedestrians, and everyone who uses the country's roadways. QTI looks forward to working with the City of Bellevue to conduct this C-V2X demonstration because QTI believes this will further educate various stakeholders and help pave the way to nationwide deployment of a smart, connected roadside platforms providing information about other road users and potential hazards directly with vehicles. In further support, QTI plans to undertake the following with respect to the Demonstration:

- Loan 10 (ten) C-V2X "aftermarket safety devices" that can be mounted on vehicles and provisioned to provide warnings to drivers when the RRFB Crosswalk RSUs communicate directly to these devices.
- Provide mutually agreed upon engineering support to help install and operate these devices.

QTI also proposes to work with the City of Bellevue and project partners to explore next steps to take learnings from this Demonstration to help the Department of Transportation continue to progress towards a nationwide deployment of C-V2X and its related safety benefits. This would include steps toward integrating a Car-to-Cloud interface, enabling complementary cloud safety-enhancing long range information from a variety of smart devices and services QTI enables for enhancing safety and mobility in cities throughout the world. The combination of direct safety-of-life communication and the longer time horizon information available through our Car-to-Cloud interface and intelligent devices in cities will instantiate our shared vision of a truly intelligently connected vehicle-roadway system to help enhance motor vehicle safety on our roads.

Sincerely,

Kirsten Duncan
Director, Contracts
kduncan@qti.qualcomm.com
Qualcomm Technologies, Inc.

Appendix E

DETAILED ACTIVITY SCHEDULE

B-SAFE SS4A Estimated Schedule and Milestones (detail)

	Year 1							Year 2												Year 3												Year 4												Year 5									
Year	**2023**							**2024**												**2025**												**2026**												**2027**												**2028**									
Month	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10
General Administration																																																					
SS4A Grant application submittal	by Jul 10 2023																																																			
If receive SS4A Grant Award								News of possible award - Oct 2024. If successful, then see the following schedules/milestones																																																
Project submitted into the STIP through MPO								Nov 2023, Published Jan 2024																																															
Complete Partnership agreements (public and private)								Nov 2023 - Feb 2024																																															
Draft USDOT Contract / City Legal Review								Dec 2023																																												
Grant accepted by City Council								Jan 2023																																												
USDOT Contract Approval/Routing Signatures								Feb-Mar 2024																																													
Grant Administration								March 2024 - December 2028 (estimated agreement close)																																														
Initiate Partnership and Consultant master agreement - initiation as feasible, also see project-specific calendar below for individual Tasks																																																			
Scope and federal DBE goal assignment																				March-May 2024																																	
Advertisement and Selection (minimum 3 weeks AD)																																June-July 2024																				
Award and execution																																																			Aug-Sept 2024
Programmatic Milestones - Implementation (IMP) Projects																																																			
NEPA																																																				
Kick-off		6/15 kickoff																																																		
Conduct evaluation and documentation																																Jun 2024 - studies and development																				
Submit draft for federal review																																																		May 2025
Finalize and sign NEPA for fed approval																																																		est Approval Jun 2025
For Public Involvement - also see individual project detail																																																		

SP-1: Road Safety Audits

Overall Estimated Duration, 42 months (3 years 6 months)

Consultant agreement with engineering and conflict analytics firm	Nov 2024 - Dec 2024
Activity Timeline: Q1 2025 - Q1 2028	Activity, 39 months (3 years 3 months)
Overall project kick-off, plus individual segment project kick-offs at interspersed sequential times for approx. 7 RSAs for 13.7 miles of HIN	Jan 2025 — Individual segement kick-offs interspersed, May 2025 - May 2027
Safety impact assessment (crash trends, roadway features, speed, near-miss, and other data)	Feb-Jun 2025
Community engagement, including:	Interspersed, Jul 2025 to Jun 2027
Walk Audits with stakeholders	
External agency, community-based organization involvement	
Online questionnaire and interactive map	
Recommendations (identified safety countermeasures) and report production	Interspersed, Nov 2025 to Jan 2028
Final report(s) complete, informs city's Action Plan list of projects	Feb-Mar 2028

SP-2: Speed Studies

Overall Duration, 18 months

Consultant agreement with engineering firm	Jul-Sep 2025
Activity Timeline: Q3 2025 - Q4 2026	Activity, 15 months
Consultant agreement with engineering firm	
Project kick-off	Oct 2025
Data gathering	Nov 2025 - Feb 2026
Analysis of posted speed limits citywide	Mar 2026 - Jun 2026
Engage first responders to account for emergency response time considerations	Jul-Aug 2026
Identify context-sensitive safety recommendations for speed management	Sep-Oct 2026
Final Report(s) complete, informs city's Action Plan list of projects	Nov-Dec 2026

SP-3: Separated Bike Lane Design Guidance

Overall Estimated Duration, 42 months (3 years 6 months)

Partnership agreement, task *(also see Administration above)* with IIHS	Jan -Mar 2025
Consultant agreement with near-miss analytics firm	Jan -Mar 2025
Activity Timeline: Q2 2025 - Q2 2028 (interim hiatus in 2026-27 to assure ability to conduct "after" analysis of IMP-2 Bike Bellevue Implementation project which will conclud at the end of 2027)	Activity, 39 months (3 years 3 months)
Project kick-off	Apr 2025
"Before" IMP-2 Bike Bellevue Implementation	est time between May-Dec 2025
"After" IMP-2 Bike Bellevue Implementation; Data collection	Jan-Feb 2028
Analysis by q2 2028...	Mar-Apr 2028
Draft guidance review	May 2028
Guidance report complete, informs city's Action Plan list of projects	Jun 2028

SP-4: Speed Safety Camera Procedures

Overall Estimated Duration, 18 months

Consultant agreement with engineering firm	Jan -Mar 2025
Activity Timeline: Q2 2025 - Q2 2026	Activity, 15 months (1 year 3 months)
Project kick-off	Apr 2025
Review current program, best practices, and new legislation & authority	May-July 2025
Determine updates	Aug-Nov 2025
Develop procedures	Dec 2025 - Mar 2026
Draft procedures review	Apr-May 2026
Procedures report complete, informs city's Action Plan list of projects	Jun 2026

B-SAFE SS4A Estimated Schedule and Milestones (detail)

Year	2023							Year 1											Year 2											Year 3											Year 4											Year 5									
Month	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10

D-1: Protected Turn Phasing for Pedestrians Demonstration

month count 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

- Overall Estimated Duration, 18 months
- Partnership agreement, task *(also see Administration above)* with IIHS — Oct-Dec 2024
- Consultant agreement for near-miss analytics — Oct-Dec 2024

Activity Timeline: Q1 2025 - Q1 2026

Activity, up to 15 months (1 year 3 months)

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

- Project kick-off — Jan 2025
- "Before" analysis of demonstration project — Jan 2025
- Threshold determinations based on volume (vehicles and pedestrians) that would trigger additional signal operations protections/warnings — Feb-Jun 2025
- Testing / protected and protected-permissive phasing and collect data to analyze impacts — Jul-Oct 2025
  - Adjust turn phasing signal operations — Jul
  - "After" data gathering and analysis of demonstration project — Aug
  - Evaluate results — Sep-Nov 2025
  - Adjust if needed — Nov 2025
- Prepare assessment report that will inform the city's updated Action Plan — Nov 2025-Jan 2026
  - Draft assessment report review — Feb 2026
  - Assessment report complete, informs city's Action Plan list of projects — Mar 2026

D-2: Adaptive Pedestrian Signal Control Demonstration

month count 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

- Overall Estimated Duration, 16 months
- Partnership agreement, task *(also see Administration above)* with IIHS — Oct-Dec 2024
- Consultant agreement for near-miss analytics — Oct-Dec 2024

Activity Timeline: Q1 2025 - Q1 2026

Activity, up to 13 months (1 year 1 month)

1 2 3 4 5 6 7 8 9 10 11 12 13

- Project kick-off — Jan 2025
- "Before" analysis of demonstration project — Jan 2025
- Integrates sensors into the city's adaptive signal control system; — later Jan-Feb 2025
  - Receive & install TraffiSense AI sensors
- Define the thresholds for pedestrian priority where APSC is installed and monitors/refines the levels of priority for varied pedestrian volumes at study intersections — Mar-Jun 2025
- Evaluate pedestrian delay and determines whether APSC reduces instances of jaywalking pedestrians crossing outside the pedestrian phase [months six to ten]; — Jul-Nov 2025
  - Refine levels of signal phasing priority for varied pedestrian volumes
- Finalize assessment report that will inform future APSC implementation through the city's updated Action Plan [months ten to twelve] — Feb 2026
  - Evaluate results on pedestrian delay and instances of crossing outside pedestrian phase
  - Draft assessment report review
  - Assessment report complete, informs city's Action Plan list of projects

D-3: Paint the Pavement Safety Demonstration

month count 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

- Overall Estimated Duration, 18 months
- Consultant agreement with engineering, artist, and near-miss analytics firm — Sep-Nov 2024
- Request & approve FHWA experimentation approval to test the use of asphalt art at crosswalks — Sep-Nov 2024

Activity Timeline: Q1 2025 - Q2 2026

Activity only, up to 15 months

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

- Project kick-off — Dec 2025
- Community engagement to identify concept ideas, Artist develops designs — Dec-Feb 2025
- Conduct before conflict analytics monitoring; — Jan-Feb 2025
- Design design, secure city ROW permit, PS&E — Mar-May 2025
- Procure asphalt striping contractor (3-week advertisement, selection and contractor award) — Jun-Jul 2025
- Install the painted asphalt art — *Aug-Sep 2025
- Conduct after conflict analytics monitoring — Oct 2025
- Conduct community outreach — Nov-Dec 2025
- Produce a Paint the Pavement guidance report to inform future implementation through the city's Action Plan — Jan-Feb 2026

**installation while surface temporature sufficiently warm to adhere*

D-4: Cellular Vehicle-to-Everything Demonstration

month count 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

- Overall Estimated Duration, 15 months
- Partnership agreement *(also see Administration above)* with UW, T-Mobile, Applied Information (AI), and Qualcomm — Oct-Dec 2024

Activity Timeline: Q1 2025 - Q1 2026

Activity, approx 12 months (1 year)

1 2 3 4 5 6 7 8 9 10 11 12

- Project kick-off — Jan 2025
- City receives and installs AI road side units and Qualcomm C-V2X "aftermarket safety devices" — Jan-Feb 2025
- City conducts media campaign encouraging downloads of TravelSafely application (provided by AI) — Mar-Apr 2025
- UW collects and evaluates TravelSafety data logs and conducts focus groups with app users — May-Oct 2025
- UW generates and completes assessment report, informs city's roll-out of C-V2X technologies — Nov-Dec 2025

B-SAFE SS4A Estimated Schedule and Milestones (detail)

Year	2023							Year 1											Year 2											Year 3											Year 4											Year 5									
Month	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10

IMP-1: Eastrail

An approximate 5 year project, including agreements, design and construction (no Right of Way anticipated)

PROGRAMMATIC MILESTONES

- State, Regional, and Local Approvals
  - Add project to Region TIP/State TIP — Nov 2023 - Jan 2024
- Partnership and Implementation Agreements (King Co MOA) — Nov-Dec 2023

DESIGN PHASE (Category B activity)

- Request FHWA design phase funding approval — Mar 2023 (after published in STIP)
- Design Start or Preparation (Kick off & Coordination) — Apr 2024
- Survey — Apr-May 2024
- 60% design — Jun 2024
- Public Involvement — Jun-Jul 2024
- *NEPA - also see programmatic milestone* — Jun 2024 - est Approval Jun 2025
- 90% design — Jan 2025
- Request construction DBE goal & training hr assignment — Mar 2025
- Initiate any Public Interest Finding (PIF) requests — Mar 2025
- 100% design — May 2025
- Design complete — Jun 2025
- Complete Permitting (Clear & Grade) — Jul 2025
- Request FHWA Approval of PS&E — Aug 2025
- Request FHWA construction phase funding approval — Aug 2025
- Procurement & Contract Advertisement (minimum 3 weeks) — Sept 2025
- Contract Award — Oct 2025

ROW PHASE (Category B activity)

- Approve "No R/W" forms
  - *No ROW expected, however, "if needed" - placeholder time period from Mar 2024 to Feb 2025 for unanticipation temporary acquisition & R/W Certification* — Jul 2025

CONSTRUCTION PHASE (Category C activity)

- *For contract Advertisement and Award, see Design Phase*
- Public Notification — Nov-Dec 2025
- Contract Kick-Off — Jan 2026
- Construction
- Substantial Completion/ Open to Public — July 2026 - Substantially Complete / Open for Use
- Final tick list — Aug 2027 - Dec 2027
- Plant establishment period (if needed) — possibly through July 2027
- ADA Inspection and As-Builts delivered as needed — July 2027
- Construction Completion/Project Completion/Contract Close — Oct 2027

IMP-2: Bike Bellevue

An approximate 4 year project, including agreements, design and construction (no Right of Way anticipated)

PROGRAMMATIC MILESTONES

- State, Regional, and Local Approvals
  - Add project to Region TIP/State TIP — Nov 2023 - Jan 2024

DESIGN PHASE (Category B activity)

- Request FHWA design phase funding approval — Mar 2023 (after published in STIP)
- Design Start or Preparation (Kick off & Coordination) — Apr 2024
- Survey — Apr-May 2024
- 60% design — Jun 2024
- Public Involvement — Jun-Jul 2024
- *NEPA - also see programmatic milestone* — Jun 2024 - est Approval Jun 2025
- 90% design — Jan 2025
- Request construction DBE goal & training hr assignment — Mar 2025
- Initiate any Public Interest Finding (PIF) requests — Mar 2025
- 100% design — May 2025 Jul 2025
- Design complete — Aug 2025
- Complete Permitting (Clear & Grade) — Aug 2025
- Request FHWA Approval of PS&E — Sep 2025
- Request FHWA construction phase funding approval
- Procurement & Contract Advertisement (minimum 3 weeks) — Oct 2025
- Contract Award — Nov 2025

ROW PHASE (Category B activity)

- Approve "No R/W" forms
  - *No ROW expected, however, "if needed" - placeholder time period from Mar 2024 to Feb 2025 for unanticipation temporary acquisition & R/W Certification* — Jul 2025

CONSTRUCTION PHASE (Category C activity)

- *For contract Advertisement and Award, see Design Phase*
- Public Notification — Jan 2026
- Contract Kick-Off — Jan 2026
- Construction
- Substantial Completion/ Open to Public — Sep 2027
- Final tick list — Oct - Dec 2027
- ADA Inspection and As-Builts delivered as needed — Nov 2027
- Construction Completion/Project Completion/Contract Close — Dec 2027

B-SAFE SS4A Estimated Schedule and Milestones (detail)

	Year 1							Year 2												Year 3												Year 4												Year 5									
Year	**2023**							**2024**												**2025**												**2026**												**2027**												**2028**									
Month	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10

IMP-3: Retroreflective Signal Head Backplates

An approximate 4 year project, including agreements, design and construction (no Right of Way anticipated)

PROGRAMMATIC MILESTONES

State, Regional, and Local Approvals

Add project to Region TIP/State TIP — Nov 2023 - Jan 2024

DESIGN PHASE (Category B activity)

Request FHWA design phase funding approval — Mar 2023 (after published in STIP)

Design Start or Preparation (Kick off & Coordination) — Apr 2024

Survey — Apr-May 2024

60% design — Jun 2024

Public Involvement — Jun-Jul 2024

NEPA - also see programmatic milestone — Jun 2024 - est Approval Jun 2025

90% design — Jan 2025

Request construction DBE goal & training hr assignment — Mar 2025

Initiate any Public Interest Finding (PIF) requests — Mar 2025

100% design — May 2025 Jul 2025

Design complete — Aug 2025

Complete Permitting (Clear & Grade) — Aug 2025

Request FHWA Approval of PS&E — Sep 2025

Request FHWA construction phase funding approval

Procurement & Contract Advertisement (minimum 3 weeks) — Oct 2025

Contract Award — Nov 2025

ROW PHASE (Category B activity)

Approve "No R/W" forms — Jul 2025

CONSTRUCTION PHASE (Category C activity)

For contract Advertisement and Award, see Design Phase

Public Notification — Jan 2026

Contract Kick-Off — Jan 2026

Construction — Feb 2026-Dec 2027

Substantial Completion/ Open to Public — Sep 2027

Final tick list — Oct - Dec 2027

ADA Inspection and As-Builts delivered as needed — Nov 2027

Construction Completion/Project Completion/Contract Close — Dec 2027

IMP-4: High Visibility Crosswalks

An approximate 4 year project, including agreements, design and construction (no Right of Way anticipated)

PROGRAMMATIC MILESTONES

State, Regional, and Local Approvals

Add project to Region TIP/State TIP — Nov 2023 - Jan 2024

DESIGN PHASE (Category B activity)

Request FHWA design phase funding approval — Mar 2023 (after published in STIP)

Design Start or Preparation (Kick off & Coordination) — Apr 2024

Survey — Apr-May 2024

60% design — Jun 2024

Public Involvement — Jun-Jul 2024

NEPA - also see programmatic milestone — Jun 2024 - est Approval Jun 2025

90% design — Jan 2025

Request construction DBE goal & training hr assignment — Mar 2025

Initiate any Public Interest Finding (PIF) requests — Mar 2025

100% design — May 2025 Jul 2025

Design complete — Aug 2025

Complete Permitting (Clear & Grade) — Aug 2025

Request FHWA Approval of PS&E — Sep 2025

Request FHWA construction phase funding approval

Procurement & Contract Advertisement (minimum 3 weeks) — Oct 2025

Contract Award — Nov 2025

ROW PHASE (Category B activity)

Approve "No R/W" forms — Jul 2025

CONSTRUCTION PHASE (Category C activity)

For contract Advertisement and Award, see Design Phase

Public Notification — Jan 2026

Contract Kick-Off — Jan 2026

Construction — Feb 2026-Dec 2027

Substantial Completion/ Open to Public — Sep 2027

Final tick list — Oct - Dec 2027

ADA Inspection and As-Builts delivered as needed — Nov 2027

Construction Completion/Project Completion/Contract Close — Dec 2027

Appendix F

SS4A SELF-CERTIFICATION ELIGIBILITY WORKSHEET

Safe Streets and Roads for All
Self-Certification Eligibility Worksheet

Lead Applicant: City of Bellevue, WA UEI: DQ3JYJ78JMD5

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1 Are both of the following true?

(a) Did a high-ranking official and/or governing body in the jurisdiction publicly commit to an eventual goal of zero roadway fatalities and serious injuries?

(b) Did the commitment include either setting a target date to reach zero, OR setting one or more targets to achieve significant declines in roadway fatalities and serious injuries by a specific date?

■ YES ☐ NO

If yes, provide documentation:

On 12/7/15 the Mayor publicly committed to zero traffic deaths and serious injuries by 2030. Resolution No. 9035.

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2 To develop the Action Plan, was a committee, task force, implementation group, or similar body established and charged with the plan's development, implementation, and monitoring?

■ YES ☐ NO

If yes, provide documentation:

Vision Zero Steering Team was created under the Vision Zero Strategic Plan (VZSP), p.83. Projects are implemented and monitored through annual Vision Zero Action Plans (VZAP).

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3 Does the Action Plan include all of the following?

(a) Analysis of existing conditions and historical trends to baseline the level of crashes involving fatalities and serious injuries across a jurisdiction, locality, Tribe, or region;

(b) Analysis of the location where there are crashes, the severity, as well as contributing factors and crash types;

(c) Analysis of systemic and specific safety needs is also performed, as needed (e.g., high risk road features, specific safety needs of relevant road users; and,

(d) A geospatial identification (geographic or locational data using maps) of higher risk locations.

■ YES ☐ NO

If yes, provide documentation:

(a) Crash analysis in VZSP p.15. (b) Crash locations identified in VZSP p.18; Crash contributing factors and types identified in VZSP p.16-17. (c) Systemic network assessment (VZSP p.16-17), conflict analytics (VZSP p.46), and road features / self-enforcing roads (VZSP p.38). (d) Geospatial ID via heat map (VZSP p.18) and High Injury Network (VZSP p.19).

---

4 Did the Action Plan development include all of the following activities?

(a) Engagement with the public and relevant stakeholders, including the private sector and community groups;

(b) Incorporation of information received from the engagement and collaboration into the plan; and

(c) Coordination that included inter-and intra-governmental cooperation and collaboration, as appropriate.

■ YES ☐ NO

If yes, provide documentation:

(a) and (b) Public engagement and incorporation of information received, VZSP p.20-21. Vision Zero Summit added private sector, academia. (c) partner agency outreach, coordination, and cooperation, VZSP p.21, 31.

Safe Streets and Roads for All
Self-Certification Eligibility Worksheet

5 Did the Action Plan development include all of the following?

(a) Considerations of equity using inclusive and representative processes;

(b) The identification of underserved communities through data; and

(c) Equity analysis, in collaboration with appropriate partners, focused on initial equity impact assessments of the proposed projects and strategies, and population characteristics.

■ YES ☐ NO

If yes, provide documentation:

(a) Inclusive outreach efforts (VZSP p.20); goals and strategies include Equity (VZSP p.8, 60). (b) Vision Zero Crash Dashboard includes underserved community identification. (c) VZSP Technical Memo 3A assesses Equity impacts.

6 Are both of the following true?

(a) The plan development included an assessment of current policies, plans, guidelines, and/or standards to identify opportunities to improve how processes prioritize safety; and

(b) The plan discusses implementation through the adoption of revised or new policies, guidelines, and/or standards.

■ YES ☐ NO

If yes, provide documentation:

(a) Tech Memo 4 and VZSP references related Comprehensive Plan elements and policies like Complete Streets (VZSP p.31, 40, 44, 48, 60). (b) VZAPs in 2021, 2022, and 2023 include policy-related strategies.

7 Does the plan identify a comprehensive set of projects and strategies to address the safety problems in the Action Plan, time ranges when projects and strategies will be deployed, and explain project prioritization criteria?

■ YES ☐ NO

If yes, provide documentation:

The 2021, 2022, and 2023 VZAPs identify projects and strategies, deployment time ranges, and prioritization criteria.

8 Does the plan include all of the following?

(a) A description of how progress will be measured overtime that includes, at a minimum, outcome data.

(b) The plan is posted publicly online.

■ YES ☐ NO

If yes, provide documentation:

(a) VZSP includes a requirement to "identify improvements and evaluate outcomes" (VZSP p.80). (b) The VZSP is posted publicly online.

9 Was the plan finalized and/or last updated between 2018 and June 2023?

■ YES ☐ NO

If yes, provide documentation:

The Bellevue VZSP was finalized in 2020. VZAPs were adopted in 2021, 2022, and 2023.

Appendix G

B-SAFE SUPPLEMENTAL ESTIMATED BUDGET ("Table 4")

Supplemental Estimated Budget
Itemized Estimated Costs of the (A) Supplemental Action Plan Activities

Bellevue Safe Access for Everyone (B-SAFE)	Federal Costs	Total Project Costs	Federal Funds to Underserved Communities
SP-1 Road Safety Audits	**$ 430,993**	**$ 538,742**	$ -
Project management and administrative expenses (city)	*$ 86,199*	*$ 107,748*	*$ -*
Consultants	*$ 344,795*	*$ 430,993*	*$ -*
SP-2 Speed Studies	**$ 351,656**	**$ 439,570**	$ -
Project management and administrative expenses (city)	*$ 31,969*	*$ 39,961*	*$ -*
Consultants	*$ 319,687*	*$ 399,609*	*$ -*
SP-3 Separated Bike Lane Design Guidance	**$ 627,210**	**$ 784,013**	$ -
Project management and administrative expenses (city)	*$ 57,019*	*$ 71,274*	*$ -*
Consultants	*$ 570,191*	*$ 712,739*	*$ -*
SP-4 Speed Safety Camera Program Procedures	**$ 193,199**	**$ 241,499**	$ -
Project management and administrative expenses (city)	*$ 17,564*	*$ 21,954*	*$ -*
Consultants	*$ 175,636*	*$ 219,545*	*$ -*
D-1 Protected Turn Phasing for Pedestirans Demonstration	**$ 237,930**	**$ 297,413**	$ -
Project management and administrative expenses (city)	*$ 21,630*	*$ 27,038*	*$ -*
Consultants	*$ 216,300*	*$ 270,375*	*$ -*
D-2 Adaptive Pedestrian Signal Control Demonstration	**$ 172,216**	**$ 215,270**	$ -
Project management and administrative expenses (city)	*$ 39,742*	*$ 49,678*	*$ -*
Consultants	*$ 132,474*	*$ 165,592*	*$ -*
D-3 Paint the Pavement Safety Demonstration	**$ 417,830**	**$ 522,287**	$ -
Project management and administrative expenses (city)	*$ 86,174*	*$ 107,717*	*$ -*
Consultants	*$ 171,656*	*$ 214,570*	*$ -*
Installation, Public Engagement	*$ 160,000*	*$ 200,000*	*$ -*
D-4 Cellular Vehicle-to-Everything Demonstration	**$ 356,860**	**$ 446,075**	$ -
Project management and administrative expenses (city)	*$ 71,372*	*$ 89,215*	*$ -*
Consultants	*$ 285,488*	*$ 356,860*	*$ -*
Subtotal Budget for (A) Supplemental Action Plan Activities	**$ 2,787,894**	**$ 3,484,867**	**$ -**

Itemized Estimated Costs of the (B) Planning, Design, and Development Activities

Bellevue Safe Access for Everyone (B-SAFE)	Federal Costs	Total Project Costs	Federal Funds to Underserved Communities
IMP-1 Eastrail Trail and Crossings	$ 1,341,005	$ 1,676,256	$ 318,489
Administrative and legal expenses	*$ 434,931*	*$ 543,664*	*$ 103,296*
Architectural and engineering fees	*$ 906,074*	*$ 1,132,592*	*$ 215,193*
IMP-2 Bike Bellevue	$ 783,207	$ 979,009	$ -
Administrative and legal expenses	*$ 113,819*	*$ 142,274*	*$ -*
Land, structures, rights-of-way etc (unanticipated TCEs)	*$ 32,000*	*$ 40,000*	*$ -*
Architectural and engineering fees	*$ 637,388*	*$ 796,735*	*$ -*
IMP-3 Signal Head Backplates with Retro Borders	$ 189,398	$ 236,747	
Administrative and legal expenses	*$ 25,776*	*$ 32,220*	*$ -*
Architectural and engineering fees	*$ 163,621*	*$ 204,527*	*$ -*
IMP-4 High-Visibility Crosswalks	$ 394,236	$ 492,795	
Administrative and legal expenses	*$ 71,750*	*$ 89,687*	*$ -*
Architectural and engineering fees	*$ 322,486*	*$ 403,108*	*$ -*
Subtotal Budget for (B) Conducting Planning, Design, and Development Activities	**$ 2,707,846**	**$ 3,384,807**	**$ 318,489**

Itemized Estimated Costs of the (C) Proposed Projects and Strategies

Bellevue Safe Access for Everyone (B-SAFE)	Federal Costs	Total Project Costs	Federal Funds to Underserved Communities
IMP-1 Eastrail Trail and Crossings	$ 6,365,026	$ 7,956,282	$ 1,511,694
Administrative and legal expenses	*$ 228,829*	*$ 286,037*	*$ 54,347*
Other architectural and engineering fees (e.g., engineer of record)	*$ 99,235*	*$ 124,043*	*$ 23,568*
Project inspection fees	*$ 457,659*	*$ 572,074*	*$ 108,694*
Construction Contract	*$ 5,044,771*	*$ 6,305,964*	*$ 1,198,133*
Miscellaneous (Police flagging (PIF))	*$ 40,000*	*$ 50,000*	*$ 9,500*
Contingencies at 10pct	*$ 494,532*	*$ 618,165*	*$ 117,451*
IMP-2 Bike Bellevue	*$ 7,216,793*	*$ 9,020,992*	*$ -*
Administrative and legal expenses	*$ 151,759*	*$ 189,699*	*$ -*
Other architectural and engineering fees (e.g., engineer of record)	*$ 265,578*	*$ 331,973*	*$ -*
Project inspection fees	*$ 796,735*	*$ 995,918*	*$ -*
Construction Contract	*$ 5,311,565*	*$ 6,639,456*	*$ -*
Miscellaneous (Police flagging (PIF))	*$ 160,000*	*$ 200,000*	*$ -*
Contingencies at 10pct	*$ 531,156*	*$ 663,946*	*$ -*
IMP-3 Signal Head Backplates with Retro Borders	$ 686,619	$ 858,274	$ -
Administrative and legal expenses	*$ 53,896*	$ 67,370	*$ -*
Other architectural and engineering fees (e.g., engineer of record)	$ 14,702	$ 18,378	*$ -*
Project inspection fees	$ 73,512	$ 91,890	*$ -*
Construction Contract	$ 440,871	$ 551,089	*$ -*
Miscellaneous (Police flagging (PIF))	$ 24,000	$ 30,000	*$ -*
Contingencies at 10pct	$ 79,638	$ 99,547	*$ -*
IMP-4 High-Visibility Crosswalks	$ 1,457,363	$ 1,821,703	$ -
Administrative and legal expenses	*$ 88,184*	*$ 110,230*	*$ -*
Other architectural and engineering fees (e.g., engineer of record)	*$ 31,296*	*$ 39,119*	*$ -*
Project inspection fees	*$ 156,478*	*$ 195,597*	*$ -*
Construction Contract	*$ 951,851*	*$ 1,189,814*	*$ -*
Miscellaneous (Police flagging (PIF))	*$ 33,958*	*$ 42,447*	*$ -*
Contingencies at 10pct	*$ 195,597*	*$ 244,496*	*$ -*
Subtotal Budget for (C) Carrying Out Projects and Strategies	**$ 15,725,800**	**$ 19,657,251**	**$ 1,511,694**
Total Budget for Activities (A), (B), and (C)	**$ 21,221,540**	**$ 26,526,925**	**$ 1,830,182**
Check for Match Requirement (should not >80%)	**80%**		7% underserved