

Applicatio n ID	Lead agency	Project name	Project type	Purpose and need	Solution	TSMO Program investment / project justification	Total Project Cost	Fed Portion	Match portion	Match check	Revised request - Total Project	Revised request - Fed Portion	Revised request - Match portion	Option A - Total Project Cost	Option A -Fed Portion	Option A - Match portion	Review rating
100	City of Portland	Rail Safety Crossing Project	Back-up batteries	The purpose for this project was to identify improvements that would make the crossings safer and more-efficient by: 1. Reducing delay for vehicles and pedestrians when there is a train at the crossing. 2.Safeguarding against power failures. 3. Recording controller events (i.e. inputs and outputs) to allow for better performance measure tracking.	The proposed solution is to install Backup Power Supplies (BPS) to keep a traffic signal operating if power service fails. This is especially critical at traffic signals located near highway-rail grade crossings because of potential vehicle queuing over the tracks. The Manual on Uniform Traffic Control Devices (MUTCD) provides some guidance on BPS in Section 4D.27: Except for traffic control signals interconnected with light rail transit systems, traffic control signals with railroad preemption or coordinated with flashing-light signal systems should be provided with a back-up power supply. Several BPS options were investigated for cabinet-to-cabinet mounting. While cabinet-to-cabinet mounting does not provide separation between the traffic signal cabinet and the BPS cabinet in the case of a crash, it does not require a new foundation or underground conduit to be installed. During the design phase, each existing cabinet should be evaluated to confirm that it can support cabinet-to-cabinet mounting.	TSMO is a set of strategies that focus on operational improvements that can maintain and even restore the performance of the existing transportation system before extra capacity is needed. The goal here is to get the most performance out of the transportation facilities we already have. This requires the installation of additional installation of a cabinet mounted on the existing cabinet to house battery power supplies allows comprehensive solutions at relatively low cost. to report back on reliability of the intersection. This will be focused on areas where equity levels are highest first to prioritize parts of our community that the regional has underinvested traditionally.	\$296,000	\$265,601	\$30,399	10.27%	\$296,000	\$265,601	\$30,399	\$-	\$-	\$-	Lower-rated
101	City of Portland	Traffic Signal Communications	Data Communications	Limited investment in the traffic signal controller communications in the past 45 years has led to Portland having several hundred traffic signals outside of our network and offline. This lack of communication to traffic signals has led to increased maintenance burdens and low efficiency of the signal timing and operations. Adding communications to the traffic signals in the described sections of the City would help improve access to traffic signal data which, in turn, would provide opportunities for improving the traffic signal timing and operation for transit reliability and vulnerable user safety. This project provides an investment in the foundation for agencies to operate traffic signals on the arterial street system to meet the region's equity, safety, climate, and congestion outcomes. The project will allow agencies greater access to data that is important for operating the system in our most diverse areas of the community which in turn will result in the prevention or decreased severity of crashes. It will enable transit priority to serve us in meeting our climate goals.	The project will help pay for connecting the traffic signals to the network. This will provide direct access to the traffic signal performance measures data collected by each traffic signal controller into the central system. This TSPM data will help us measure the effectiveness of the traffic signals in order to provide better traffic signal timing and operations. We will be able to create new timing plans that will incorporate transit signal priority and other operations to help improve the efficiency of the traffic signal timing as well as providing additional safety benefits.	TSMO is a set of strategies that focus on operational improvements that can maintain and even restore the performance of the existing transportation system before extra capacity is needed. The goal here is to get the most performance out of the transportation facilities we already have. This requires the hardware communications to be able to implement signal timing that allows comprehensive solutions at relatively low cost. This project will implement part of the communication network equipment that will allow these devices to report back on reliability of the intersection. This will include improved reporting on transit travel times for home to work trips where many in the community work. This will be focused on areas where equity levels are highest first to prioritize parts of our community that the regional has underinvested traditionally.	\$387,000	\$347,255	\$39,745	10.27%	\$253,200.00	\$227,196.36	\$26,003.64	\$253,200	\$227,196	\$26,004	Lower-rated
102	City of Portland	Local Traffic Signal Controller Replacement	ATCs	Limited investment in the local traffic signal controller software in the past 45 years has lead to Portland having 7 different versions of local controller software. This lack of consistency has lead to a regional traffic signal system for the Portland metropolitan area that is hard to train staff to manage and maintain. The management software for the traffic signals has also had to insure things are backwards compatible which has complicated matters considerably. This project provides an investment in the foundation for agencies to operate traffic signals on the arterial street system to meet the region's equity, safety, climate, and congestion outcomes. The project will allow agencies greater access to data that is important for operating the system in our most diverse areas of the community which in turn will result in the prevention or decreased severity of crashes. It will enable transit priority to serve us in meeting our climate goals.	The local traffic signal controllers will provide new features that will allow agencies to proactively manage the signal timing on our street system. The implementation effort will insure traffic signals meet relevant safety standards for signal timing at up to 200 intersections.	TSMO is a set of strategies that focus on operational improvements that can maintain and even restore the performance of the existing transportation system before extra capacity is needed. The goal here is to get the most performance out of the transportation facilities we already have. This requires the software to be able to implement signal timing that allows comprehensive solutions at relatively low cost. This project will implement traffic signal controllers and communication network equipment that will allow these devices to report back on reliability of the intersection. This will include improved reporting on transit travel times for home to work trips where many in the community work. This will be focused on areas where equity levels are highest first to prioritize parts of our community that the regional has underinvested traditionally.	\$1,420,500	\$1,274,615	\$145,885	10.27%	\$1,238,500	\$1,111,306.05	\$127,193.95	\$936,626	\$840,435	\$96,192	Higher-rated
103	City of Portland	Regional Traffic Signal System Performance Measures	CTSS SPM	The regional traffic signal system for the Portland metropolitan area is 17 years old. As the management software for the traffic signals, this project provides a foundation for agencies to manage traffic signals on the arterial street system to meet the region's equity, safety, climate, and congestion outcomes. The project will allow agencies greater access to data that is important for speed management in our most diverse areas of the community which in turn will result in the prevention or decreased severity of crashes. It will enable transit priority to serve us in meeting our climate goals.	The regional traffic signal system will provide new features that will allow agencies to proactively manage the traffic signal system. Software support for monitoring the health of detectors is a common solution for reducing non-recurring congestion. The Signal Performance Measures (SPM) created by this project will result in a Transit Signal Priority system that will inform TriMet and adjacent agencies of the success of signal timing for moving buses through the street network. The innovation of SPMs for transit will result in leadership by Portland nationally.	TSMO is a set of strategies that focus on operational improvements that can maintain and even restore the performance of the existing transportation system before extra capacity is needed. The goal here is to get the most performance out of the transportation facilities we already have. This requires the software to be able to implement signal timing that allows comprehensive solutions at relatively low cost. This project will turn data into information that will enable transportation agencies to "stretch" their knowledge of what's happening on the transportation system. TSMO also helps agencies balance supply and demand and provide flexible solutions to match changing conditions. This project will serve to report back on reliability of transit travel times for home to work trips where many in the community work. This will be focused on areas where equity levels are highest first to prioritize parts of our community that the regional has underinvested traditionally.	\$855,000	\$767,192	\$87,809	10.27%	\$855,000	\$767,192	\$87,809	\$690,000	\$619,137	\$70,863	Middle-rated
104	Clackamas County	Clackamas County Regional ATC controller & Signal Optimization Project	ATCs	Clackamas County currently maintains approximately 170 traffic signals, of which 73 signals are owned by Clackamas County and the remaining 97 signals are owned by local jurisdictions. These local jurisdictions consist of Lake Oswego, Oregon City, Wilsonville, Milwaukie, Gladstone, and West Linn. Traffic signals within these local jurisdictions are maintained by Clackamas County through an existing intergovernmental maintenance agreements. Of the 170 existing traffic controllers, 116 are using out dated technology, with unsupported local software, and out dated signal timing.	Since majority of the existing signal controllers and internal software are outdated technology with no software support, this project proposes to replace the older model 170/2070 controllers to the latest Advanced Traffic Controllers (ATC). ATC controllers are the latest national and state standards with more functionality and built-in performance software tools. In addition, these new ATC controllers are better suited for connected vehicle application. County proposes to be a lead agency for 2019 TSMO grant application and deliver the entire ATC controller upgrades for County and City owned signals. Along with controller upgrades, - signal timing will be optimized for all road users, - implement leading pedestrian interval signal timing at high crash locations, - integrate ATC controllers to new central signal system server using existing high speed fiber optic communication, and - enable signal performance logging using existing detection system and central signal system.	This project stretches a portion of unincorporated Clackamas County and areas within City of Lake Oswego, Wilsonville, Oregon City, Milwaukie, Gladstone, and West Linn. Some areas in unincorporated Clackamas County, City of Milwaukie, Gladstone, and Oregon City are within equity focus area. Communities within these area would be better served with reliable signal system and improve travel time for home-to-work.	\$1,245,176	\$1,117,296	\$127,880	10.27%	\$930,110	\$834,588	\$95,522	\$820,103	\$735,878	\$84,225	Higher-rated

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105	Metro	Regional Operations Asset Data ConOps	ConOps	<p>The purpose of this project is to provide support for partner agencies who want to share there road asset data that concern operations (e.g., street signs, school zones, parking zones, etc.), providing fresh information that is not available today for needs such as safety, resiliency, wayfinding across mobile devices and connected vehicles.</p> <p>As streets are modified (e.g., Enhanced Transit Corridors, detours, natural disasters, school zones, parking zones, TNC loading/drop-off zone, shared mobility zones), operators have traditional ways to communicate those changes to the public. This ConOps would explore options for agencies to share data starting with specifications to follow in the region for interoperability (e.g., SharedStreets open data specification) and the platform or platforms to serve the data to maximize use by the public and private entities, with benefits to the participating agency's operations and maintenance of assets.</p>	The Regional Operations Asset Data ConOps will solve a key area of preparing to serve safe, reliable, timely information to the traveling public and commercial operators. Once in place, innovations branch out from this data to inform connected travelers: their connected vehicle announces that they are entering a school zone during school hours; after a storm or natural disaster, bicyclists, bus operators, freight operators and others are given warnings in areas where hazard signs, pedestrian crossing sings, stop signs or other infrastructure was destroyed. This data is also a significant step toward managing arterials and multimodal integrated corridor management, supporting recommendations from a decision support system.	Operations Asset Data should be rooted in a regional conversation where all local agencies can look to state and national practices in determining a path forward. The TSMO program is the place to develop a regional strategic approach through ConOps.	\$ 170,000	\$ 152,541	\$ 17,459	10.27%	\$ 170,000	\$ 152,541	\$ 17,459	\$ -	\$ -	\$ -	Lower-rated
106	Metro	Regional TSMO Program Plus	Regional Coordination	The purpose of this project is to bolster TSMO leadership efforts in the region through strategic support for planning, policy development, research, training and communications. The collective regional TSMO effort cannot deliver the high-level of leadership needed to achieve 2018 RTP Goal 4, Reliability and Efficiency in a manner to meet the equity, safety, climate and congestion outcomes without dedicating resources.	The solution is to springboard off the 2020 TSMO Strategy to bring high-quality responsiveness to the areas needed in whatever areas are emphasized by regional partners and stakeholders. While the resource needs aren't anything new or innovative, the overall result is a cohesive set of actions behind the innovations that will flow from he 2020 TSMO Strategy.	Metro champions TSMO and recognizes the importance of leading planning efforts and implementation with low-cost solutions for utilizing our existing system before making more expensive investments. The regionally desired outcomes from recent 2018 RTP work including Vision Zero, racial equity, achieving climate goals and congestion solutions will take renewed, strategic effort.	\$ 460,000	\$ 412,758	\$ 47,242	10.27%	\$ 460,000	\$ 412,758	\$ 47,242	\$ 318,600	\$ 285,880	\$ 32,720	Middle-rated
107	Oregon Department of Transportation	Advanced Traffic Controller (ATC) Deployment Project and Tualatin Valley Highway Infrared Transit Signal Priority (TSP) Implementation	ATCs	Project is needed to expedite the deployment of next generation Linux-based, edge computing ready, high-resolution performance measure compatible, advanced traffic signal controllers (ATC). ODOT went through a competitive process to select Intelight for these ATC treatments and have procured the hardware. Installation of these ATC controllers is needed to support the ongoing Next Generation Transit Signal Priority Project, for smarter signal priority. ATCs will also support high-resolution, 0.1 second logging of Automatic Traffic Signal Performance Measures (ATSPMs) to allow for proactive planning and monitoring of congestion and progress towards vision zero safety goals. Project will pilot implementation of Infrared Transit Signal Priority outside of Portland City Limits for the first time and document outcomes using the improved data logging of the ATC controllers. This process will proactively update to Intergovernmental Agreements for Transit Signal Priority allowing for faster implementation of Next Generation Transit Signal Priority	Project will fund consultant support to do the software programming of the controller timing conversion under agency guidance to accelerate installation at intersections across the region. Project will also include funds for programming of Transit Signal Priority and a before/after performance measures evaluation of Infrared Transit Signal Priority using ATSPM data and TriMet CAD-AVL data led by the consultant.	This TSMO project is low-risk, high-reward in that it is a building block to support various smart city and big data applications. The ATC roadside computers are multi-application with Android OS to allow for an open source platform for a variety of safety, mobility and maintenance purposes. The project will be deployed where there is existing communication to allow for efficient remote management and along transit lines to support Next Generation Transit Signal Priority. ATSPMs will allow for the tracking of goals related to reduction in greenhouse gas emissions (split failures, arrivals on red) and vision zero safety measures (red light running violations, pedestrian signal priority).	\$ 288,330	\$ 258,719	\$ 29,611	10.27%	\$ 266,920	\$ 239,507	\$ 27,413	\$ 266,920	\$ 239,507	\$ 27,413	Higher-rated
108	Portland State University	Multimodal Transportation Data Archive	Data Archive	<p>Purpose &amp; Need: The Multimodal Transportation Data Archive proposed in this project aims to support Metro's Regional Transportation Plan, the production of regional performance measures, regional transportation agencies and their consultants and researchers at Portland State University (PSU) and elsewhere. The Multimodal Transportation Data Archive encompasses PORTAL and BikePed Portal resources and facilitates data and information sharing for public agencies in the region.</p> <p>PORTAL is the official Archived Data User Service (ADUS) for the Portland Metropolitan region as specified in the Regional ITS Architecture. BikePed Portal, developed by the Transportation Research and Education Center (TREC) at PSU serves as a regional data archive for bicycle and pedestrian counts within the Portland Metropolitan region.</p> <p>This project and the data it collects is key to analyses that may prevent fatal and serious crashes in equity focus areas and throughout the region, understand and model congestion outcomes, and reduce carbon emissions through improved transportation management. In addition, this project supports the training of transportation professionals.</p>	<p>Solution: The Multimodal Transportation Data Archive encompasses PORTAL and BikePed Portal and provides a centralized database that facilitates the collection, archiving, standardizing, and sharing of data and information for public agencies and other stakeholders within the region.</p> <p>PSU has been collecting and storing regional transportation data for fifteen years and has an established track record of archiving the data. With a research and educational mission, PSU/TREC provides a neutral location for storing and sharing regional data. PORTAL and BikePed Portal collect data regardless of jurisdiction and provide transparency in data access, management, and data analysis. PORTAL and the PORTAL team at PSU also serve as testing grounds for adding new data sources, different types of data, different data storage and management methods, and visualizing data and data analyses.</p> <p>The current monitoring system data stored in PORTAL and BikePed Portal are complementary to other regional data sets including GPS data, such as the Replica data provided by Sidewalk Labs, and commercial solutions like iPeMS. The system monitoring data in PORTAL and BikePed Portal are primarily sensor data. Combining different types of data - sensor and GPS - will lead to a full understanding of the transportation system. For example, sensor data is often used to calibrate other data sets due to the strength of its statistical accuracy at the sensor location.</p> <p>Sensor and GPS data have different strengths and weaknesses. Sensors are location-specific, but have high accuracy and potentially lower bias at the sensed location (a physical traffic sensor has the capability to collect data on all persons or vehicles at the sensor location). In addition, all cleaning and processing done by PORTAL and BikePed Portal is publicly-available and transparent. Commercial data sources have broader spatial coverage, but may not have transparent processing, may have restrictions on sharing data and may be subject</p>	<p>Project objectives for the proposed Multimodal Transportation Data Archive includes producing applications and performance measures useful to local transportation professionals, exploring new and innovative uses of the data, and making the PORTAL and BikePed Portal data and systems more accessible to agency personnel and other stakeholders. The analyses supported by this data archive project are able to serve communities in equity focused areas that lack investment and to support the provision of reliable transit travel time for home-to-work trips for those in underserved communities.</p>	\$ 668,672	\$ 600,000	\$ 68,673	10.27%	\$ 598,537	\$ 537,068	\$ 61,470	\$ 668,672	\$ 600,000	\$ 68,673	Higher-rated
109	Washington County	Advanced Traffic Controller (ATC) Optimization Project	ATCs	Project will accelerate the deployment of needed next generation Linux-based, edge computing ready, high-resolution performance measure compatible, advanced traffic signal controllers (ATC). ODOT went through a competitive process to select Intelight for these ATC treatments. These ATC controllers are needed to support the ongoing Next Generation Transit Signal Priority Project, for smarter signal priority. ATCs will also support high-resolution, 0.1 second logging of mobility and safety metrics to allow for proactive planning and monitoring of congestion and progress towards vision zero safety goals.	Project will procure the needed ATC hardware, as well as fund consultant support to do the software programming of the ATC's to deliver hundreds of intersections across the region with this cutting-edge technology treatment. Project will also include funds for a before/after performance measures evaluation led by the consultant.	This TSMO project is low-risk, high-reward in that it is a building block to support various smart city and big data applications. The ATC roadside computers are multi-application with Android OS to allow for an open source platform for a variety of safety, mobility and maintenance purposes. The project will be deployed where there is existing communication to allow for efficient remote management, in equity focus area communities (Metzger, Aloha, etc), and along transit lines to support Next Generation transit signal priority. Many of the high-resolution performance measures will allow for the tracking of goals related to reduction in greenhouse gas emissions (split failures, arrivals on red) and vision zero safety measures (red light running violations, pedestrian signal priority).	\$ 1,999,000	\$ 1,793,703	\$ 205,297	10.27%	\$ 1,603,540	\$ 1,438,856	\$ 164,684	\$ 1,283,780	\$ 1,151,936	\$ 131,844	Higher-rated
							\$ 7,789,678	\$ 6,989,678	\$ 800,000		\$ 6,671,807	\$ 5,986,613	\$ 685,195	\$ 5,237,901	\$ 4,699,969	\$ 537,932	
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								\$ 4,700,000				\$ 4,700,000			\$ 4,700,000		
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								(available minus requested)				(available minus requested)			(available minus requested)		
								\$ (2,289,678)				\$ (1,286,613)			\$ 31		