SCOG
Skagit Council of Governments

Appendix 2025 Skagit Intelligent Transportation Systems Plan

CONTENTS

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Cover photograph courtesy of Andy Porter Photography.

APPENDIX A STANDARDS FOR EXISTING SERVICE PACKAGES

Table 10.1 Standards and Physical Objects recommended for Existing ITS Service Packages as recommended by ARC-IT 9.2

SP	SP Name	Standard Name	Standard Title	Physical Object
PT04	Transit Fare Collection Management	NEMA TS 8 Cyber and Physical Security	Cyber and Physical Security for Intelligent Transportation Systems	Payment Administration Center
PT09	Transit Signal Priority	CTI 4001 RSU	Dedicated Short Range Communications Roadside Unit Specifications (FHWA-JPO-589)	Connected Vehicle Roadside Equipment
PT09	Transit Signal Priority	ITE ATC	Advanced Transportation Controller	ITS Roadway Equipment
PT09	Transit Signal Priority	ITE ATC API	Application Programming Interface Standard for the Advanced Transportation Controller	ITS Roadway Equipment
PT09	Transit Signal Priority	ITE ATC ITS Cabinet	Intelligent Transportation System Standard Specification for Roadside Cabinets	ITS Roadway Equipment
PT09	Transit Signal Priority	ITE ATC Model 2070	Model 2070 Controller Standard	ITS Roadway Equipment
PT09	Transit Signal Priority	NEMA TS 8 Cyber and Physical Security	Cyber and Physical Security for Intelligent Transportation Systems	ITS Roadway Equipment, TMC
PT09	Transit Signal Priority	NEMA TS2 Traffic Controller Assemblies	Traffic Controller Assemblies with NTCIP Requirements	ITS Roadway Equipment
PS01	Emergency Call Taking and Dispatch	NEMA TS 8 Cyber and Physical Security	Cyber and Physical Security for Intelligent Transportation Systems	Traffic Management Center TMC
PS03	Emergency Vehicle Preemption	CTI 4001 RSU	Dedicated Short Range Communications Roadside Unit Specifications (FHWA-JPO-17-589)	Connected Vehicle Roadside Equipment
PS03	Emergency Vehicle Preemption	ITE ATC	Advanced Transportation Controller	ITS Roadway Equipment
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PS03	Emergency Vehicle Preemption	NEMA TS2 Traffic Controller Assemblies	Traffic Controller Assemblies with NTCIP Requirements	ITS Roadway Equipment
PS03	Emergency Vehicle Preemption	NEMA TS 8 Cyber and Physical Security	Cyber and Physical Security for Intelligent Transportation Systems	ITS Roadway Equipment, TMC
PS10	Wide Area Alert	ITE ATC	Advanced Transportation Controller	ITS Roadway Equipment
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PS10	Wide Area Alert	ITE ATC ITS Cabinet	Intelligent Transportation System Standard Specification for Roadside Cabinets	ITS Roadway Equipment
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PS10	Wide Area Alert	NEMA TS 8 Cyber and Physical Security	Cyber and Physical Security for Intelligent Transportation Systems	ITS Roadway Equipment, TMC
PS10	Wide Area Alert	NEMA TS 2 Traffic Controller Assemblies	Traffic Controller Assemblies with NTCIP Requirements	ITS Roadway Equipment
PS10	Wide Area Alert	NEMA TS4 Hardware Standards for DMS	Hardware Standards for Dynamic Message Signs (DMS) with NTCIP Requirements	ITS Roadway Equipment
PS11	Early Warning System	NEMA TS 8 Cyber and Physical Security	Cyber and Physical Security for Intelligent Transportation Systems	Traffic Management Center TMC
TI01	Broadcast Traveler Information	CTI 4001 RSU	Dedicated Short-Range Communications Roadside Unit Specifications (FHWA-JPO-17-589)	Connected Vehicle Roadside Equipment
TM01	Infrastructure-Based Traffic Surveillance	ITE ATC ITS Cabinet	Intelligent Transportation System Standard Specification for Roadside Cabinets	ITS Roadway Equipment
TM01	Infrastructure-Based Traffic Surveillance	NEMA TS 8 Cyber and Physical Security	Cyber and Physical Security for Intelligent Transportation Systems	ITS Roadway Equipment, TMC
TM03	Traffic Signal Control	ITE ATC	Advanced Transportation Controller	ITS Roadway Equipment

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TM06	Traffic Information Dissemination	ITE ATC	Advanced Transportation Controller	ITS Roadway Equipment
TM06	Traffic Information Dissemination	ITE ATC API	Application Programming Interface Standard for the Advanced Transportation Controller	ITS Roadway Equipment
TM06	Traffic Information Dissemination	ITE ATS ITS Cabinet	Intelligent Transportation System Standard Specification for Roadside Cabinets	ITS Roadway Equipment
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TM06	Traffic Information Dissemination	NEMA TS4 Hardware Standards for DMS	Hardware Standards for Dynamic Message Signs (DMS) with NTCIP Requirements	ITS Roadway Equipment
TM13	Standard Railroad Grade Crossing	ITE ATC	Advanced Transportation Controller	ITS Roadway Equipment
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TM13	Standard Railroad Grade Crossing	NEMA TS 8 Cyber and Physical Security	Cyber and Physical Security for Intelligent Transportation Systems	ITS Roadway Equipment, TMC
WX01	Weather Data Collection	CTI 4001 RSU	Dedicated Short Range Communications Roadside Unit Specifications (FHWA-JPO-589)	Connected Vehicle Roadside Equipment
WX01	Weather Data Collection	ITE ATC ITS Cabinet	Intelligent Transportation System Standard Specification for Roadside Cabinets	ITS Roadway Equipment
WX01	Weather Data Collection	NEMA TS 8 Cyber and Physical Security	Cyber and Physical Security for Intelligent Transportation Systems	ITS Roadway Equipment, TMC

Appendix B List of Stakeholder Outreach

Stakeholder Agency	Outreach Meeting 7/3/24 Introductory Meeting	Outreach Meeting 8/12/24 Date- Meeting on I-5 and SR 20 Projects	Emergency Management Outreach Meeting 9/6/24	Additional Meetings
City of Anacortes	No	No	N/A	
City of Burlington	No	No	N/A	
City of Mount Vernon	Attended	Attended	N/A	Check in December 2025
City of Sedro-Woolley	Attended	Attended	N/A	
Port of Skagit/Port of Anacortes	Attended	No	N/A	
Skagit Council of Governments	Attended	Attended	N/A	
Skagit County Public Works	Attended	No	N/A	
Skagit Transit	Attended	No	N/A	Met to discuss proposed transit related ITS projects on 7/26/24
WSDOT	Attended	Attended	N/A	Check in December 2025
Skagit County Emergency Management	Attended	No	Joan Cromley Attended from SC DEM	
Washington State Ferries	Attended	No	N/A	
Burlington Northern Santa Fe Rail	No	Attended	N/A	
Skagit 911 – Mike Voss	No	No	No	Met to discuss emergency management and communications 7/30/24
Swinomish Indian Tribal Community Emergency Management	No	No	Keri Cleary Attended	
Samish Indian Nation	No	No	Steve Lange Attended	

APPENDIX C USER NEEDS FROM RAD-IT

Need Area	Need Area Type	Need Number	Need
CVO06: Freight Signal Priority	Mobility	1	Traffic Management needs to collect data from freight facilities and commercial vehicle fleet management in order to support traffic signal system optimization for commercial vehicles.
CVO06: Freight Signal Priority	Mobility	2	Traffic Management needs to process traffic and commercial vehicle data in order to provide commercial vehicle signal priority for the efficient movement of freight.
CVO06: Freight Signal Priority	Mobility	3	Traffic Management needs to communicate with field equipment to provide commercial vehicle signal priority commands to the intersection.
CVO06: Freight Signal Priority	Mobility	4	The Commercial Vehicle Driver needs to progress through their arterial route safely and efficiently.
PM02: Smart Park and Ride System	Mobility	1	Parking operators need to be able to monitor the number of available spaces in park and ride lots.
PM02: Smart Park and Ride System	Mobility	2	Parking operators need to be able to provide available space information to travelers requesting that information in order to assist their decision-making on where best to park and make use of transit alternatives.
PM02: Smart Park and Ride System	Mobility	3	Parking operators need to be able to provide available space information to transit systems operating near to those spaces.

PM02: Smart Park and Ride System	Mobility	4	Transit operations need to be able to provide transit information to nearby parking operations.
PM02: Smart Park and Ride System	Mobility	5	Parking operators need to be able to provide available space information to traveler information providers.
PS01: Emergency Call-Taking and Dispatch	Safety	1	Emergency Management needs to provide basic public safety call-taking and dispatch of emergency vehicles in order to provide safe and rapid deployment of appropriate resources to an emergency.
PS01: Emergency Call-Taking and Dispatch	Safety	2	Emergency Management needs to coordinate with other emergency management operations in order to support emergency notification between agencies.
PS01: Emergency Call-Taking and Dispatch	Safety	3	Emergency Management needs to process current and historical weather and road conditions data from multiple sources in order to generate warnings and route advisories for individual emergency responders or emergency response dispatchers.
PS01: Emergency Call-Taking and Dispatch	Safety	4	Emergency Management needs to provide emergency responders with road weather warnings and advisories.
PS01: Emergency Call-Taking and Dispatch	Safety	5	Emergency Management needs to provide routing information to the emergency responders.
PS02: Emergency Response	Environmental	1	Emergency Management needs to be able to obtain information from the incident scene to support incident response.

PS02: Emergency Response	Environmental	2	Emergency Management needs to provide response in the field to incidents and emergency situations.
PS02: Emergency Response	Environmental	3	Emergency Management needs to coordinate with other emergency management operations in order to support emergency response.
PS03: Emergency Vehicle Preemption	Safety	1	Emergency Management needs to be able to request signal preemption from Traffic Operations for a specific emergency vehicle.
PS03: Emergency Vehicle Preemption	Safety	2	Emergency Management needs to be able to request signal preemption locally for one or more signals the vehicle is approaching so that it may quickly and safely cross the intersections.
PS03: Emergency Vehicle Preemption	Safety	3	Traffic Management needs to be able to adjust signal timing to provide signal preemption for an emergency vehicle based upon a request from Emergency Management.
PS03: Emergency Vehicle Preemption	Safety	4	Traffic Management needs to be able to support local adjustments to signal timing based upon a local preemption request and transition back to normal traffic signal operations after providing emergency vehicle preemption.
PS03: Emergency Vehicle Preemption	Safety	5	Traffic Operations needs to be able to provide signal timing information to emergency vehicles to support emergency vehicle preemption.

PS04: Mayday Notification	Mobility	1	Emergency Management needs to be able to determine whether a crash or emergency situation has taken place, based on on-board sensor data that detect changes in velocity, vehicle orientation, and airbag status.
PS04: Mayday Notification	Mobility	2	Drivers need to be able to automatically or manually send a mayday alert or emergency requests and provide data about the crash and the vehicle's occupants in order to facilitate the quickest and most appropriate response.
PS04: Mayday Notification	Mobility	3	Travelers need to be able to send a mayday alert to Emergency Management or other traveler devices in order to get help from emergency services.
PS04: Mayday Notification	Mobility	4	Drivers need to be able to rebroadcast crash alerts to remote connected vehicles as well as roadside "hotspots" in order to forward mayday requests even in areas where no vehicle to infrastructure communications exists.
PS04: Mayday Notification	Mobility	5	Emergency Management needs to be able to route crash alerts to the appropriate emergency communications center for action.
PS04: Mayday Notification	Mobility	6	Emergency management needs to verify the crash alert message and/or provide additional notification to the appropriate authorities.

PS04: Mayday Notification	Mobility	7	Travelers need to be able to share information about conditions, incidents, and hazards in their vicinity in order to inform appropriate authorities and other travelers.
PS05: Vehicle Emergency Response	Safety	1	Emergency Response Personnel need to be able to collect information regarding a crash directly from connected vehicles in order to respond safely and effectively to the vehicle crash.
PS06: Incident Scene Pre-Arrival Staging Guidance for Emergency Responders	Safety	1	Emergency Management needs to be able to collect information external to the incident scene to support staging of emergency responder personnel and their equipment.
PS06: Incident Scene Pre-Arrival Staging Guidance for Emergency Responders	Safety	2	Emergency Management needs to be able to provide situational awareness information to emergency responders about an incident to support decisions about how to stage the personnel and their equipment.
PS06: Incident Scene Pre-Arrival Staging Guidance for Emergency Responders	Safety	3	Emergency Management needs to be able to provide emergency responders with real-time navigation instructions that use all available data sources to quickly and efficiently route the responder.

PS06: Incident Scene Pre-Arrival Staging Guidance for Emergency Responders	Safety	4	Emergency Management needs to be able to maintain location and situational information about the emergency vehicles responding to or on the scene of an incident in order to provide a complete picture of the response and share the status with other responding vehicles en route.
PS07: Incident Scene Safety Monitoring	Safety	1	Emergency Management needs to be able to alert drivers when they have entered an incident zone and direct them to change course (merge, change lanes) as needed in order to maintain a safe distance between them and the emergency personnel.
PS07: Incident Scene Safety Monitoring	Safety	2	Emergency Personnel need to be able to receive alerts whenever a vehicle is entering an incident zone and represents a potential threat to their safety.
PS07: Incident Scene Safety Monitoring	Safety	3	Emergency Management needs to be able to maintain location and situational information about the emergency vehicles responding to or on the scene of an incident to be able to provide a complete picture of the response and share the status with other responding vehicles en route.
PS07: Incident Scene Safety Monitoring	Safety	4	Emergency Management needs to be able to provide real-time information on the current conditions at the incident scene to arriving responders and to other information assets.

PS07: Incident Scene Safety Monitoring	Safety	5	Emergency Management needs to provide remote monitoring and control of incident scene safety devices that detect vehicle intrusions in designated areas at the incident scene.
PS10: Wide-Area Alert	Safety	1	Emergency Management needs to be able to verify the reported emergency situation in order to activate the alert system.
PS10: Wide-Area Alert	Safety	2	Emergency Management needs to be able to alert the public in emergency situations such as child abductions, severe weather events, civil emergencies, and other situations that pose a threat to life and property, using ITS technologies such as dynamic message signs, highway advisory radios, in-vehicle displays, transit displays, 511 traveler information systems, and traveler information web sites.
PS10: Wide-Area Alert	Safety	3	Emergency Management needs to be able to broadcast emergency information to traffic agencies, transit agencies, information service providers, toll operators, and others that operate ITS systems.
PS11: Early Warning System	Safety	1	Emergency Management needs to be able to collect potential threats, alerts, and advisories from various ITS systems to identify emergencies.

PS11: Early Warning System	Safety	2	Emergency Management needs to be able to alert all relevant agencies of detected emergencies.
PS14: Disaster Traveler Information	Safety	1	Emergency Management and Traveler Information need to be able to provide the general public with real-time disaster and evacuation information using ITS traveler information systems.
PS14: Disaster Traveler Information	Safety	2	Traveler Information needs to be able to collect disaster related information from multiple sources including traffic, transit, public safety, emergency management, shelter provider, and travel service provider organizations.
PS14: Disaster Traveler Information	Safety	3	Emergency Management and Traveler Information need to be able to provide evacuees with information including a shelter that matches their needs, including location, availability, and routing.
PS14: Disaster Traveler Information	Safety	4	Emergency Management and Traveler Information need to be able to provide information concerning roadside resources including information provided by other evacuees to help understand availability of resources.
PS14: Disaster Traveler Information	Safety	5	Emergency Management and Traveler Information need to be able to provide evacuees with information regarding when they can return to their area, including routes and road conditions.

PT01: Transit Vehicle Tracking	Mobility	1	Transit Operations needs to be able to monitor the location of transit vehicles in order to improve decision making by transit operators and provide more accurate information to travelers.
PT01: Transit Vehicle Tracking	Mobility	2	Transit Operations needs to be able to determine whether each transit vehicle is adhering to its schedule.
PT01: Transit Vehicle Tracking	Mobility	3	Transit Operations needs to be able to send transit vehicle location and schedule adherence data to other centers in order to support traveler information and traffic operations.
PT02: Transit Fixed-Route Operations	Mobility	1	Transit Operations needs to be able to create and update schedules for fixed route or flexible route transit routes in order to plan transit operations.
PT02: Transit Fixed-Route Operations	Mobility	2	Transit Operations needs to be able to disseminate transit schedules for fixed route or flexible route transit routes to traveler information centers.
PT02: Transit Fixed-Route Operations	Mobility	3	Transit Operations needs to be able to dispatch transit vehicles for fixed route or flexible route runs.
PT02: Transit Fixed-Route Operations	Mobility	4	Transit Operations needs to be able to schedule blocks (vehicle assignments) and runs (operator assignments) for fixed route or flexible route transit operations.

PT02: Transit Fixed-Route Operations	Mobility	5	Transit Operations needs to be able to monitor transit vehicle schedule adherence in order to manage fixed route or flexible route transit operations.
PT02: Transit Fixed-Route Operations	Mobility	6	Transit Operations needs to have real-time information about the road network in order to increase the effectiveness of operations for fixed route or flexible route transit.
PT03: Dynamic Transit Operations	Mobility	1	Transit Operations needs to be able to take reservations for demand response trips that include the travelers' origin, destination, and departure time in order to do demand response scheduling.
PT03: Dynamic Transit Operations	Mobility	2	Transit Operations needs to be able to schedule demand response transit vehicles based upon travelers' trip requests.
PT03: Dynamic Transit Operations	Mobility	3	Transit Operations needs to provide and update manifests to properly manage demand response transit vehicles based upon traveler requests.
PT03: Dynamic Transit Operations	Mobility	4	Transit Operations needs to be able to monitor the real-time location of demand response transit vehicles.
PT03: Dynamic Transit Operations	Mobility	5	Transit Operations needs to have real-time information about the road network in order to increase the effectiveness of operations for demand response transit.

PT04: Transit Fare Collection Management	Mobility	1	Transit Operations needs to be able to collect transit fares on-board transit vehicles using electronic payment methods in order to improve transit operation.
PT04: Transit Fare Collection Management	Mobility	2	Transit Operations needs to be able to collect transit fares at transit stations using electronic payment methods in order to support bus rapid transit or train systems.
PT04: Transit Fare Collection Management	Mobility	3	Transit Operations needs to be able to download transit fare collection information from transit vehicles or transit fare gates at stations in order to manage the fare collection operations.
PT04: Transit Fare Collection Management	Mobility	4	Travelers need to be able to add value to payment instruments in order to use them as part of fare collection systems.
PT04: Transit Fare Collection Management	Mobility	5	Transit Operations needs to be able to support transit fare reconciliation with other transit agencies participating in a regional fare collection system.
PT04: Transit Fare Collection Management	Mobility	6	Transit operations needs to be able to share fare information with traveler information systems and other transit operations.
PT05: Transit Security	Mobility	1	Transit Operations needs to be able to monitor conditions on a transit vehicle in order to provide a secure environment for travelers.

PT05: Transit Security	Mobility	2	Transit Operations needs to be able to monitor transit stops and transit stations in order to provide a secure environment for travelers.
PT05: Transit Security	Mobility	3	Transit Operations needs to be able to monitor transit secure areas such as bus or rail yards and transit infrastructure such as tracks and tunnels in order to provide security for transit assets.
PT05: Transit Security	Mobility	4	Transit Operations needs to be able to authenticate operators of transit vehicles and perform remote disabling of vehicles, if necessary, in order to ensure secure operation of the vehicles.
PT05: Transit Security	Mobility	5	Transit Operations needs to be able to alert emergency services to incidents on vehicles, at stations/stops, or other monitored assets.
PT05: Transit Security	Mobility	6	Transit Operations needs to be able to inform traveler information systems or the media regarding transit-related incidents in order to keep the traveling public informed of the impacts these incidents may have on their trips.
PT07: Transit Passenger Counting	Mobility	1	Transit Operations needs to be able to count the passengers entering or exiting a transit vehicle in order to support efficient operations.

PT08: Transit Traveler Information	Mobility	1	Transit Operations needs to be able to provide static and real time transit information to traveler information systems and the media in order to increase travelers' ability to plan and manage their trips.
PT08: Transit Traveler Information	Mobility	2	Transit Operations needs to be able to provide static and real-time transit information directly to travelers either pre-trip or en route in order to support traveler trip decisions.
PT08: Transit Traveler Information	Mobility	3	Transit Operations needs to be able to share static and real-time transit information with other transit operations in order to facilitate multi-system trip planning.
PT09: Transit Signal Priority	Mobility	1	Transit Operations needs to provide approaching Transit Vehicle location and heading to the roadside signal controller so that the controller can modify signal timing in favor of the transit vehicle.
PT09: Transit Signal Priority	Mobility	2	Transit Operations needs to provide approaching Transit Vehicle location and heading to traffic operations so that they can adjust the signal controller signal timing in favor of the transit vehicle.
PT09: Transit Signal Priority	Mobility	3	Transit Operations needs to provide transit vehicle data to Traffic Operations including loading information and schedule performance in order to support decision making regarding whether to give the transit vehicle priority at the intersection.

PT09: Transit Signal Priority	Mobility	4	The Transit Vehicle Operator needs to progress through their arterial route safely and efficiently.
PT14: Multimodal Coordination	Mobility	1	Transit Operations needs to be able to coordinate service information with other Transit Operations in order to improve operations.
PT14: Multimodal Coordination	Mobility	2	Transit Operations needs to be able to coordinate with other transportation modes (e.g. ferry operations, airports) in order to improve service connections with these other modes.
PT14: Multimodal Coordination	Mobility	3	Transit Operations needs to coordinate with other centers (e.g. traffic, parking, and event promoters) in order to share system information.
PT15: Transit Stop Request	Mobility	1	Transit Operations needs to be able to accept stop requests from transit users at roadside stops or directly from their personal devices.
PT15: Transit Stop Request	Mobility	2	Transit Vehicle Operators need to be able to receive transit stop requests submitted from the roadside or from Transit Operations.
PT16: Route ID for the Visually Impaired	Mobility	1	Transit Operations needs to know the location and destination of the visually impaired traveler in order to identify the correct route and stop information to provide to the traveler via their personal device.
PT16: Route ID for the Visually Impaired	Mobility	2	Transit Operations needs to be able to provide transit vehicle route and stop information to the traveler via their personal device.

PT16: Route ID for the Visually Impaired	Mobility	3	Transit Operations needs to provide bus arrival information at the stop to support visually impaired travelers.
PT17: Transit Connection Protection	Mobility	1	Transit Operations needs to be able to determine when connections between transit routes are in jeopardy due to late arrival of one transfer vehicle in order to develop corrective actions to prevent missed connections.
PT17: Transit Connection Protection	Mobility	2	Transit Operations needs to be able to adjust the real time schedule of a transit vehicle in order to protect the connections made from other transit vehicles to the subject vehicle at a station or stop.
PT17: Transit Connection Protection	Mobility	3	Transit Travelers need to be able to provide a trip plan to Transit Operations and request they be provided with connection protection for the trip.
PT17: Transit Connection Protection	Mobility	4	Transit Operations needs to be able to track a specific traveler's trip through the system and provide connection protection actions to give the traveler the best chance of making their trip connections.
PT17: Transit Connection Protection	Mobility	5	Transit Operations needs to be able to adjust the real time schedule of a transit vehicle in order to provide connection protection for a traveler's trip.
PT17: Transit Connection Protection	Mobility	6	Transit Operations needs to be able to provide a traveler with updates regarding their transit trip, including connection protection actions taken by Transit Operations.

TI02: Personalized Traveler Information	Mobility	1	Traveler Information needs to be able to collect timely, accurate, and reliable traffic, transit, and other road conditions data from multiple sources in order to inform individual travelers of the latest conditions affecting their travel.
TI02: Personalized Traveler Information	Mobility	2	Traveler Information needs to be able to inform as much of the traveling public as possible using any available interactive media to increase mobility and safety through better information.
TI02: Personalized Traveler Information	Mobility	3	Travelers, including drivers or passengers, need access to timely, accurate, and reliable traffic, transit, and other travel conditions in order to make informed decisions about their travel.
TI02: Personalized Traveler Information	Mobility	4	Travelers, including drivers or passengers, need to be able to request specific and customized information concerning current and future travel conditions in order to make decisions about their own travel.
TI04: Trip Planning and Payment	Mobility	1	Traveler Information needs access to timely, accurate, and reliable traffic, transit, and other road conditions data from multiple sources in order to generate accurate and appropriate routes for travelers.

TI04: Trip Planning and Payment	Mobility	2	Travelers need a complete trip plan from their origin to their destination that is timely, accurate, and reliable in order for them to arrive safely in as little time as possible.
TI04: Trip Planning and Payment	Mobility	3	Traveler Information needs travel parameters from a traveler in order to develop a complete multimodal trip plan for the traveler.
TI04: Trip Planning and Payment	Mobility	4	Travelers need to be able to set up and update account information that defines payment parameters for their multimodal trips.
TI04: Trip Planning and Payment	Mobility	5	Traveler Information needs payment information from a traveler in order to develop reservations for a complete multimodal trip plan for the traveler.
TI04: Trip Planning and Payment	Mobility	6	The Traveler needs to be able to perform all multi-modal trip planning and payment actions from a personal device.
TI04: Trip Planning and Payment	Mobility	7	The Traveler needs to be able to perform all multi-modal trip planning and payment actions from 3rd party provided traveler support equipment
TI05: Integrated Multi-Modal Electronic Payment	Mobility	1	Regional Transportation Operations needs to have an electronic payment functionality that operates across different modes or systems.
TI05: Integrated Multi-Modal Electronic Payment	Mobility	2	Travelers need to be able to set up and update user accounts for a regional multi-modal payment system.

TI05: Integrated Multi-Modal Electronic Payment	Mobility	3	Regional Transportation Agencies need to be able to perform payment reconciliation in order to obtain their share of payments from the regional payment system.
TI05: Integrated Multi-Modal Electronic Payment	Mobility	4	Travelers need to be able to pay for multi-modal trips using a variety of payment mechanisms.
TI05: Integrated Multi-Modal Electronic Payment	Mobility	5	Travelers need to be able to access transportation modes at a discounted rate, based on their eligibility for the services.
TI06: Shared Use Mobility and Dynamic Ridesharing	Mobility	1	Traveler Information needs access to timely, accurate, and reliable transit and multi-modal operations data, including available parking, in order to support ride matching by locating and managing meeting and drop-off points.
TI06: Shared Use Mobility and Dynamic Ridesharing	Mobility	2	Traveler Information needs to accept commuter and driver information for ridesharing, including preferences, payment options, origin/destination, arrival time, departure time, number of riders, number of available passenger spaces.
TI06: Shared Use Mobility and Dynamic Ridesharing	Mobility	3	Traveler Information needs to match riding commuters to drivers.
TI06: Shared Use Mobility and Dynamic Ridesharing	Mobility	4	Traveler information needs to provide a mechanism for the confirmation of ride matching.

TI06: Shared Use Mobility and Dynamic Rides-haring	Mobility	5	Travelers need to be able to request and confirm shared-use transportation, includ-ing time for pickup, as well as pickup and drop-off locations
TI06: Shared Use Mobility and Dynamic Rides-haring	Mobility	6	Travelers need to be able to receive accurate, timely, and reliable information regarding shared use options that support their overall trip plan.
TI06: Shared Use Mobility and Dynamic Rides-haring	Mobility	7	Travelers need to receive the location of a shared vehicle they have arranged to use.
TI06: Shared Use Mobility and Dynamic Rides-haring	Mobility	8	Travelers need to be able to gain access to the shared vehicle they have arranged to use.
TI06: Shared Use Mobility and Dynamic Rides-haring	Mobility	10	Travelers need to be able to set up and up-date user accounts for shared use transpor-tation systems.
TI06: Shared Use Mobility and Dynamic Rides-haring	Mobility	11	Shared Use Transportation needs to provide shared use operations status to other cen-ters.
TM01: Infra-structure-Based Traffic Surveil-lance	Informational	1	Traffic Operations needs to be able to moni-tor the road network using infrastructure devices in order to detect and verify inci-dents and support implementation of traffic operational strategies.
TM01: Infra-structure-Based Traffic Surveil-lance	Informational	2	Traffic Operations needs to be able to moni-tor the infrastructure devices used for road network monitoring in order to detect faults in equipment or communications.

TM01: Infra-structure-Based Traffic Surveil-lance	Informational	3	Traffic Operations needs to be able to send network monitoring data to other centers in order to support traveler information.
TM02: Vehicle-Based Traffic Surveillance	Mobility	1	Traffic Operations and Traveler Information Providers need to be able to monitor the road network using information from con-nected vehicles in order to detect and verify incidents.
TM02: Vehicle-Based Traffic Surveillance	Mobility	2	Traffic Operations needs to be able to moni-tor the roadside equipment in order to de-tect faults in equipment or communications.
TM02: Vehicle-Based Traffic Surveillance	Mobility	3	Traffic Operations needs to be able to moni-tor the road network using probe data from connected vehicles in order to support trav-eler information.
TM02: Vehicle-Based Traffic Surveillance	Mobility	4	Traffic Operations needs to be able to moni-tor the road network using probe data from toll or transit systems.
TM03: Traffic Signal Control	Mobility	1	Traffic Operations needs to be able to re-motely control traffic signals at intersections under their jurisdiction
TM03: Traffic Signal Control	Mobility	2	Traffic Operations needs to be able to man-age and implement control plans in order to coordinate signalized intersections.
TM03: Traffic Signal Control	Mobility	3	Traffic Operations needs to be able to moni-tor and control pedestrian crossing aspects of traffic signals in order to facilitate safe pe-destrian crossings at the intersection.
TM03: Traffic Signal Control	Mobility	4	Traffic Operations needs to monitor the sta-tus of traffic signal control equipment.

TM05: Traffic Metering	Mobility	1	Traffic Operations needs to be able to monitor and control traffic metering equipment in order to regulate the flow of traffic on ramps, interchanges, and the mainline.
TM05: Traffic Metering	Mobility	2	Traffic Operations needs to monitor the status of traffic metering equipment.
TM05: Traffic Metering	Mobility	3	Traffic Operations needs to be able to implement control strategies utilizing the traffic metering equipment on ramps, interchanges, and on the mainline.
TM07: Regional Traffic Management	Management	1	Traffic Operations needs to exchange traffic and incident data with other Traffic Management Centers in order to support regional coordination spanning jurisdictional boundaries.
TM07: Regional Traffic Management	Management	2	Traffic Operations needs to exchange traffic control data with other traffic management centers to support inter-jurisdictional, real-time coordinated traffic signal control systems and coordination between freeway operations and traffic signal control within a corridor.
TM08: Traffic Incident Management System	Mobility	1	Traffic Operations needs to detect and verify incidents on roadways using CCTV and field sensors.
TM08: Traffic Incident Management System	Mobility	2	Traffic Operations needs to share incident information with other ITS centers in order to coordinate incident response.

TM08: Traffic Incident Management System	Mobility	3	Traffic Operations needs to obtain incident information from other ITS centers in order to coordinate incident response
TM08: Traffic Incident Management System	Mobility	4	Emergency Operations needs to be able to dispatch emergency assets to a traffic incident.
TM08: Traffic Incident Management System	Mobility	5	Traffic Operations needs to coordinate requests for resources with emergency and maintenance centers in order to support cleanup after the incident.
TM12: Dynamic Roadway Warning	Safety	1	Traffic Operations needs to be able to dynamically warn drivers approaching hazards on a roadway in order to increase the safety of a roadway by reducing the occurrence of incidents.
TM12: Dynamic Roadway Warning	Safety	2	Traffic Operations needs to be able to receive and process data from multiple sources in order to generate warnings for drivers based on the collected traffic and road conditions.
TM12: Dynamic Roadway Warning	Safety	3	Traffic Operations needs to detect and warn micromobility vehicle users of hazards that could affect them.
TM13: Standard Railroad Grade Crossing	Safety	1	Traffic Operations needs to be able to warn drivers of crossing closures in time for the driver to take appropriate action.
TM13: Standard Railroad Grade Crossing	Safety	2	Traffic Operations needs to be able to modify traffic signal timing in order to allow safe movement of vehicles away or towards a highway rail intersection when a train is approaching.

TM20: Variable Speed Limits	Management	1	Traffic Operations needs to be able to collect data from multiple sources to actively recommend variable speed limits which can be based on environmental conditions.
TM20: Variable Speed Limits	Management	2	Traffic Operations needs to be able to process current and historical data in order to provide recommended variable speed limits.
TM20: Variable Speed Limits	Management	3	Traffic Operations needs to be able to display variable speed limits to drivers.
VS08: Queue Warning	Safety	1	Traffic Operations needs to be able to detect queue formation using both infrastructure and connected vehicle sources of information.
VS08: Queue Warning	Safety	2	Traffic Operations needs to be able to develop predicted queue formation using both infrastructure and connected vehicle sources of information.
VS08: Queue Warning	Safety	3	Traffic Operations needs to be able to generate queue warning response strategies, including speed reduction, lane change, or diversion.
VS08: Queue Warning	Safety	4	The Driver needs to be able to send queue information and response strategies to upstream vehicles.
VS08: Queue Warning	Safety	5	The Driver needs to be able to receive queue information and queue response strategies based on information received from the infrastructure or other connected vehicles

WX01: Weather Data Collection	Environmental	1	Traffic operations or maintenance and construction operations need to be able to collect road conditions and weather data from environmental sensors on or in the vicinity of the roadway.
WX01: Weather Data Collection	Environmental	2	Traffic operations needs to be able to collect road conditions and weather data from vehicle on-board sensors.
WX01: Weather Data Collection	Environmental	3	Traffic operations and maintenance and construction operations need to share collected environmental data with each other.
WX01: Weather Data Collection	Environmental	4	Traffic operations and Maintenance and construction need to be able to receive environmental data from Weather operations.
WX01: Weather Data Collection	Environmental	5	Maintenance and construction operations need to be able to collect road conditions and weather data from maintenance vehicle on-board sensors.
WX01: Weather Data Collection	Environmental	6	Weather Systems need be able to collect road conditions and weather data from environmental sensors on or in the vicinity of the roadway.

APPENDIX D ROLES AND RESPONSIBILITIES

Roles and Responsibilities Area	Stakeholder Group Members	Roles and Responsibility Description
Traffic Management	Anacortes, WSDOT	WSDOT maintains and operates their traffic signals
Traffic Management	City of Burlington WSDOT	WSDOT maintains and operates their 33 signals
Traffic Management	City of Sedro-Woolley WSDOT	All signals in the city are owned and operated by WSDOT
Traffic Management	City of Anacortes, WSDOT, BNSF	HRI (highway rail intersections) signal coordination with flashing lights and gates
Traffic Management	City of Burlington, WSDOT, BNSF	HRI (highway rail intersections) signal coordination with flashing lights and gates
Traffic Management	City of Mt Vernon, WSDOT, BNSF	HRI (highway rail intersections) signal coordination with flashing lights and gates
Traffic Management	City of Sedro-Woolley, WSDOT, BNSF	HRI (highway rail intersections) signal coordination with flashing lights and gates
Traffic Management	Skagit County WSDOT BNSF	HRI (highway rail intersections) signal coordination with flashing lights and gates
Emergency Call Taking and Dispatch, Emergency Response	WSDOT, Skagit911 Fire Emergency Management- Code Red	Skagit 911 alerts Emergency Response, WSDOT, Fire, and Emergency Management, if it includes HAZMAT or another accident that needs their response
Emergency Vehicle Preemption	Skagit 911 WSDOT	Opticom is used for emergency vehicle preemption on all signals in Skagit County except a crosswalk in Mount Vernon
Traffic Management	WSDOT Skagit County	Has an operations and maintenance agreement with WSDOT

APPENDIX E FUNCTIONAL REQUIREMENTS /PHYSICAL OBJECTS

SP	SP Name	Physical Object	Functional Object
CVO06	Freight Signal Priority	Commercial Vehicle OBE, Fleet and Freight Management Center, TMC	CV On-Board Safety and Security, CV On-Board Trip Monitoring, Fleet Administration, Fleet Maintenance Management
PM02	Smart Park and Ride System	Connected Roadside Equipment, Light Vehicle OBE, Parking Area Equipment, Parking Management Center, Personal Information Device, Transit Management Center, Transportation Information Center, Vehicle	RSE Parking Management, Light Vehicle Interactive Traveler Information, Parking Area Park and Ride Operations, Parking Coordination, Parking Management, Personal Interactive Traveler Information, Transit Center Park and Ride Operations, TIC Data Collection, TIC Interactive Traveler Information, Vehicle Basic Safety Communication, Vehicle Traveler Information Reception
PS01	Emergency Call Taking and Dispatch	Emergency Management Center, Emergency Vehicle OBE, Traffic Management Center	Emergency Call-Taking, Emergency Dispatch, Emergency Environmental Monitoring, Emergency Routing, EV On-Board En Route Support, TMC Incident Dispatch Coordination,
PS02	Emergency Response	Emergency Management Center, Emergency Vehicle OBE, Personal Device	Emergency Incident Command, EV On-Board Incident Management Communication, Personnel Incident Scene Communications
PS03	Emergency Vehicle Preemption	Connected Roadside Equipment, Emergency Management Center, Emergency Vehicle OBE, ITS Roadway Equipment, Traffic Management Center, Transportation Information Center, Vehicle	RSE Intersection Management, Emergency Routing, EV On-Board En Route Support, Roadway Signal Control, Roadway Signal Preemption, TMC Signal Control, TIC Traffic Control Dissemination, Vehicle Basic Safety Communication, Vehicle Intersection Warning

PS04	Mayday Notification	Emergency Management Center, Personal Information Device, Vehicle	Emergency Call-Taking, Emergency Notification Support, Personal Emergency Notification, Vehicle Emergency,
PS05	Vehicle Emergency Response	Commercial Vehicle OBE, Emergency Vehicle OBE, Vehicle	CV On-Board Cargo Monitoring, EV On-Board En Route Support, Vehicle Emergency Notification
PS06	Incident Scene Prearrival	Commercial Vehicle OBE, Emergency Management Center, Emergency Vehicle OBE, Traffic Management Center,	CV On-Board Cargo Monitoring, Emergency Commercial Vehicle Response, Emergency Dispatch, Emergency Incident Command, Emergency Routing, EV On-Board Route Support, EV On-Board Incident Management Communication, TMC Incident Dispatch Coordination
PS07	Incident Scene Safety Monitoring	Connected Vehicle Roadside Equipment, Emergency Management Center, Emergency Vehicle OBE, ITS Roadway Equipment, Personnel Device, Traffic Management Center, Vehicle	RSE Incident Scene Safety, Emergency Incident Command, Emergency Incident Scene Safety Management, EV On-Board Safety Monitoring, Roadway Incident Scene Safety, Personnel Incident Scene Safety, TMC incident Dispatch Coordination, Vehicle Basic Safety Communication, Vehicle Traveler Information Reception
PS10	Wide Area Alert	Emergency Management Center, ITS Roadway Equipment, Light Vehicle OBE, Personal Information Device, Traffic Management Center, Transit Management Center, Transit Vehicle OBE, Transportation Information Center, Traveler Support Equipment	Emergency Early Warning System, Roadway Traffic Information, Light Vehicle Interactive Traveler Information, Personal Interactive Traveler Information, TMC Incident Dispatch Coordination, TMC Traffic Information Dissemination, Transit Center Information Services, Transit Center Security, Transit Vehicle On-Board Information Services, TIC Data Collection, TIC Emergency Traveler Information, TIC Traveler Telephone Information, Traveler Information Reception

PS11	Early Warning System	Emergency Management Center, Security Monitoring Equipment, Traffic Management Center	Emergency Early Warning System, Emergency Environmental Monitoring, Emergency Secure Area Sensor Management, Emergency Secure Area Surveillance, Field Secure Area Sensor Monitoring, Field Secure Area Surveillance, TMC Incident Detection, Transit Center Security
PS14	Disaster Traveler Information	Emergency Management Center, Light Vehicle OBE, Personal Information Device, Transportation Information Center, Traveler Support Equipment, Vehicle	Emergency Evacuation Support, Emergency Response Management, Light Vehicle Interactive Traveler Information, Personal Interactive Traveler Information, Personal Traveler Information Reception, TIC Data Collection, TIC Emergency Traveler Information, TIC Traveler Telephone Information, Traveler Information Reception, Traveler Interactive Information, Vehicle Traveler Information Reception
PT01	Transit Vehicle Tracking	Transit Management Center, Transit Vehicle OBE, AVL on all Vehicles except service vehicles	Transit Center Vehicle Tracking, Transit Vehicle On-Board Trip Monitoring
PT02	Transit Fixed-Route Operations	Transit Management Center, Transit Vehicle OBE	Transit Center Fixed-Route Operations, Transit Center Operator
PT03	Dynamic Transit Operations	Personal Information Device, Transit Management Center	Personal Trip Planning and Route Guidance, Transit Center Operator Assignment, Transit Center Paratransit Operations, Transit Vehicle On-Board Paratransit Operations, TIC Data Collection, TIC Trip Planning

PT04	Transit Fare Collection Management	Payment Administration Center, Personal Information Device, Transit Management Center, Transit Vehicle OBE, Transportation Information Center, Traveler Support Equipment	PAC Payment Administration, Personal Interactive Traveler Information, Transit Center Fare Management, Transit Vehicle On-Board Fare Management, TIC Data Collection, Traveler Fare Management
PT05	Transit Security	Security Monitoring Equipment, Transit Management Center, Transit Vehicle OBE, Traveler Support Equipment	Emergency Response Management, Emergency Secure Area Alarm Support, Emergency Secure Area Sensor Management, Emergency Secure Area Surveillance, Field Secure Area Sensor Monitoring, FeildSecure Area Surveillance, Transit Center Security, Transit Vehicle Security, Traveler Security
PT07	Transit Passenger Counting	Transit Management Center, Transit Vehicle OBE, Traveler Support Equipment	Transit Center Passenger Counting, Transit Vehicle Passenger Counting, Transit Stop Information Services
PT08	Transit Traveler Information	Personal Information Device, Transit Management Center, Transit Vehicle OBE, Transportation Information Center, Traveler Support Equipment	Personal Interactive Traveler Information, Transit Center Information Services, Transit Vehicle On-Board Information Services, TIC Data Collection, TIC Interactive Traveler Information, Transit Stop Information Services
PT09	Transit Signal Priority	Connected Vehicle Roadside Equipment, ITS Roadway Equipment, Traffic Management Center, Transit Management Center, Transit Vehicle OBE, Transportation Information Center, Vehicle	RSE Intersection Management, Roadway Signal Control, TMC Multi-Modal Coordination, TMC Signal Control, Transit Center Priority Management, Transit Signal Priority, TIC Traffic Control Dissemination, Vehicle Basic Safety Communication, Vehicle Intersection Warning
PT15	Transit Stop Request	Connected Vehicle Roadside Equipment, Personal Information Device, Transit Management Center, Transit Vehicle OBE, Traveler Support Equipment	RSE Transit User Guide, Personal Trip Planning and Route Guidance, Transit Center Information Services, Transit Vehicle On-Board Information Services, Transit Vehicle On-Board Trip Monitoring, Transit Stop Information Services

PT16	Route ID for the Visually Impaired	Connected Vehicle Roadside Equipment, Personal Information Device, Transit Management Center, Traveler Support Equipment	RSE Transit User Guidance, Personal Pedestrian Safety, Personal Trip Planning and Route Guidance, Transit Center Information Services, Transit On-Board Information Services, Transit Stop Information Services
PT17	Transit Connection Protection	Personal Information Device, Transit Management Center, Transit Vehicle OBE, Traveler Support Equipment	Personal Trip Planning and Route Guidance, Transit Center Connection Protection, Transit Center Multi-Modal Coordination, Transit Center Passenger Counting, Transit Vehicle On-Board Connection Protection, Transit Vehicle Passenger Counting, Transit Stop Information Services
TI01	Broadcast Traveler Information	Connected Vehicle Roadside Equipment, Personal Information Device, Transportation Information Center, Traveler Support Equipment, Vehicle	RSE Traveler Information Communications, Personal Traveler Information Reception, TIC Connected Vehicle Traveler Info Distribution, TIC Data Collection, TIC Traveler Information Broadcast, Traveler Information Reception, Vehicle Traveler Information Reception
TI02	Personalized Traveler Information	Light Vehicle OBE, Personal Information Device, Transportation Information Center, Traveler Support Equipment	Light Vehicle Interactive Traveler Information, Personal Interactive Traveler Information, TIC Data Collection, TIC Interactive Traveler Information, TIC Traveler Telephone Information, Traveler Interactive Information, Provide Road Use Charging Services Kiosk Interface
TI04	Trip Planning and Payment	Electric Charging Management Center, Light Vehicle OBE, Payment Administration Center, Personal Information Device, Shared Use Transportation Center, Transit Management Center, Transportation Information Center, Traveler Support Equipment	Electric Charging Management, Light Vehicle Trip Planning and Route Guidance, PAC Payment Administration, Personal Trip Planning and Route Guidance, Shared Use Operations, Transit Center Connection Protection, Shared Use Operations, TIC Data Collection, TIC Dynamic Ridesharing, TIC Trip Planning, Traveler Trip Planning, Update Traveler Display Map Data at Kiosk

TI05	Integrated Multi-Modal Electronic Payment	ITS Roadway Payment Equipment, Light Vehicle OBE, Parking Area Equipment, Parking Management Center, Payment Administration Center, Personal Information Device, Shared Use Transportation Center, Transit Management Center, Transit Vehicle OBE, Traveler Support Equipment	Light Vehicle Payment Service, PAC Payment Administration, Personal Interactive Traveler Information, Shared Use and Fee Management, Transit Center Fare Management, Transit Vehicle On-Board Fare Management, Traveler Fare Management
TI06	Shared Use Mobility and Dynamic Ridesharing	Light Vehicle OBE, Micromobility Vehicle OBE, Personal Information Device, Shared Use Transportation Center, Transit Management Center, Transportation Information Center, Traveler Support Equipment	Light Vehicle Access, Light Vehicle Trip Planning and Route Guidance, MMV Access, Personal Shared Use Planning, Personal Trip Planning and Route Guidance, Shared Use Account and Fee Management, Share Use Operations, Transit Center Paratransit Operations, Shared Use Operations, TIC Data Collection, TIC Dynamic Ridesharing, TIC Trip Planning, Traveler Trip Planning, Update Traveler Display Map Data at Kiosk
TM01	Infrastructure-Based Traffic Surveillance	ITS Roadway Equipment, Traffic Management Center	Roadway Basic Surveillance, Roadway Passive Monitoring, TMC Basic Surveillance, TMC Passive Surveillance
TM03	Traffic Signal Control	ITS Roadway Equipment, Traffic Management Center	Roadway Basic Surveillance, Roadway Field Management Station Operation, Roadway Signal Control, TMC Basic Surveillance, TMC Roadway Equipment Monitoring, TMC Signal Control
TM05	Traffic Metering	ITS Roadway Equipment, Traffic Management Center	Roadway Basic Surveillance, Roadway Traffic Information Dissemination, Roadway Traffic Metering, TMC Basic Surveillance, TMC Roadway Equipment Monitoring, TMC Traffic Information Dissemination, TMC Traffic Metering
TM06	Traffic Information Dissemination	ITS Roadway Equipment, Traffic Management Center	Roadway Traffic Information Dissemination, TMC Traffic Information Dissemination
TM07	Regional Traffic Management	Traffic Management Center	TMC Regional Traffic Management

TM08	Traffic Incident Management System	Emergency Management Center, ITS Roadway Equipment, Traffic Management Center	Emergency Response Management, Roadway Incident Detection, TMC Incident Detection, TMC Incident Dispatch Coordination
TM12	Dynamic Roadway Warning	ITS Roadway Equipment, Traffic Management Center	Roadway Basic Surveillance, Roadway Warning, TMC Basic Surveillance, TMC Roadway Warning
TM13	Standard Railroad Grade Crossing	ITS Roadway Equipment, Traffic Management Center	Roadway Standard Rail Crossing, TMC Standard Rail Crossing Management
TM20	Variable Speed Limits	ITS Roadway Equipment, Traffic Management Center	Roadway Basic Surveillance, Roadway Environmental Monitoring, Roadway Traffic Information Dissemination, Roadway Variable Speed Limits, TMC Basic Surveillance, TMC Environmental Monitoring, TMC Traffic Information Dissemination, TMC Variable Speed Limits
VS08	Queue Warning	Connected Vehicle Roadside Equipment, ITS Roadway Equipment, Traffic Management Center, Transportation Information Center, Vehicle	RSE Environmental Monitoring, RSE Queue Warning, RSE Traffic Monitoring, Roadway Basic Surveillance, Roadway Environmental Monitoring, Roadway Warning, TMC Basic Surveillance, TMC Environmental Monitoring, TMC Roadway Warning, TIC Situation Data, TIC Traffic Control Dissemination, Vehicle Basic Safety Communication, Vehicle Environmental Monitoring, Vehicle Queue Warning, Vehicle Situation Data Monitoring, Vehicle Traveler Information Reception
VS11	Oversize Vehicle Warning	ITS Roadway Equipment, Traffic Management Center, Vehicle	RSE Infrastructure Restriction Warning, Roadway Restriction Monitoring and Warning, TMC Infrastructure Restriction Warning, Vehicle Traveler Information Warning
WX01	Weather Data Collection	Connected Vehicle Roadside Equipment, ITS Roadway Equipment, Traffic Management Center, Transportation Information Center, Vehicle	RSE Environmental Monitoring, Roadway Environmental Monitoring, TMC Environmental Monitoring, TIC Data Collection, Vehicle Environmental Monitoring

APPENDIX F INVENTORY OF ITS ELEMENTS

Existing Elements			Planned Elements		
Element	**Description**	**Stakeholder**	**Element**	**Description**	**Stakeholder**
Shoreline TMC	Traffic Operations, alerts, incident response, traveler information dissemination	WSDOT	Queue Warning I-5	Queue warnings presented to drivers when congestion is ahead so drivers can reduce speed	WSDOT, Shoreline TMC, Skagit County, Mount Vernon, Burington
Emergency Call Taking and Dispatch	Skagit 911	Skagit 911, DEM, WSP and other law enforcement	Variable Speed Limits, I-5	Traffic operations collect data to recommend speed limits	WSDOT, Shoreline TMC, Skagit County, Mount Vernon, Burlington
Emergency Response Data and Information via personal devices	Skagit 911 provides personal devices if they have the technology	Skagit 911, Fire Departments, Emergency Responders	Dynamic Roadway Warning	Dynamically warn drivers of approaching hazards	WSDOT, Shoreline TMC, Skagit County, Mount Vernon, Burlington
Emergency Vehicle Preemption	Opticom	Skagit 911, WSDOT	Regional Traffic Management	Shoreline and Bellingham TMC's share information for I-5 corridor	WSDOT, Shoreline TMC, Bellingham TMC, Skagit County
Early Warning System	Siren alert system tsunami and dam failure	PSE, WA SEOC	Traffic Metering I-5 Ramps	On-ramps to I-5 are regulated to manage congestion	WSDOT, Mount Vernon, Burlington, Skagit County
Emergency Alerts	SkagitReady, IPAWS	Skagit County DEM, Skagit 911	Dynamic Ridesharing	Travelers can request and confirm shared transportation	WSDOT, Mount Vernon, Burlington, Skagit County

Existing Elements			Planned Elements		
Element	Description	Stakeholder	Element	Description	Stakeholder
I-5 Monitoring	CCTV, Traffic Counts	WSDOT	Integrated Multi Modal Electronic Payment	Electronic payments system that includes multiple agencies and modes on one card	Skagit Transit
Traveler Information System	CCTV, traffic counts on WSDOT website	WSDOT	Personalized Traveler Information	Travelers are able to request specific customized information	Skagit Transit
Weather Data Collection	RWIS	WSDOT	Transit Connection Protection	Transit operators, when connections are in jeopardy can adjust schedule in real-time.	Skagit Transit
Skagit Transit AVL	On all vehicles	Skagit Transit	Skagit Transit Electronic Fare Management	Convert to ORCA card	Skagit Transit
Skagit Transit Electronic Fare	GFI/Card App UMO	Skagit Transit	Freight Signal Priority	Give freight signal priority	WSDOT, Anacortes, Burlington, Mount Vernon, Sedro-Woolley
Skagit Transit Management	Passenger Counting	Skagit Transit	Smart Park and Ride	Allow Park and Ride users to know parking capacity in real-time	Skagit Transit
Skagit Transit Security	Cameras	Skagit Transit	Incident Scene Safety Monitoring	Alert drivers when entering an incident zone	Skagit 911, Emergency Responders, DEM for various agencies