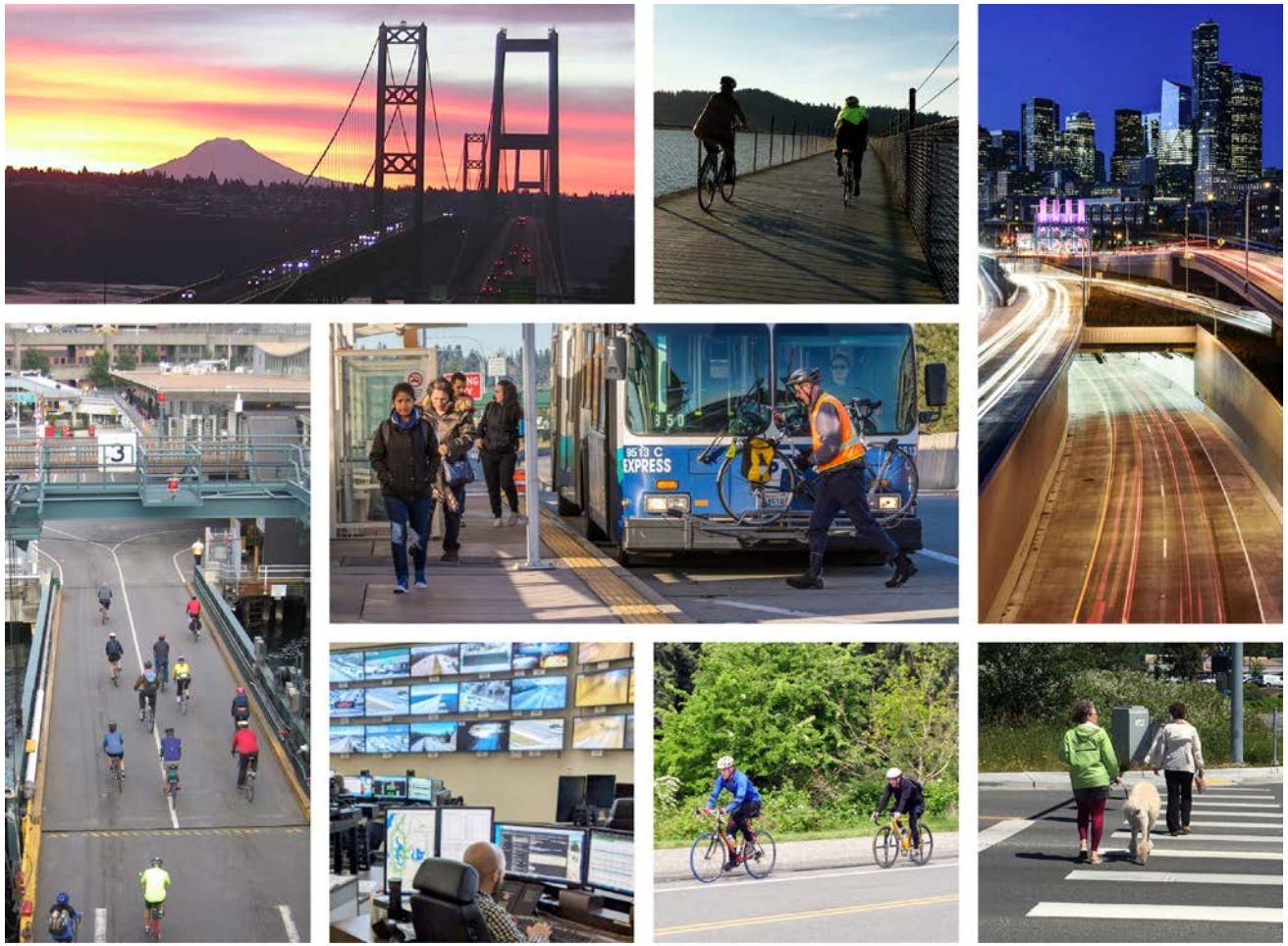
WSDOT TSMO PROGRAM PLAN

Executive Summary

June 2023



Meeting Outcomes

By the end of this presentation, you will have:

- An update on the TSMO Program Plan and efforts during 2021-23 Biennium
- Discussion on the level of urgency for an operational vision
- Feedback and direction on implementation actions

WSDOT is an Operating Agency

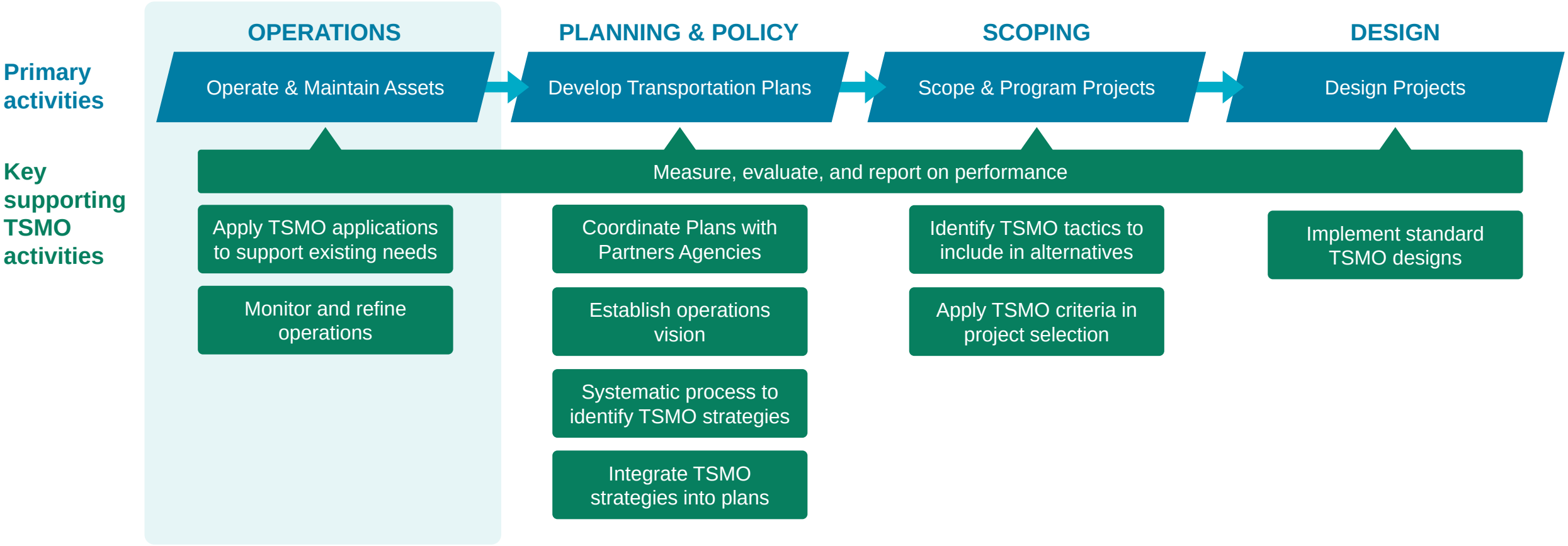
"...We were in the past a highway-building agency. We are now a **multimodal transportation operating agency**, and building stuff is a part of what we do. But a bigger...part of what we do is going to be operating the stuff we already built"

– Sec. Roger Millar, 2023 State of Transportation address

Transportation System Management and Operations (TSMO) is *how* we put into practice the Operating Agency mindset

TSMO Integration in the Project Development Process

Integrate TSMO activities throughout the project development lifecycle to promote high-value project selection and support continuous evaluation and improvement.



Benefits

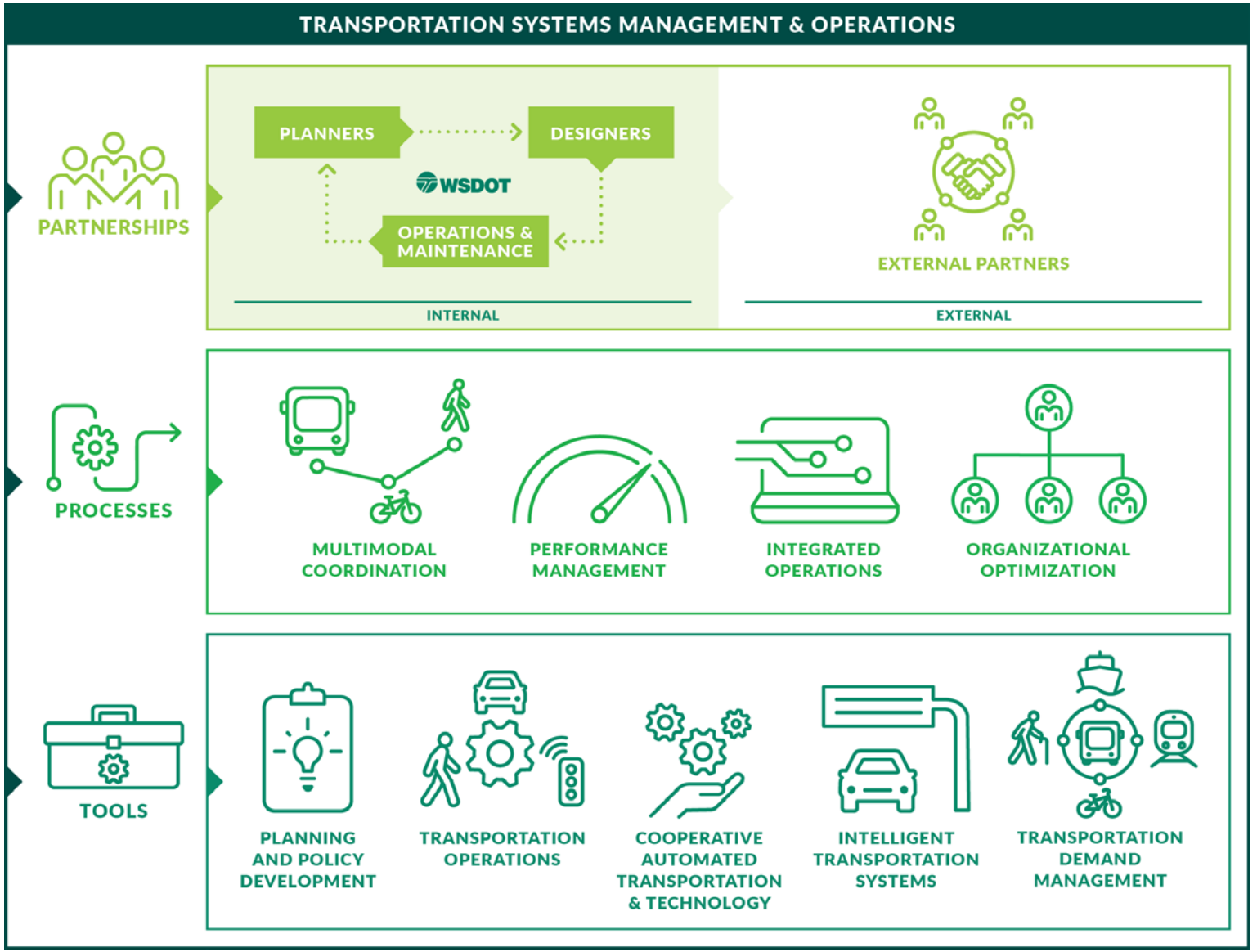
Continuous improvement: Ongoing performance monitoring enables continuous operational improvement and provides insights for all project lifecycle phases

Better plans: TSMO-oriented plans reflect operational needs and are tied to measurable goals

Value-oriented scoping: Performance and objectives-based evaluation framework ensures elevation of high-value solutions

Defining TSMO

Transportation Systems Management and Operations (TSMO) entails holistic solutions that cut across domains and functions. It aligns the **partnerships**, **processes**, and **tools** necessary to advance WSDOT's goal to be an operating agency.



Case Study: Ramp Meters (Eastern Region)

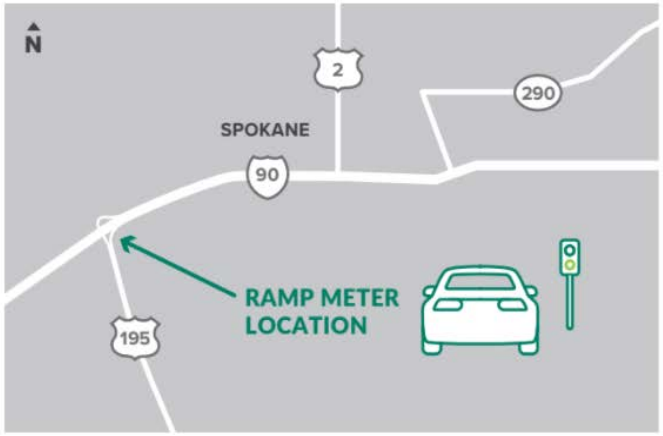
Ramp Metering

WSDOT

TRANSPORTATION SYSTEMS MANAGEMENT & OPERATIONS BENEFIT SUMMARY

PROJECT DESCRIPTION

The merge from US-195 to I-90 is short and the possibility for expansion is limited given the proximity to Latah Creek and existing bridges on US-195 and I-90. In 2019, WSDOT installed and turned on a ramp meter at this location to organize vehicles entering I-90 from US-195. As a result, the merge point has seen significant safety improvements with minor changes in travel times.



What are the associated benefit-costs?

COST TO DESIGN, CONSTRUCT, AND MAINTAIN IN THE FIRST YEAR = $664,560

DESIGN COST: $152,500

CONSTRUCTION COST: $507,060

ANNUAL MAINTENANCE COST: $5,000

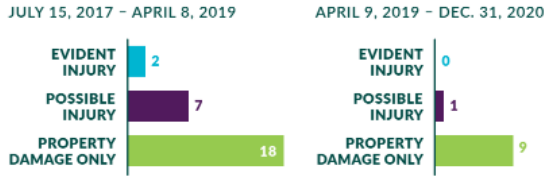
$1.46M+

TOTAL ANNUAL BENEFIT IN SOCIETAL COST FOR CRASHES DURING THE FIRST YEAR OF OPERATION

SAFETY BENEFITS:

- Reduces crashes during congestion
- Reduces secondary crashes when an incident is present on I-90
- Increases safety by reducing the likelihood of merging traffic collisions

CRASH DIFFERENCE (BY SEVERITY LEVEL):



CRASH REDUCTION (APRIL – DECEMBER 2020):

63% REDUCTION IN OVERALL CRASHES

89% REDUCTION IN INJURY CRASHES

OPERATIONAL BENEFITS:

- Reduces congestion
- Delays the onset of congestion by allowing traffic to flow smoothly and efficiently
- Reduces travel times for all vehicles

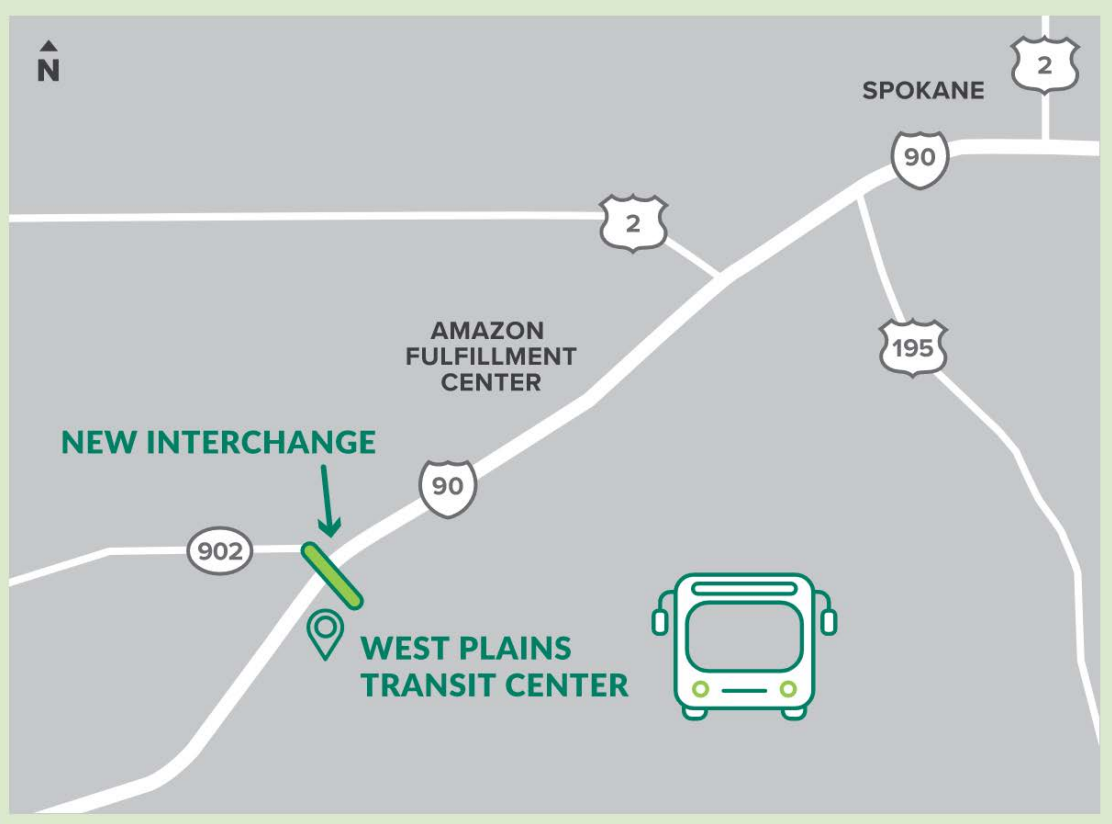
TRAVEL TIMES ON I-90 STAYED CONSISTENT (CHANGING BY LESS THAN 20 SECONDS)

TRAVEL TIMES THROUGH THE INTERCHANGE ARE MORE RELIABLE AS THERE WERE FEWER UNPREDICTABLE CRASH EVENTS

Case Study: West Plains Transit Center (Spokane, WA)

BACKGROUND INFORMATION

2020: Implementation of transit-only lanes.
2021: Bus schedules adjusted to reflect results.



RESULTS

1 TRAVEL TIME SAVINGS

Saves about 5-7 minutes

2 IMPROVED ACCESS TO TRANSIT

Increases service frequency

3 ACCESS TO JOBS

Increased ridership

4 REAL-TIME BUS ROUTE MANAGEMENT

Buses are re-routed in real-time

Case Study: Leavenworth's Pedestrian Crossing Improvements (Leavenworth, WA)

BACKGROUND INFORMATION

2018: Christmas Lighting Festival generated significant queues along US-2 for up to 4 miles.

RESULTS

Mobility

3500 more vehicles were accommodated.

Safety

Increased safety for both pedestrians and vehicles.

Case Study: I-5 Woodland Smart Work Zone System Implementation (Southwest Region)

BACKGROUND INFORMATION

- 2-mile lane closure of southbound I-5.
- Higwhay messages about real-time travel, traffic backups ahead and zipper merge reminders helped prevent crases and keep traffic flowing.

RESULTS

Reduced Project Duration

21-calendar day project was completed in 15 days.

Travel Time Savings

Informed drivers created travel time savings.

Collision Reduction

No collisions resulting in personal injury occurred during the project.

Benefits of TSMO

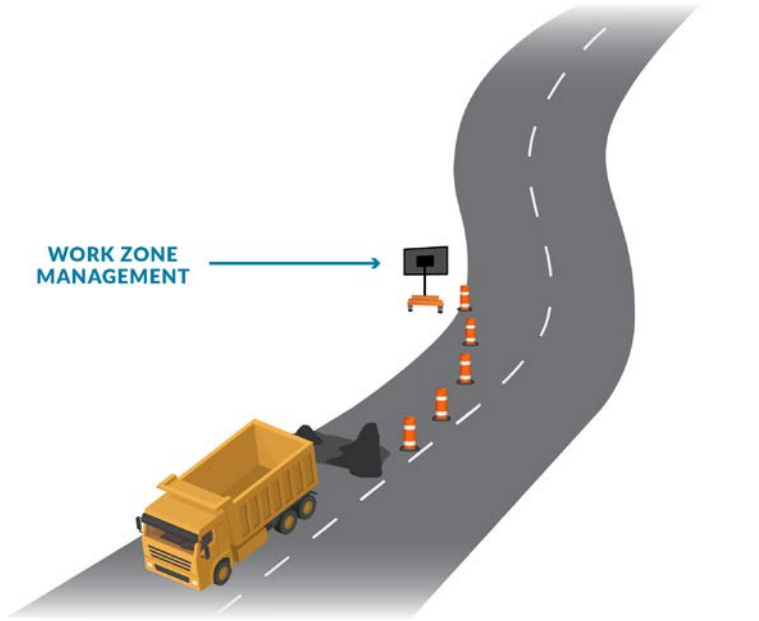
- TSMO is how we put into practice the “Operations Agency” mindset
- TSMO benefits are correlated with the level of investment—the greater the (especially early) investment, the larger the returns. Why?
  - TSMO solutions are **performance-based, context sensitive, and targeted**, meaning investment dollars are going more directly to addressing the specific needs of the corridor
  - TSMO solutions are **dynamic and adaptable**, allowing them to provide value throughout the asset’s lifecycle and be responsive to changes in travel patterns and demand

	BENEFITS	TRADITIONAL	TSMO LEVEL 1	TSMO LEVEL 2	TSMO LEVEL 3
SAFE	Safety	—	^	^^	^^
	Emissions	v	—	^	^^
SMART	Efficiency	—	^	^^	^^
	Lifecycle Costs	v	^	^^	^^
SOUND	Resilience	—	—	^	^^
	Capacity	^^	—	^	^^
	Multimodal	—	^	^^	^^

Level 1 TSMO Strategies

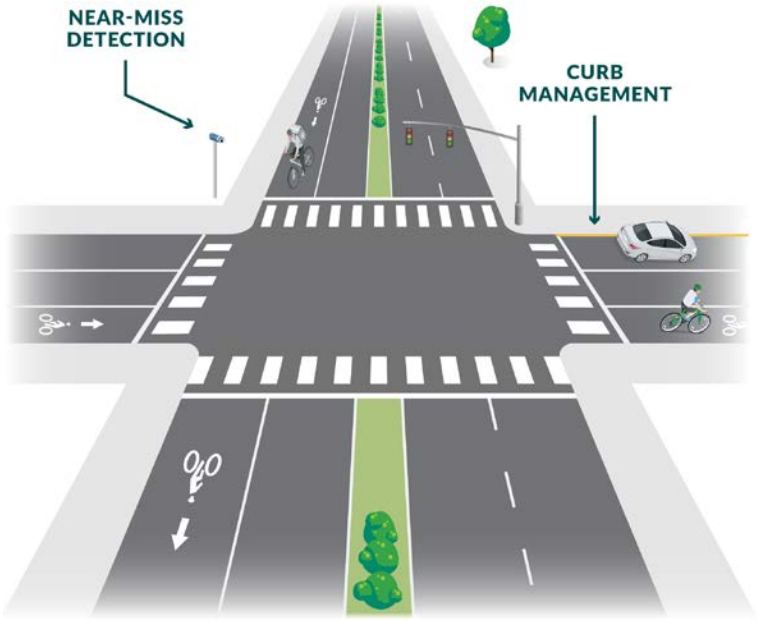
Reallocate existing space using low-cost techniques, like signing and striping and targeted ITS, to support more efficient and safer uses.

RURAL HIGHWAYS



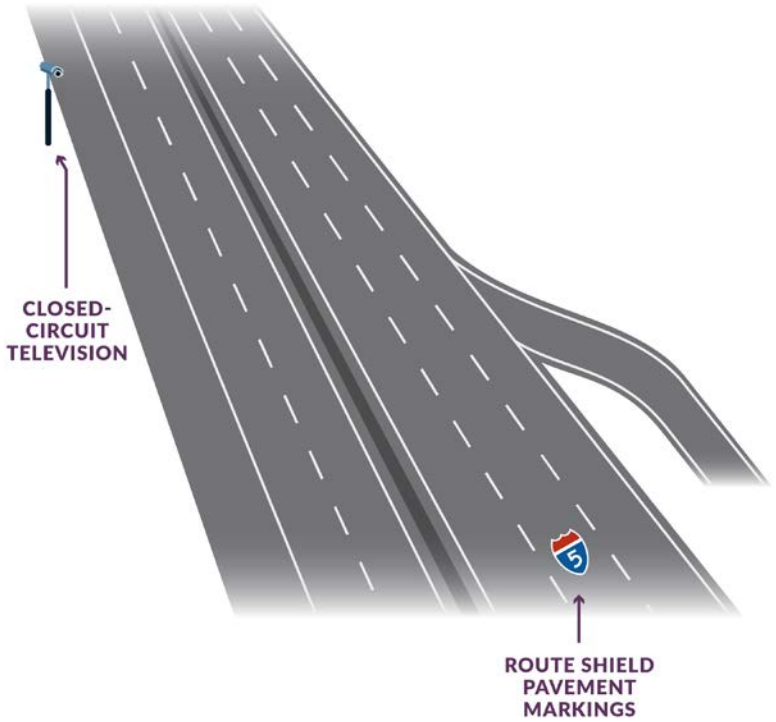
- **Portable devices in work zones** to improve safety for workers and travelers

URBAN TOWN CENTERS



- **Near-miss detection** to proactively identify safety issues
- **Curb management** to manage parking and allocate curb space efficiently

LIMITED ACCESS

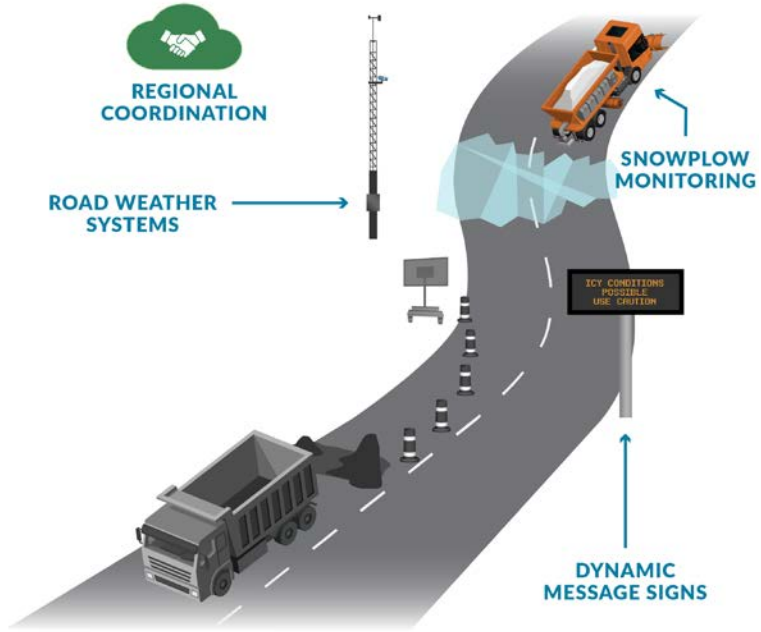


- **CCTV and detection devices** to monitor traffic conditions and support incident management
- **Route shield pavement markings** as a cost-effective road traffic safety measure

Level 2 TSMO Strategies

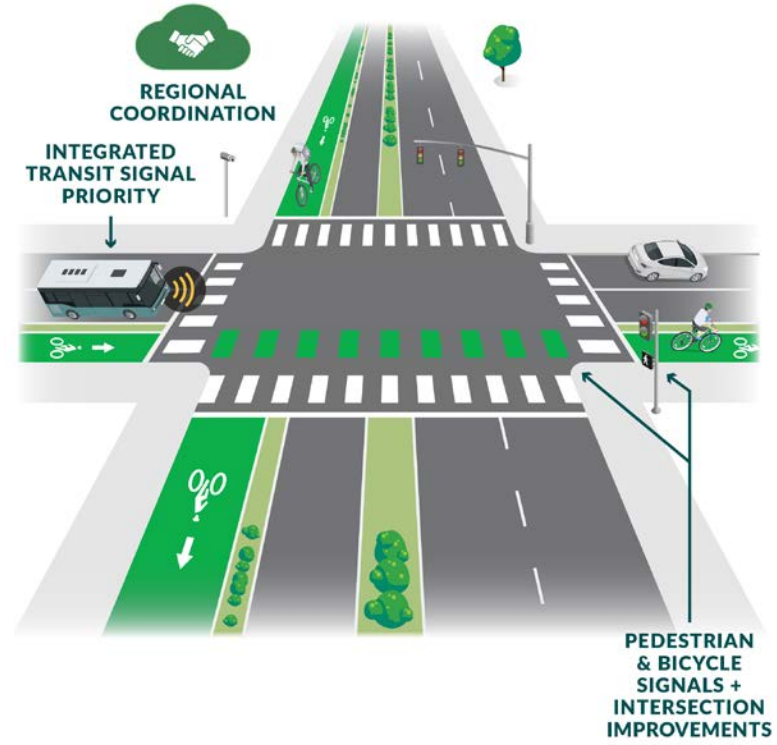
Incorporate integrated ITS systems and coordinated operations to optimize existing right-of-way and agency resources.

RURAL HIGHWAYS



- **Road weather systems** to improve safety during inclement weather conditions
- **Snowplow monitoring** to keep roads clear and inform the public of road conditions
- **DMS** and other integrated systems to provide en route traveler information

URBAN TOWN CENTERS



- **Corridor-wide TSP** to improve transit speed and reliability
- **Pedestrian and bike signals** to provide safe movements for active transportation

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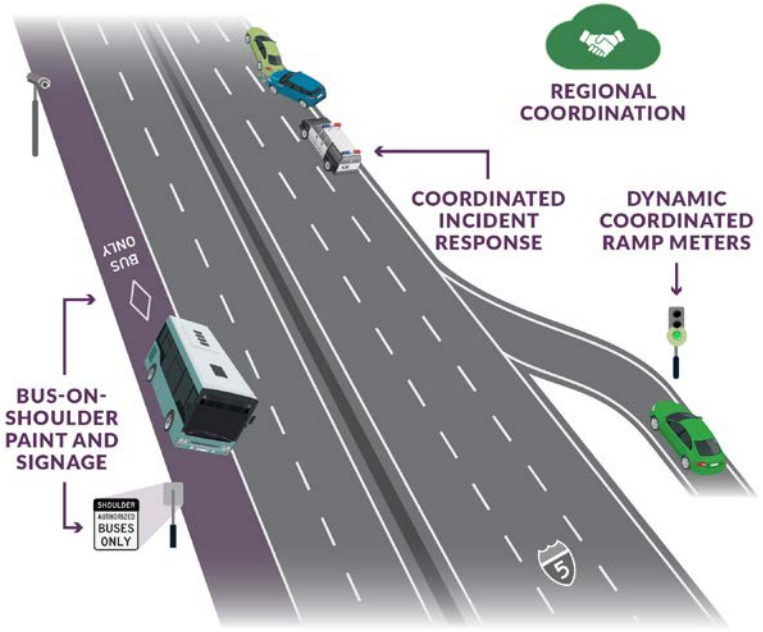
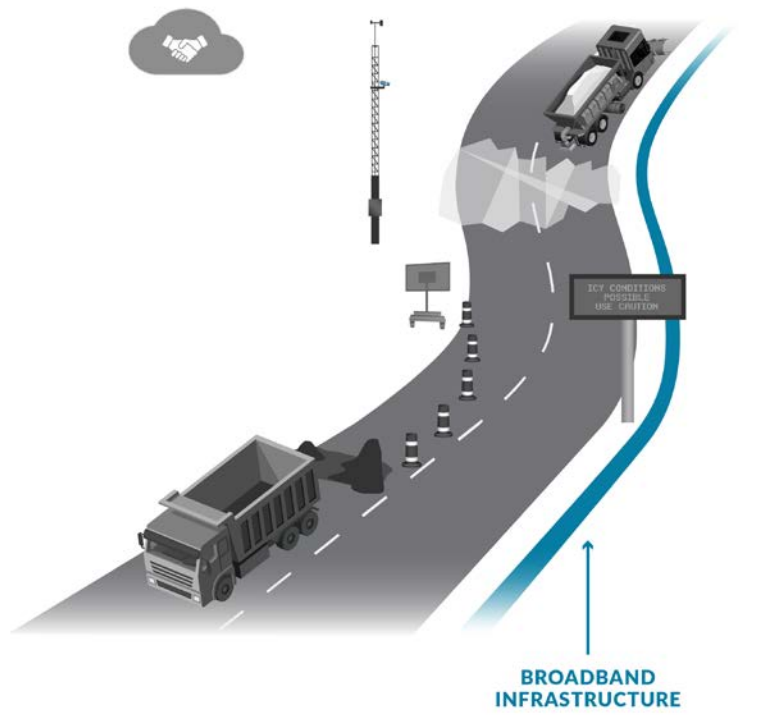


- **Bus-on-shoulder** operations to move transit reliably
- **Incident response** that is coordinated with multiple agencies
- Corridor-optimized **ramp meters**

Level 3 TSMO Strategies

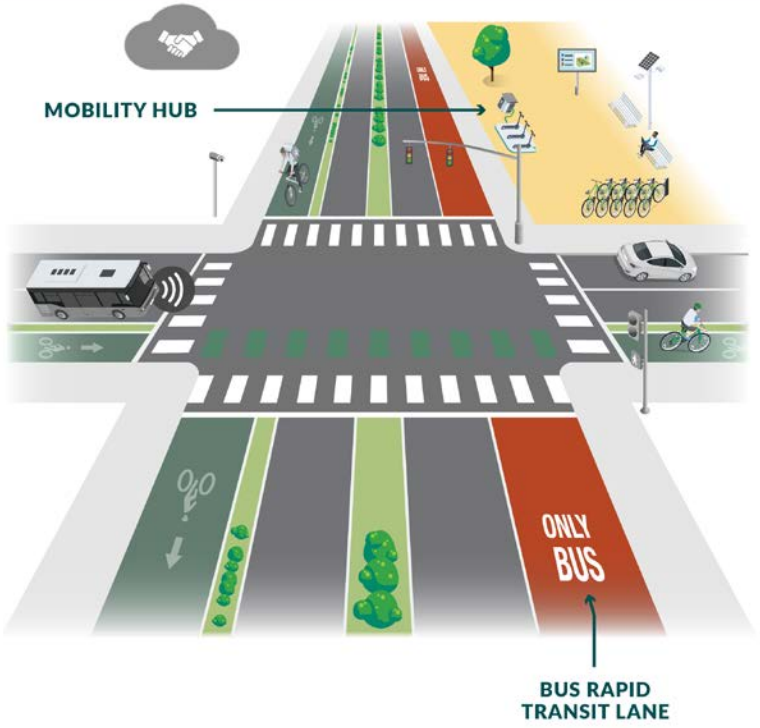
Make significant investments to reimagine and enhance infrastructure and operations to fully optimize for new mobility options and users.

RURAL HIGHWAYS



- **Broadband infrastructure** to connect systems and travelers

URBAN TOWN CENTERS



- **Mobility hub** to provide multimodal transportation options
- **BRT** infrastructure and operations to prioritize transit

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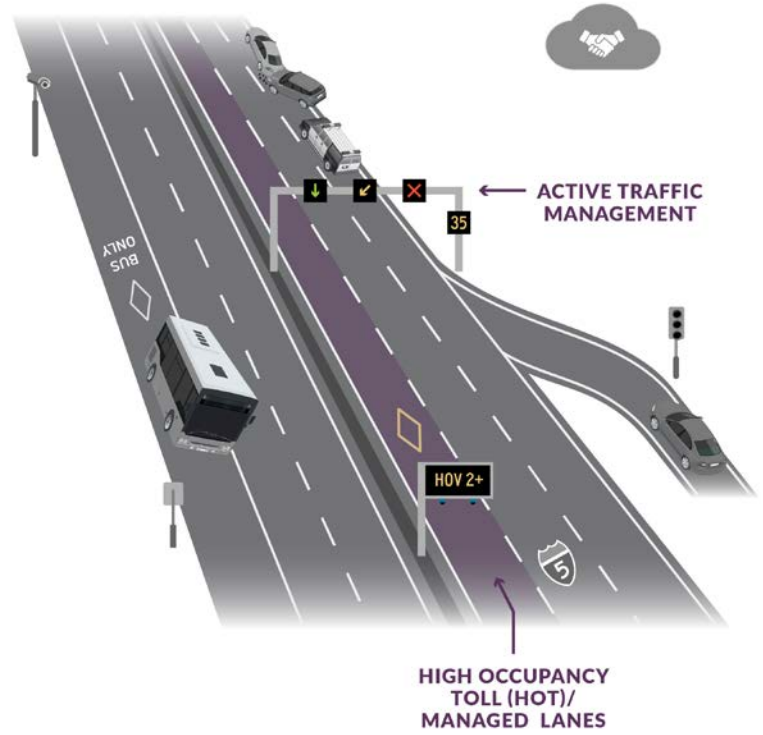
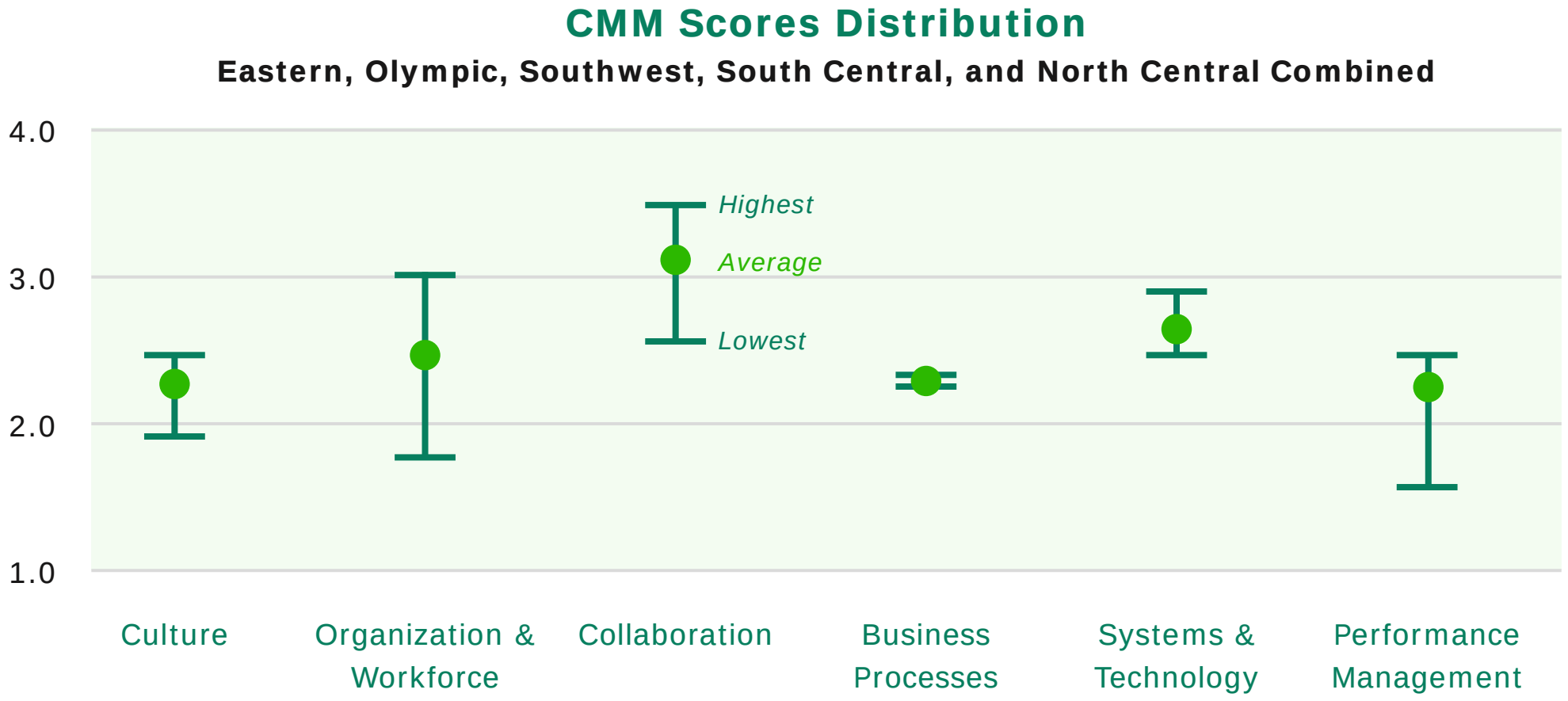


- **Active traffic management** to optimize system performance and reduce crashes
- **Managed/HOT lanes** to use pricing to manage demand and encourage carpooling

Region TSMO CMM Assessment (version 2)

- CMM workshops conducted to help Regions identify TSMO successes and common barriers to adoption
- TSMO maturity assessed on a 1–4-point scale (low to high) across six distinct dimensions



Region TSMO CMM Assessment Highlights

Dimension	Key Findings
Culture	• Training needed for staff, executives/leaders, etc. on benefits of TSMO • Highlight TSMO successes and share them (ex. case studies)
Organization & Workforce	• Difficulty retaining and hiring new employees (career upward mobility challenges, pay, etc.) • Staff dedicated to implementing TSMO
Collaboration	• Increase staff resources (personnel, tools, guidance) to cultivate the relationships • Be proactive in engaging with local partners, and educate them about TSMO
Business Processes	• TSMO is integrated into all WSDOT processes • Fund TSMO – either through grants or Q-funding (essentially throughout all the dimensions
Systems & Technology	• Need to do lifecycle planning of equipment • Updating / upgrading existing equipment to newer hardware or software
Performance Management	• Use available performance measures more consistently • Collect and analyze data that furthers WSDOT goals

Environmental Justice Highlights

Programmatic opportunities

- Revising WSDOT job descriptions to include EJ skills
- Overall programmatic assessment for incorporation of EJ
- Gain legislative support to use TSMO to support EJ

Advanced tactical TSMO phase

- Convert strategies and actions into prioritized services, activities, and projects
- Identify ITS and data analytic tools to support EJ
- Develop performance measures and tracking that are EJ focused including multimodal and walkability measures, and has data that qualitatively measures EJ needs

Develop an EJ TSMO Plan

- Prioritization – consider impacts, complexity, dependencies, resource needs, and deployment needs.
- Overall programmatic assessment for incorporation of EJ