I-84 Corridor Operations Plan

ACKNOWLEDGMENTS

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Introduction

PROJECT PURPOSE

The I-84 corridor is one of the most important east-west routes for commuters and freight through southwest Idaho that connects Caldwell, Nampa, Meridian and Boise. I-184 serves as an auxiliary route to downtown Boise that begins at the Flying Wye interchange with I-84 and transitions to Route 26. Although there have been significant improvements made to the interstate, the corridor continues to experience congestion, safety concerns and reliability challenges.

The project study corridor is shown in Figure 1. It comprises a 32-mile corridor from Exit 25 to Exit 57 along I-84 and the auxiliary route along I-184 from the Flying Wye interchange to S 13th St in downtown Boise. The figure shows the locations of ramps and terminal points of the study corridor.

FIGURE 1: STUDY AREA

This report includes an assessment of the existing conditions related to operations of the study corridor. It also provides an overview of the evaluation process as well as the operational concepts for the strategies evaluated to improve traffic operations. The purpose of this plan is to provide a guide for future improvements that can be implemented as the need arises or the funding becomes available.

GOALS AND OBJECTIVES

The three goals, and their corresponding objectives, were developed with input from the stakeholder steering committee. These goals provided a framework to focus the many proposed tactics into a concise list that fits the needs in the study area.
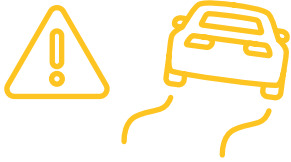
GOAL #1:
IMPROVE SAFETY OF THE I-84/I-184 CORRIDOR.

GOAL #2:
RESPOND TO REGIONAL GROWTH BY MAXIMIZING CAPACITY AND RELIABILITY OF I-84/I-184 FOR TRAVELERS AND FREIGHT.

GOAL #3:
MANAGE I-84/I-184 AS PART OF AN INTEGRATED TRANSPORTATION SYSTEM, INCLUDING STATE HIGHWAYS, ARTERIALS, AND TRANSIT.

OBJECTIVES

- Reduce overall frequency and severity of crashes due to incidents, severe weather, or other hazards while improving communication to travelers.

- Improve work zone safety and reduce risks to workers and motorists.

- Reduce crashes caused by congestion bottlenecks and stopped traffic on the interstate mainline.

- Reduce fatalities and severity of personal injuries.

OBJECTIVES

- Improve inter-agency collaboration to maintain performance and reliability across the interstate and arterial networks.

- Extend coverage and functionality of ITS and communications technologies to provide situational awareness and support effective operations.

- Target low-cost, high-impact, infrastructure investments to address safety, capacity, and reliability hotspots.

- Support effective operations management through recurring and coordinated training of incident response personnel and resources.

OBJECTIVES

- Increase travel time reliability for travelers and freight.

- Coordinate freeway operations and incident response with local jurisdictions to address diversion traffic and implement detour routes.

- Provide competitive multimodal and transit travel options across the east-west corridor.

- Support informed trip planning decisions through coordinated and consistent traveler information across multiple channels.

PROJECT APPROACH

The project consisted of four phases:

1 **2** **3** **4**

**STAGE 1:
EVALUATION
OF CURRENT
PERFORMANCE**

At this stage of the
project existing data
was reviewed and
any key findings
were identified.
These conditions
formed the basis for
the strategies that
were proposed in
Phase 3.

**STAGE 2:
GOALS, OBJECTIVES,
AND PERFORMANCE
MEASURES**

At this stage of the
project the evaluation
structure of the
subsequent phases
was identified.

**STAGE 3:
IDENTIFY AND
SCREEN STRATEGIES**

This phase included
two levels of
screening, first-level
and second-level.
The first-level screen
included a broad set
of strategies and
tactics to address the
concerns identified in
Phase 1 and the goals
identified in Phase 2.
The screening
process reduced the
list to a more concise
set of strategies and
tactics that were
evaluated in the
second-level
screening. The tactics
that passed both
the first and second
level screens were
included in the
Implementation Plan.

**STAGE 4:
DEVELOP
IMPLEMENTATION
PLAN AND
FINAL REPORT**

The Implementation
Plan created a
toolbox of ITS
improvements that
are the best fit for
the I-84 corridor.
The Final Report
incorporated the
Implementation
Plan and
summarized the
previous phases
of the project to
provide context for
any interested party
that may benefit
from the analysis
included here.

Operations
in the I-84
Corridor Today

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I-84/I-184 CORRIDOR DESCRIPTION AND CONDITIONS

The corridor was organized into five segments, which are color-coded in Figure 2. The study segments were selected to reflect the different characteristics of the corridor. The segments are as follows:

- **Segment A:** West of Exit 36 (N Franklin Blvd) on I-84

- **Segment B:** I-84 Exit 36 to I-84 Milepost 48.4 (end of westbound drop lane)

- **Segment C:** Flying Wye: I-84 Milepost 48.4 (end of westbound drop lane) to MP 50.2 Cole Rd Interchange (Exit 50 A-B) and I-184 Franklin interchange (Exit 1-A)

- **Segment D:** I-184 Exit 1-A (Franklin interchange) to S 13th St

- **Segment E:** East of Exit 50 (Cole Rd Interchange)

FIGURE 2: STUDY CORRIDOR SEGMENTS

CORRIDOR TSMO STRATEGIES

See the Appendix for a summary of the key findings, challenges, congestion data, safety data, and stakeholder feedback for each corridor segment.

AGENCY ROLES AND RESPONSIBILITIES

- The **Idaho Transportation Department (ITD)** is the lead agency for managing the infrastructure and any ITS improvements along I-84/I-184.

- Due to the corridor's national significance, and related funding sources, **FHWA** is another leader in managing the corridor.

- **COMPASS**, the regional planning organization, provides coordination across jurisdictional boundaries.

- **State Communications** provides emergency communications dispatch and records incident logs of those events.

- **Idaho State Patrol** provides incident response and safety enforcement along the corridor.

- Transit service is provided by **Valley Regional Transit**.

- The **Ada County Highway District** (ACHD) monitors cameras and collect incident logs on I-84. ACHD also manages and operates the traffic signals on adjacent arterials in Meridian and Boise.

- The **City of Meridian**, **City of Nampa**, and **City of Caldwell** are all served by I-84. Nampa and Caldwell operate traffic signals at the ramp terminals and their city limits.

These agencies, and stakeholders in the project, were interviewed to discuss their concerns and ideas regarding the I-84/I-184 study corridor. Table 1 highlights some of the frequent themes, concerns, and suggestions from stakeholders.

TABLE 1: AGENCY PARTNER INPUT

REOCCURRING THEME	REOCCURRING CONCERNS	FREQUENT SUGGESTIONS
ROADWAY CONCERNS	Ramp Spillovers and Congestion	Ramp metering
	Lane Capacities	HOV lanes or variable lanes in peak hours
SIGNS/ READER BOARDS	Interest in Variable Messages Information Displayed to Travelers	Estimated travel times Digital messaging signs (DMS) Alternative modes and routes (detours) Accident ahead warning
PHYSICAL EQUIPMENT	Low Coverage in Canyon County	Expand cameras in Canyon County
	Limited First Responder Vehicles	More incident response vehicles (push bumpers, digital message signs)
COMMUNICATION & COORDINATION	Better Accessibility to Shared Equipment Distributing Plans and Providing Information Faster to Responders and Services Affected	Shared control and access to cameras Improve distribution of detour plans Playbook of roles and responsibilities Providing training and certifications

KEY OPERATIONAL ISSUES IDENTIFIED

The following are notable findings from the existing conditions data collection and analysis:

TRAFFIC VOLUMES: Segment B, from Nampa to the Flying Wye, experienced the highest traffic volumes compared to the rest of the study corridor. In particular, the interchanges in Nampa experienced the highest level of congestion during both the AM and PM peak period.

SAFETY: Between 2015 and 2019, Segment B experienced the highest frequency of crashes, while Segment A (west of Nampa) experienced the most high-severity crashes during the five-year study period. The areas near I-84 exit 36, exit 38, exit 44 and the Flying Wye are particularly crash-prone. One out of ten crashes were reported as a work zone related crash and 40 percent of all crashes occurred at ramp locations. Per the Safe Systems Approach, the focus should be on the locations with the highest frequency of fatal and serious injury crashes.

INCIDENT LOGS: Between 2018 and 2020 most incidents occurred in Segment A and Segment B. Most of these incidents were related to a motor vehicle collision but other categories with high numbers of incidents include disabled vehicle, traffic hazard, construction problem and water on road. The duration of a crash event has remained relatively consistent with the 50th percentile at approximately 60 minutes for both eastbound and westbound directions.

ONGOING AND PLANNED PROJECTS: Treasure Valley has completed significant planning and construction around ITS coordination and infrastructure. I-84 is undergoing various construction projects between Nampa and Caldwell that involve interstate widening, overpass widening, and other improvements.
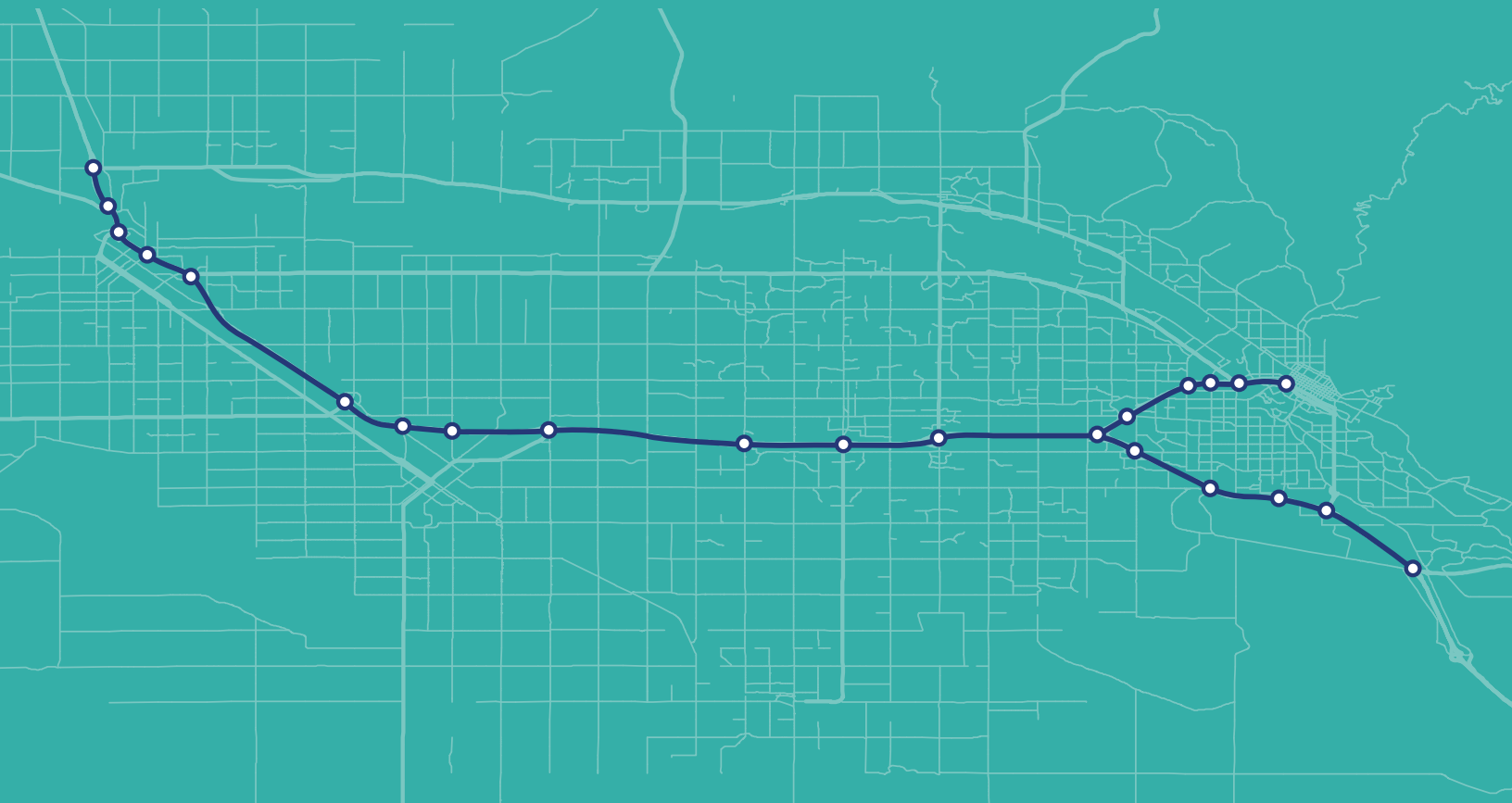
FROM 2015–2019:

SEGMENT B HAD THE HIGHEST FREQUENCY OF CRASHES

AND THE MOST HIGH-SEVERITY CRASHES WERE ON SEGMENT A

I-84 Corridor Operations Vision

I-84 CORRIDOR USER EXPERIENCE

The I-84 Corridor Operations Plan envisions a transportation network that is increasingly connected, using advanced technologies and interagency collaboration to improve safety, mobility, reliability, and choice for Treasure Valley travelers.

The goal is to operate the I-84 corridor as part of a seamless transportation network that spans both Canyon and Ada Counties. This network includes transportation infrastructure and services operated by the Idaho Transportation Department, Ada County Highway District, Valley Regional Transit, and local jurisdictions.

A dynamic corridor like I-84 in the Treasure Valley demands a dynamic response to rapidly evolving conditions. Peak hour and special event traffic, accidents and incidents, severe weather, and construction are just a few of the challenges that require a proactive and real-time response to traffic conditions.

In the future, Treasure Valley traffic and emergency management partners will coordinate to share information and manage the network in a similarly dynamic fashion, using advanced technologies and information sharing to increase situational awareness and allow for an effective response.

Many transportation and emergency management agencies play a role in managing the I-84 corridor. Effective communications and coordinated response is critical to responding to traffic incidents, coordinating interstate and arterial operations, and informing travelers of real-time conditions.

The plan envisions new technologies and tactics, which have been pioneered in other parts of the country, to address growing operational challenges and traffic volumes in the Treasure Valley. An example is Ramp Metering, which can reduce congestion and safety hazards due to merging traffic in interchange areas. Another new tactic is Shoulder Running Transit, which would allow VRT express routes between Ada and Canyon Counties to drive on Interstate shoulders to bypass stopped or slow traffic, providing greater reliability and more competitive travel alternatives for corridor travelers. Dynamic Roadway Warning and Smart Work Zone technology are ways to increase safety through focused deployment of technology.

TRAVELERS WILL BENEFIT FROM IMPROVED SAFETY, MOBILITY, RELIABILITY, & CHOICE

NEW TECHNOLOGIES AND TACTICS ENVISIONED IN THIS PLAN:

1. **RAMP METERING**
2. **SHOULDER RUNNING TRANSIT**
3. **DYNAMIC ROADWAY WARNING**
4. **SMART WORK ZONE**

In the future, Treasure Valley agencies will continue to use and refine the use of proven technologies that already provide significant benefit to the region. These include: Traffic Signal Management and Operations (with coordination across jurisdictions and with Interstate operations); Roadside Traveler Information, with coordinated Dynamic Message Signs deployment along I-84 and approach arterials; and expansion of ITD's Roadway Service Patrol program.

The operations vision includes updated "playbooks" (standard operating procedures) and agreements for how transportation agencies work together to respond to incidents, implement detours, and communicate with the public. Improved video and data sharing capabilities provide access to real-time conditions in the I-84 corridor, which for examples allows law enforcement and ITS maintenance to coordinate response to roadway incidents and blockages.

As the I-84 corridor continues to evolve, continual agency coordination and refinement of operational strategies is necessary to maintain effectiveness. A multi-agency Corridor Operations Team will provide an ongoing forum for transportation and emergency agencies to debrief and learn from past incident and operational response.

As champions for effective system management, the Corridor Operations Team will also look for opportunities to apply new and evolving technologies to address the needs of the corridor, and advocate for the resources and support needed to maintain the effectiveness of the program through staffing, technology investment, and training.

Ultimately, travelers will be able to plan their trip with an awareness of the travel time for all modes, the location of the nearest bus, locations affected by incidents, construction or weather. During the trip, travelers will have real-time information about incidents, hazardous conditions, travel times, and transit arrival information, the corridor travel times will be reliable and the trip safer due to the technology and active corridor management and operations.

BEFORE DEPARTING: TRAVELERS PLAN THEIR TRIP USING TRAVEL TIMES, THE LOCATION OF THE NEAREST BUS, LOCATIONS AFFECTED BY INCIDENTS, CONSTRUCTION, AND WEATHER.
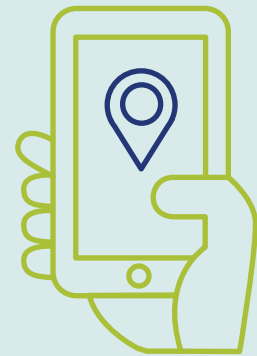
DURING THE TRIP: TRAVELERS RECEIVE REAL-TIME UPDATES ABOUT INCIDENTS, HAZARDOUS CONDITIONS, TRAVEL TIMES, AND TRANSIT ARRIVAL INFO, **MAKING THEIR JOURNEY SAFER AND MORE RELIABLE.**

I-84 CORRIDOR OPERATIONS VISION

REGIONAL VIDEO/DATA
INFORMATION SHARING

LAW ENFORCEMENT DISPATCH

STATE COMMUNICATIONS

IDAHO TRANSPORTATION DEPARTMENT (ITD) DISTRICT 3

ADA COUNTY HIGHWAY DISTRICT (ACHD) TRAFFIC MANAGEMENT CENTER (TMC)

CITY OF NAMPA TMC

VALLEY REGIONAL TRANSIT

Real-time traveler information provided through Idaho 511 and other sources informs real-time travel decisions for motorists, transit riders, and freight.

The **Regional Performance Management System** measures operations program effectiveness compared to regional safety and mobility goals.

A web-based **Enhanced Detour Plan** includes pre-planned scenarios to manage traffic diverting in the event of major incidents.

Event Management is a coordinated effort to manage traffic associated with large-scale pre-planned events like concerts and sports.

A multi-agency **Corridor Operations Team** provides a forum for continual improvement of Treasure Valley operations programs.

Interoperable Communications Procedures provide a common "Playbook" for agencies to implement operational responses in a coordinated fashion.

Traffic Incident Management plans and laws provide a coordinated response to roadway incidents with traveler and first responder safety in mind.

Roadway Service Patrols provide quick response to disabled motorists, and act as a "force multiplier" for law enforcement in implementing lane closures and detours.

Regional Video and Data sharing provides situational awareness to all agencies connected to roadway CCTV cameras.

Dynamic Roadway Warnings alert motorists of safety hazards such as frequent icing/flooding locations.

Active Traffic Management automatically detects changing roadway conditions, such as advanced lane closure warnings, and alerts upstream motorists.

Dynamic Message Signs (DMS) inform travelers of real-time roadway conditions at key decision points.
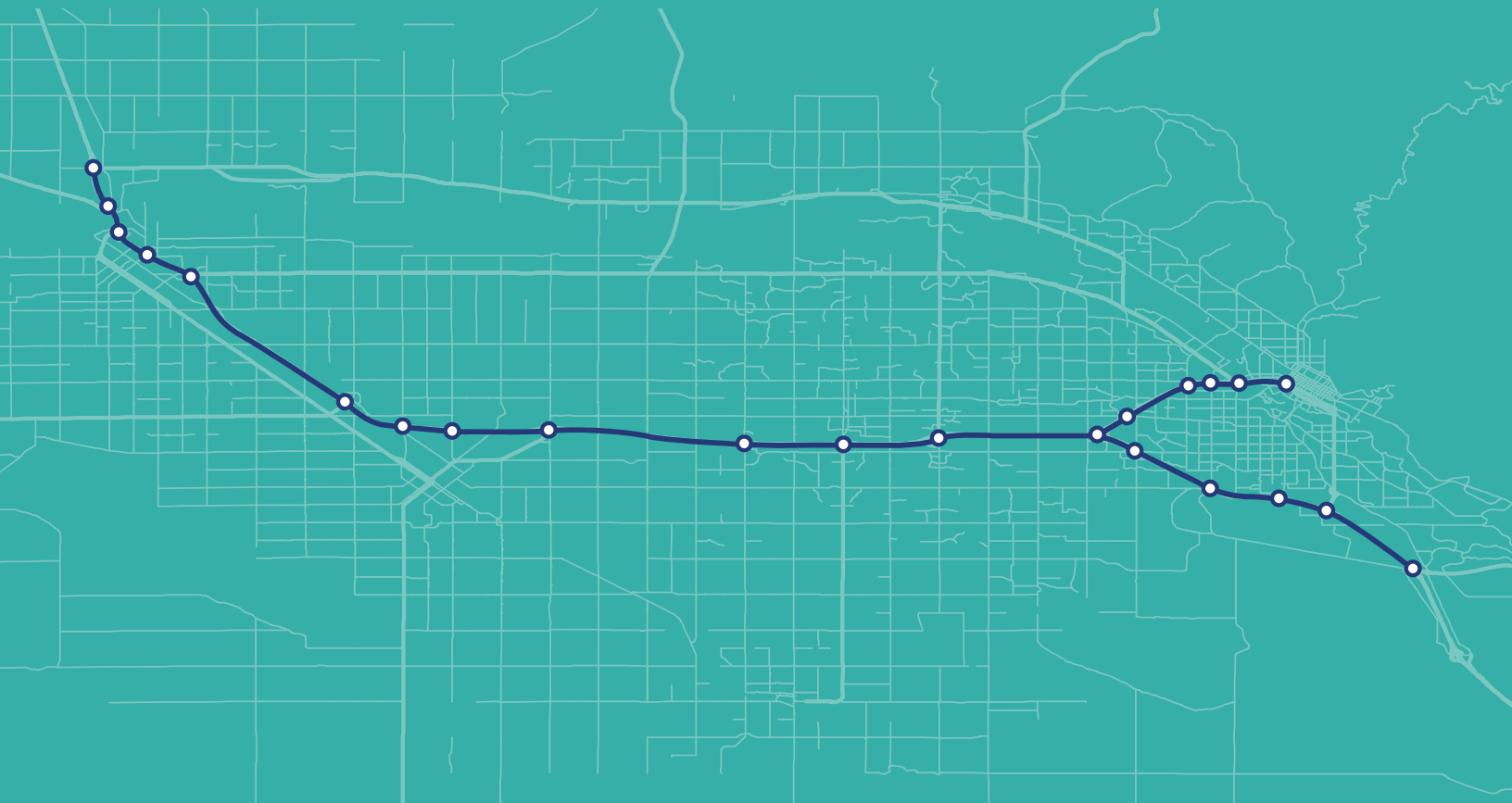
Smart Work Zone technology protects workers and motorists through speed notifications, surveillance, and motorist warnings.

Ramp Metering evens out the flow of traffic entering the Interstate, reducing merge conflicts, congestion, and crashes.

Geometric improvements like **on-ramp and auxiliary lane configuration** may improve operations in the congested segment of I-84, such as between Exits 42 and 46.

Shoulder Running Transit allows VRT buses to bypass slowed or stopped traffic to improve travel time reliability and competitiveness.

Evaluation of Operational Strategies and Tactics

4

STRATEGIES AND TACTICS IDENTIFIED

The project team assembled an initial TSMO toolbox of strategies with the potential to meet the I-84 project goals along the corridor. The TSMO strategies toolbox includes 37 tactics, organized into six strategies:

1. **TRAFFIC MANAGEMENT**
2. **INCIDENT AND EMERGENCY MANAGEMENT**
3. **ROAD WEATHER MANAGEMENT**
4. **PUBLIC TRANSPORTATION**
5. **PERFORMANCE MEASUREMENT**
6. **WORK ZONE MANAGEMENT**

The screening process will allow the project team to narrow a full-range of TSMO tactics, to those that best meet the identified goals and needs for the I-84 corridor study area. The screening levels and applied criteria for each level are shown in Figure 3.

37 TACTICS CONSIDERED IN THE INITIAL TOOLBOX

1 **FIRST-LEVEL SCREENING > NARROW TO FEWER TACTICS**

CRITERIA:
I-84 corridor goals

2 **SECOND-LEVEL SCREENING > NARROW TO FEWER TACTICS**

CRITERIA:
Operational benefits, feasibility, initial cost, and on-going maintenance cost

IMPLEMENTATION PLAN

ADVANCE RECOMMENDED STRATEGIES TO THE IMPLEMENTATION PLAN

FIGURE 3: SCREENING LEVELS AND CRITERIA

FIRST-LEVEL SCREENING (LONG-LIST TACTICS)

The initial 37 tactics, organized by the six strategies, are presented in Table 2. Each tactic scored to produce a rating which was subsequently reviewed at a stakeholder meeting and the second-level screening tactics were selected, a graphic showing this process is shown in Figure 4. For more information about each tactic and to see the rating used to evaluate it see *I-84 Corridor Operations Plan – First Level Screening Methodology* (August 2021).

TABLE 2: FIRST-LEVEL SCREENING TACTICS BY STRATEGY

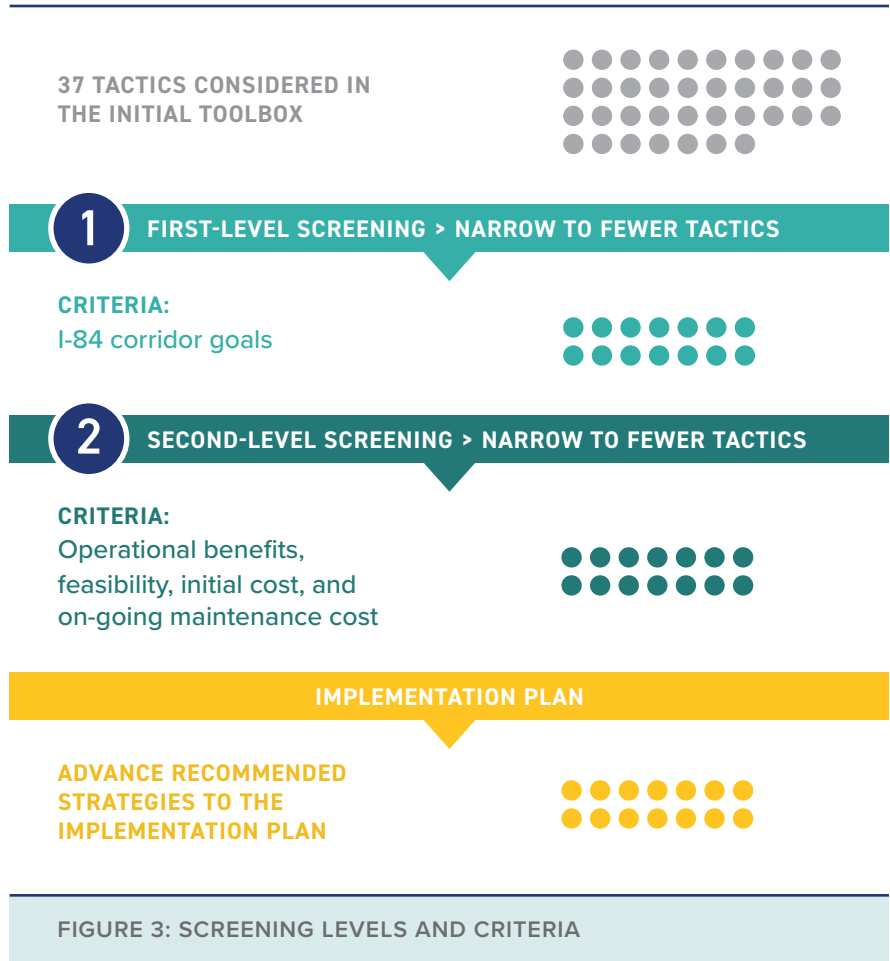| TRAFFIC MANAGEMENT	INCIDENT AND EMERGENCY MANAGEMENT	PUBLIC TRANSPORTATION
• Active Traffic Management (ATM) • Active Traffic Management (Dynamic Lane Control) • Ramp Metering • Expanding Traffic Surveillance (Cameras and Detection) • Regional Video and Data Sharing (Monitoring and Control) • Roadside Traveler Information (Dynamic Message Signs) • Roadside Traveler Information (Dynamic Message Signs Travel Time Estimates) • Dynamic Roadway Warning • Traffic Signal Management and Operations • HOV • Connected and Automated Vehicle Readiness • Regional Traveler Information (Websites and Mobile Applications) • Event Management • Automated Decision-Support System (ATMS Software) • On-ramp Configuration and Auxiliary Lanes • Availability of Truck Parking	• Corridor Operations Team • Emergency Management – Contra Flow on I-84/I-184 • Enhanced Detour Plans • Interoperable Communications Procedures/Operations Playbook • Regional Alert System (Incident Queue/Situational Awareness) • Roadway Service Patrols • Towing Contract (Hourly, Staged or Dry-Run) • Traffic Incident Management Strategic Plan (Laws, Program and Training)	• Active Demand Management Strategies • Real-Time Transit Information • Transit Traveler Information through Third-Party Services • Shoulder Running Transit

		PERFORMANCE MANAGEMENT
		• Regional Performance Management System, such as RITIS, ITS Data Warehouse

	ROAD WEATHER MANAGEMENT	WORK ZONE MANAGEMENT
	• Weather Data Collection and Information Processing (Decision Support, Weather Detection/ Prediction Technologies) • Winter Roadway Maintenance	• Automated Work Zone Information Systems (Smart Arrow Board Technology) • Dynamic Lane Merge (Zipper Merge) • Smart Work Zones (Work Zone Data Exchange) • Automated Speed Limit Enforcement • Work Zone Transportation Management Plan

37 Strategies

1. Score Each Strategy 0 -10

Rating	Effectiveness
0	No impact
1	Little to no impact
2	Marginal impact
3	Fewer applicable areas, moderate impact
4	Moderate use and impact
5	Effective
6	Fairly high impact
7	High impact
8	Highly effective in meeting objective
9	Corridor-wide, highly effective
10	Transformative impact

2. Apply Stakeholder Goal Weighting

Utility Factor
Goal 1 = 41
Goal 2 = 31
Goal 3 = 28

Apply to Score = Weighted Score

3. Weighting from Stakeholder Input

Weighted Score x Multiplier = Final Score

Multiplier	Meaning
1	No strong support
1.15	Support from at least 3 agencies
1.2	Moderate support
1.25	Large support from majority

4. Convert Final Scores to Icons

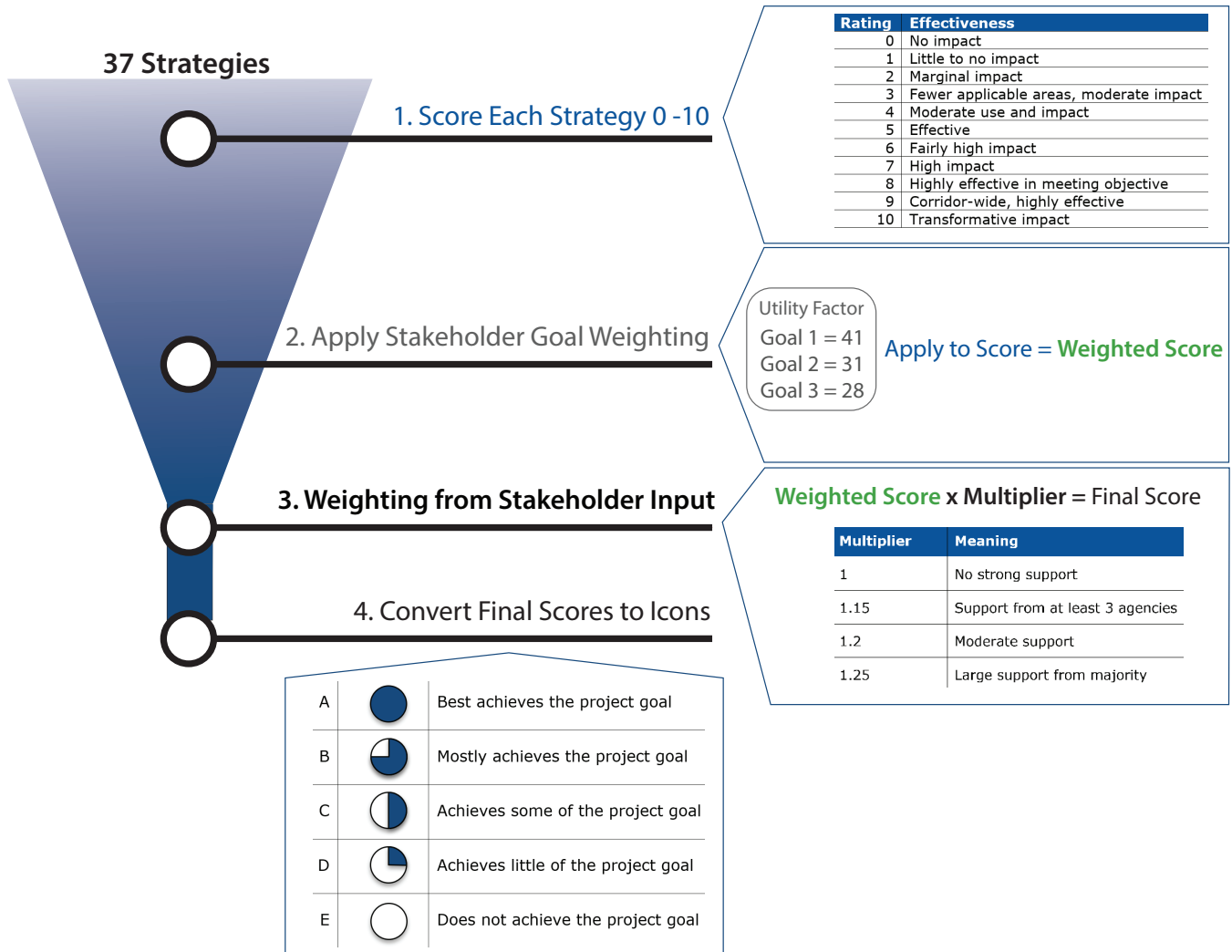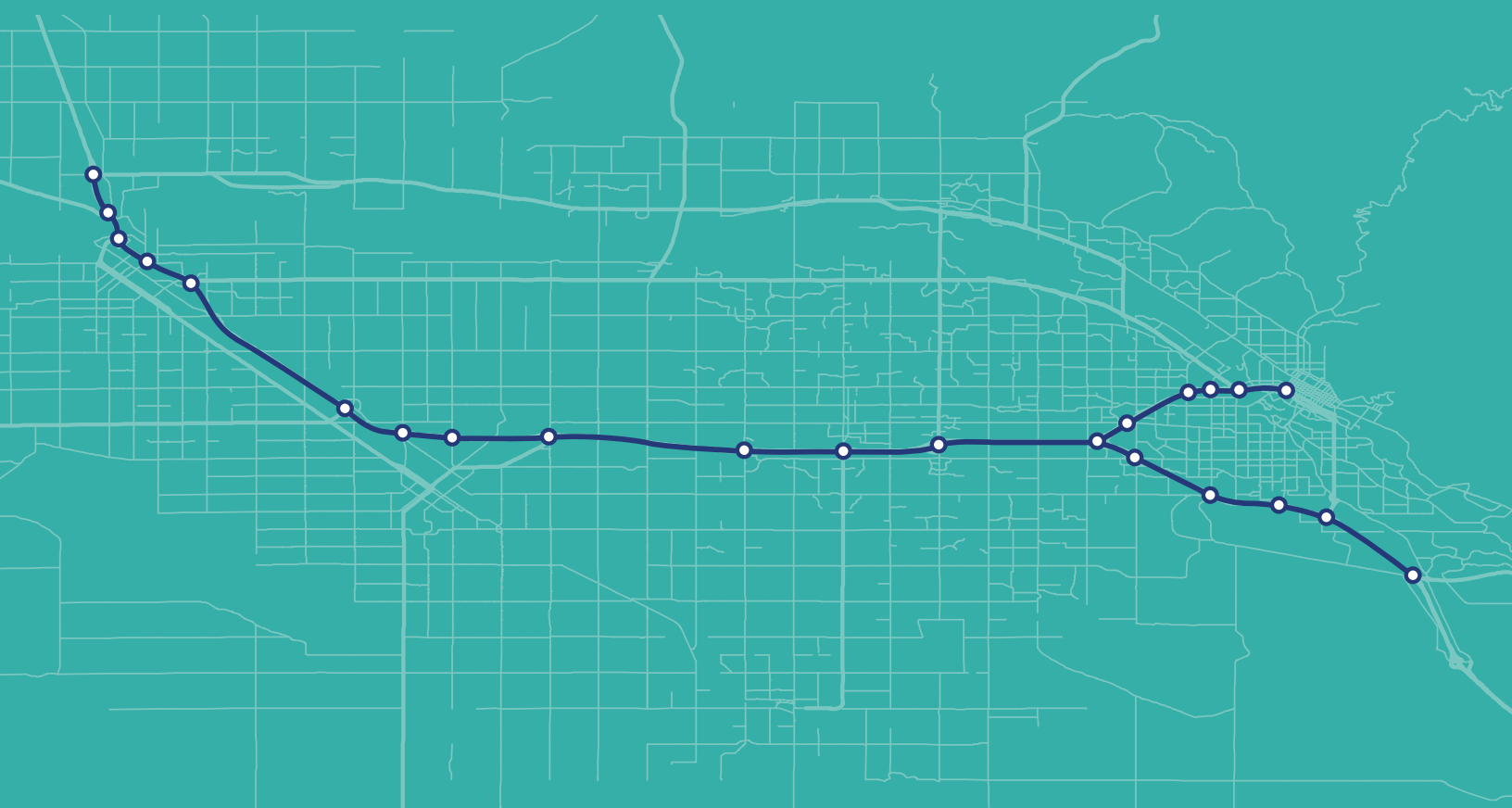|		
A		Best achieves the project goal
B		Mostly achieves the project goal
C		Achieves some of the project goal
D		Achieves little of the project goal
E		Does not achieve the project goal

FIGURE 4: SCREENING METHODOLOGY

Implementation Plan for Recommended Operational Strategies

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SCREENING OF SHORTLISTED TACTICS

The first level screening process evaluated candidate tactics against the three operational goals of Safety, Capacity & Reliability, and Integrated Transportation System. This first level resulted in 17 tactics that advanced to a second level screening which looked more closely at Benefits, Annualized Costs, and Implementation Feasibility criteria. Where applicable, a benefit-cost ratio was calculated for each tactic using USDOT's Tool for Operations Benefit Cost (TOPS-BC). An overall weighted score was developed for each tactic on a 1-10 scale, capturing the combined benefits, costs, and feasibility of each tactic and effectiveness in meeting one or more of the project goals.

Table 3 summarizes the rankings for each tactic against the project goals (first level screening), the second-level screening criteria, and the overall blended score for each tactic.

As the summary shows, some tactics have generalized effectiveness against multiple project goals, such as Regional Video and Data Sharing. Other tactics are more target towards meeting a specific project goal, such as the emphasis of Dynamic Roadway warning on safety.

Because no individual tactic will effectively meet all regional goals, a successful operations program for the Treasure Valley will pursue a "layered" approach of implementing multiple strategies that address different goals in different geographic areas of the corridor. Together, these tactics combine to form a comprehensive and effective approach that engages multiple agencies, technologies, and plans to manage the I-84 corridor. The highest priority tactics for the stakeholder group are noted with a ✳ in Table 3.

Similarly, the Benefit, Cost, and Implementation Feasibility criteria show a range of effectiveness and complexity in implementing specific tactics. For example, Ramp Metering is expected to have high benefits and is expected to be highly feasible to implement. However, the annualized cost is relatively high compared to other strategies, so the benefits will require a commitment to the investment. By contrast, the Corridor Operations Team is quick and inexpensive to implement, an "early win" strategy that requires modest time commitments of existing agency staff to meet periodically. But while essential for overall regional coordination, the direct benefits of the Corridor Operations Team on day-to-day performance of the I-84 corridor is lower compared to a high-benefit tactic like Ramp Metering.

Additional detail on each tactic and the second level screening process can be found in the I-84 Corridor Operations Plan Tactics Screening Results Memo (December 2021).

TABLE 3: SUMMARY OF RANKINGS BY TACTIC

TACTIC	FIRST LEVEL SCREENING*			SECOND LEVEL SCREENING*				OVERALL SCORE (1–10)
	GOAL 1: SAFETY	GOAL 2: CAPACITY & RELIABILITY	GOAL 3: INTEGRATED TRANSPORTATION SYSTEM	BENEFITS	ANNUALIZED COST	IMPLEMENTATION FEASIBILITY	BENEFIT-COST	
REGIONAL VIDEO & DATA SHARING (MONITORING, CONTROL, CAMERAS, DETECTION)	●	●	●	◐	●	◐	n/a	**8.7**
ROADSIDE TRAVELER INFORMATION (DYNAMIC MESSAGE SIGNS, TRAVEL TIME ESTIMATES)	◐	●	●	◐	◐	●	0.36	**8.0**
INTEROPERABLE COMMUNICATIONS PROCEDURES/OPERATIONS PLAYBOOK (SOP)	◐	◕	●	◕	◕	◕	n/a	**8.0**
ENHANCED DETOUR PLANS	◔	●	◐	◐	●	◐	n/a	**7.7**
✳ RAMP METERING	●	●	○	●	◕	●	7.04	**7.7**
✳ ROADWAY SERVICE PATROLS	●	◕	◐	●	◐	◐	n/a	**7.7**
CORRIDOR OPERATIONS TEAM	◐	◕	◕	◐	●	●	n/a	**7.3**
REGIONAL PERFORMANCE MANAGEMENT SYSTEM	◔	◔	●	◐	◐	◐	n/a	**7.3**
TRAFFIC INCIDENT MANAGEMENT PROGRAM	◔	◔	●	◐	◕	◔	n/a	**7.3**

*For a more detailed explanation of each screening method and meaning, see the Appendix.

Legend: ● Best achieves ◕ Mostly achieves ◐ Achieves somewhat ◔ Achieves a little ○ Does not achieve

✳ Stakeholder highest priority

TACTIC	FIRST LEVEL SCREENING*			SECOND LEVEL SCREENING*				OVERALL SCORE (1–10)
	GOAL 1: SAFETY	GOAL 2: CAPACITY & RELIABILITY	GOAL 3: INTEGRATED TRANSPORTATION SYSTEM	BENEFITS	ANNUALIZED COST	IMPLEMENTATION FEASIBILITY	BENEFIT-COST	
✴ DYNAMIC ROADWAY WARNING (HOTSPOTS/WATER ON ROADWAY RWIS)	Best achieves	Achieves somewhat	Achieves a little	Does not achieve	Best achieves	Achieves a little	2.04	6.7
REAL-TIME TRANSIT INFORMATION	Does not achieve	Best achieves	Achieves a little	Achieves a little	Mostly achieves	Mostly achieves	1.21	6.7
SMART WORK ZONES (AUTOMATED INFORMATION SYSTEMS, SMART ARROW BOARDS)	Achieves somewhat	Achieves a little	Achieves a little	Achieves a little	Best achieves	Best achieves	2.53	6.3
TRAFFIC SIGNAL MANAGEMENT AND OPERATIONS (COORDINATION AND SIGNAL PERFORMANCE MEASURES)	Achieves a little	Best achieves	Mostly achieves	Achieves somewhat	Achieves a little	Achieves somewhat	0.68	6.3
✴ ACTIVE TRAFFIC MANAGEMENT	Achieves a little	Achieves a little	Does not achieve	Mostly achieves	Achieves a little	Achieves somewhat	0.73	5.3
EVENT MANAGEMENT	Does not achieve	Achieves a little	Achieves a little	Achieves a little	Mostly achieves	Achieves somewhat	n/a	5.3
SHOULDER RUNNING TRANSIT	Does not achieve	Achieves somewhat	Does not achieve	Achieves somewhat	Achieves somewhat	Achieves somewhat	n/a	4.7
ON-RAMP CONFIGURATION AND AUXILIARY LANES	Achieves a little	Achieves somewhat	Achieves a little	Achieves somewhat	Achieves a little	Achieves a little	n/a	4.3

*For a more detailed explanation of each screening method and meaning, see the Appendix.

Legend:
- ⬤ Best achieves
- ◕ Mostly achieves
- ◑ Achieves somewhat
- ◔ Achieves a little
- ◯ Does not achieve
- ✴ Stakeholder highest priority

TOP RANKED TACTICS BY THEME

Here is a summary of the top-ranked tactics according to three themes: high benefit, favorable cost, and high feasibility.

HIGH BENEFIT

These tactics have the highest ultimate payback in terms of operational benefits and effectiveness in meeting the goals. **Roadside Traveler Information using Dynamic Message Signs (DMS)**, **Ramp Metering**, and **Highway Service Patrols** each provide direct benefit to the corridor operations: respectively these are real-time traveler information, congestion reduction, and quicker traffic incident clearance. As a tradeoff, they all represent significant capital and/or operating investments, but those costs are still considerably lower than conventional roadway capacity infrastructure investments like Interstate widening.

Interoperable Communications/ Standard Operating Procedures (SOPs) is another high benefit strategy that focuses on improve interagency coordination to create a more seamless and effective operations program, particularly for traffic incidents, construction, and major events. Lastly, **Active Traffic Management** has been shown to have significant safety benefits in other jurisdictions that may justify the relatively high implementation costs to construct roadway instrumentation, signage gantries, and new central control center software and staffing capabilities.

FAVORABLE COST

These tactics are relatively low cost to implement and operate. Three of the tactics – **Regional Video and Data Sharing**, **Enhanced Detour Plans**, and the **Corridor Operations Team**, require little or no capital investment. The key to their success, however, is agency buy-in and ongoing commitment to implement and update these strategies over time through multi-agency partnerships, policies, and agreements.

Dynamic Roadway Warning is low cost because it is geographically targeted to specific areas prone to icing or flooding, such as the I-184 connector. Additional hotspots could be addressed over time based on the efficacy of the initial pilot implementation. **Smart Work Zones** can be implemented as a relatively low-cost measure in select construction projects, potentially as a pilot project prior to committing to full-sale implementation.

HIGH FEASIBILITY

These tactics are among the simplest and easiest to implement in terms of project complexity, technological maturity, and agency coordination. **Roadside Traveler Information** leverage and expands existing and proven **Dynamic Message Sign** technology. **Ramp Metering** is new to the Treasure Valley but has been deployed on a widespread basis elsewhere. Both of these strategies can be ITD led to evaluate, design, and implement the technology and infrastructure along the I-84 corridor.

The **Corridor Operations Team** could begin meeting imminently with only modest dedication of agency staff time and commitment to achieving a defined operational goal. **Smart work zone** technology is highly suited to a pilot implementation, and is adaptable to address various safety and congestion reduction objectives.

SELECTION OF TACTICS FOR THE IMPLEMENTATION PLAN

Through discussion and review of the total screening and ranking of shortlisted tactics, the participating agencies in the Steering Committee determined that the Implementation Plan should include all of the shortlisted tactics. This approach recognizes that:

- Tactics are geared towards addressing specific operational needs, and therefore a package of multiple tactics are necessary for a well-rounded regional operations strategy.

- Tactics should reflect a combination of proven regional strategies, like Traffic Signal Management and Operations, as well as innovative strategies that have been implemented elsewhere but are new to the Treasure Valley, like Advanced Traffic Management or Shoulder Running Transit. This provides flexibility in implementing tactics based on agency priorities, technological maturity, and overall stakeholder receptiveness to new approaches.

- Various tactics have different lead and participating agencies, and it is important that multiple tactics are available in the implementation plan to reflect the diversity of agency champions and their capacity to implement tactics over time.

- Some tactics are "early wins," and can be implemented quickly while other longer-term strategies progress through advanced stages of planning, design, and funding acquisition.

- Many tactics are likely to be implemented in an opportunistic fashion, as grant funding or other discretionary funding sources are identified. Therefore, it is appropriate to include a diversity of worthy tactics as candidate for funding opportunities when they arise.

Regional Video & Data Sharing

DESCRIPTION

This tactic aims to improve the multi-agency understanding of the freeway system operations through the sharing of video and other data related to past or current operations between local system managers.
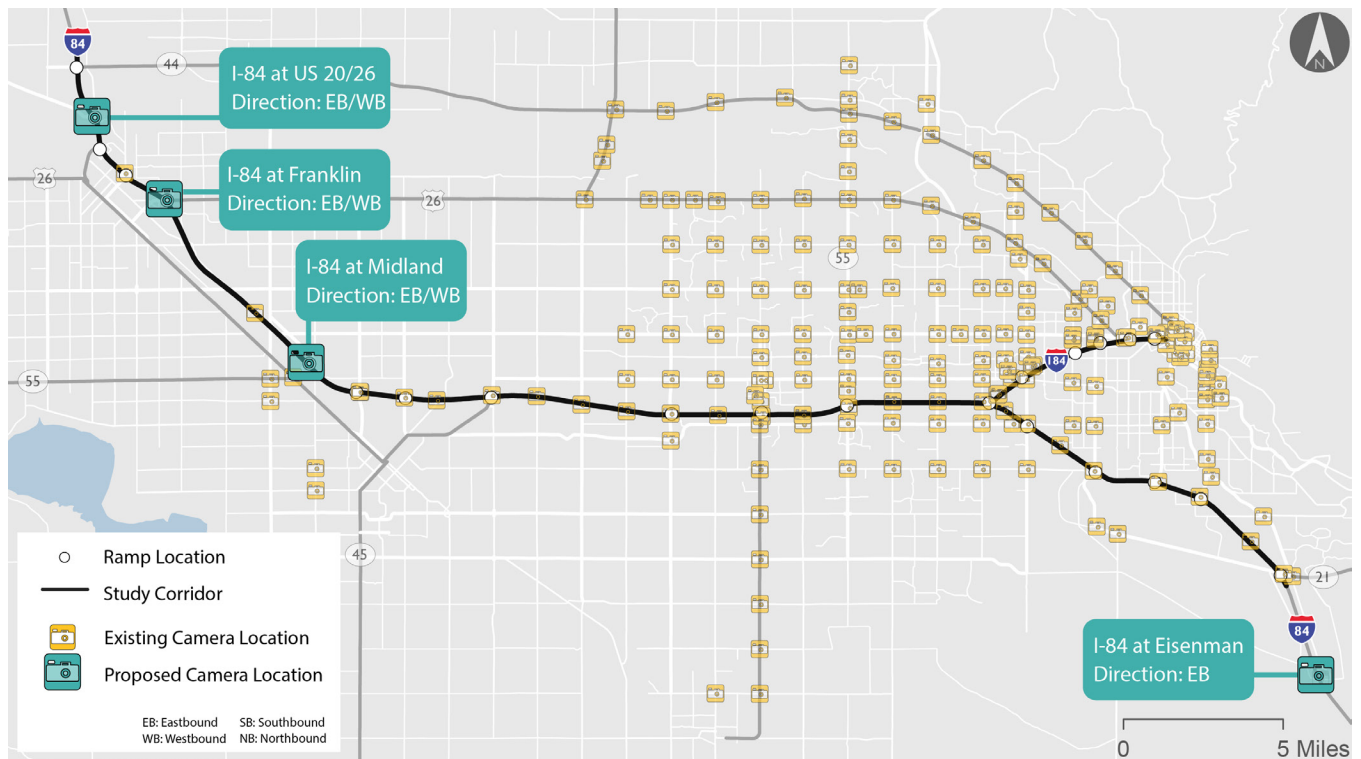
This tactic is relatively inexpensive and fills in a few gaps in the camera infrastructure of the valley. The regional data sharing provides benefits to regional operations, incident management, and event management in real time.

LEAD AGENCY

- Idaho Transportation Department

PARTICIPATING AGENCIES:

- Ada County Highway District
- City of Nampa
- State Comm
- Idaho State Police
- Ada County Sheriff
- Canyon County Sheriff

I-84 at US 20/26
Direction: EB/WB

I-84 at Franklin
Direction: EB/WB

I-84 at Midland
Direction: EB/WB

I-84 at Eisenman
Direction: EB

○ Ramp Location

— Study Corridor

Existing Camera Location

Proposed Camera Location

EB: Eastbound   SB: Southbound
WB: Westbound   NB: Northbound

0   5 Miles

COMPONENTS

- **New camera deployment** at four new locations in Ada and Canyon Counties:
  › I-84 at US 20/26
  › I-84 at Franklin Road
  › I-84 at Midland Boulevard
  › I-84 at Eisenman Road

- **Regional Video Sharing System** for virtual sharing and selective control of cameras from traffic and emergency management centers.

- **Regional Data Management System** for incidents and event data to improve inter-agency communications and situational awareness.
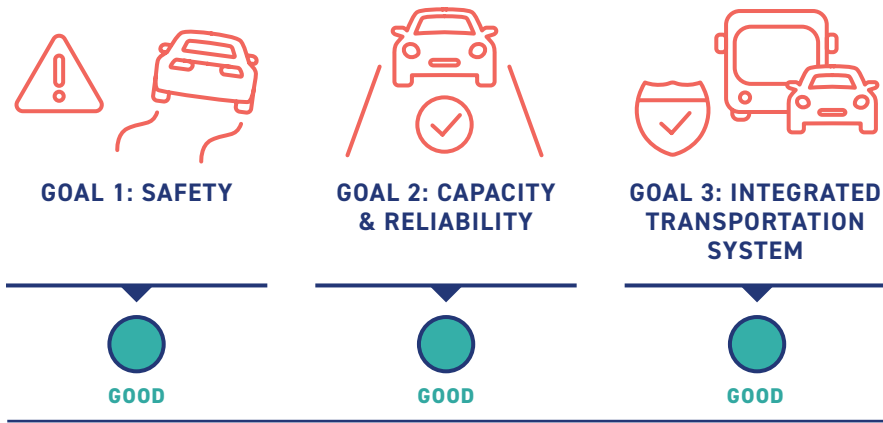
TIMEFRAME

NEAR TERM:

- Planning & Agreements *(Year 1)*
- Camera Deployment *(Years 2–3)*
- Systems Integration *(Years 2–3)*

PERFORMANCE COMPARED TO THE PROJECT GOALS

GOAL 1: SAFETY

GOAL 2: CAPACITY & RELIABILITY

GOAL 3: INTEGRATED TRANSPORTATION SYSTEM

GOOD

GOOD

GOOD

GRANT FUNDING OPPORTUNITIES

- Advanced Transportation Technologies and Innovative Mobility Deployment Program
- National Highway Performance Program
- Congestion Relief Program
- Nationally Significant Freight and Highway Projects Program
- Strengthening Mobility and Revolutionizing Transportation

CAPITAL COSTS

- Camera Implementation (four site installations) $60,000 per site, $240,000 total
- Regional Video and Data Integration: $500,000 for software and integration

OPERATING COSTS

- $20,000/year hardware and IT maintenance

STRATEGIES ADDRESSED

- ☑ **Traffic Management**
- ☑ **Incident & Emergency Management**
- ☐ Road Weather Management
- ☐ Public Transportation
- ☑ **Work Zone Management**

RELATED INITIATIVES

- ITD Statewide Traffic Management System Software Replacement
- City of Nampa Traffic Management Center
- Roadside Traveler Information (DMS)
- Dynamic Roadway Warning
- Traffic Signal Management and Operations
- Enhanced Detour Plans
- Interoperable Communications Procedures/Operations Playbook (SOP)
- Regional Performance Management System
- Smart Work Zones
- Event Management
- Active Traffic Management

ANTICIPATED BENEFITS

- Provides shared real-time and historic system operations information.
- Improves visual information (related to freeway operations, situational awareness, incidents, and events) for decision makers and the public.
- Improves incident response times and accuracy.

REGIONAL COORDINATION AND COLLABORATION

- Data sharing agreement
- Update operating procedures
- Integrate systems and data into a backend software

PHASING OPPORTUNITIES

PHASE 1: Complete deployment of four camera sites to increase coverage.

PHASE 2: Expand regional video management system and regional video sharing. Develop regional data/event dashboard to provide situational awareness to traffic and emergency management centers in the Treasure Valley.

Ramp Metering

DESCRIPTION

This tactic aims to improve corridor operations by metering the rate of vehicles entering mainline traffic. Ramp meters reduce congestion on the Interstate and reduce crash risks in merging areas. It can be deployed using pre-timed configuration and expanded to include a central software with adaptive capabilities based on real-time conditions in the future.

This tactic uses traffic data provided by field sensors. Ramp meters support traffic management and public transportation operations for intercounty routes. Since it is planned as a long-term tactic, a pilot can be initially deployed to evaluate its feasibility before implementing corridor wide.

BENEFIT-COST = 7.04 TO 1

LEAD AGENCY
- Idaho Transportation Department

PARTICIPATING AGENCIES:
- State Comm
- Ada County Highway District
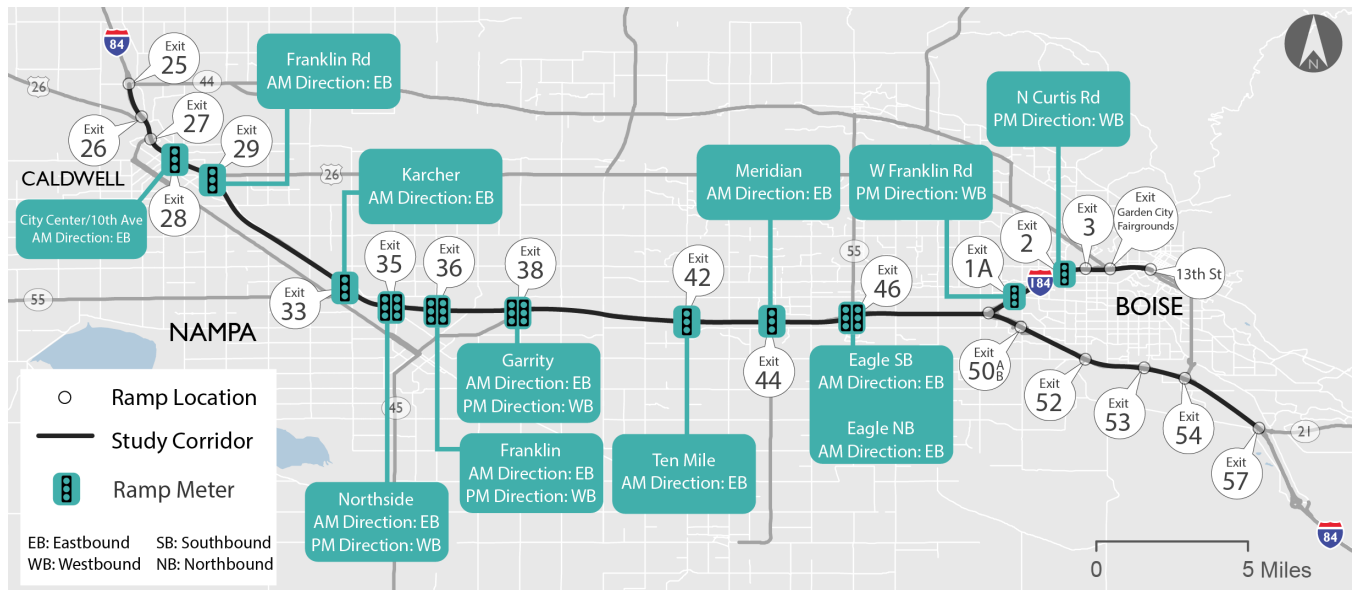
COMPONENTS

- **Ramp meter deployment at 17 on-ramps spanning 11 total interchanges:**
  - › 10th Ave (Exit 28)
  - › Franklin Rd (Exit 29)
  - › Karcher Rd (Exit 33)
  - › Northside Blvd (Exit 35)
  - › Franklin Blvd (Exit 36)
  - › Garrity Blvd (Exit 38)
  - › Ten Mile Rd (Exit 42)
  - › Meridian Rd (Exit 44)
  - › Eagle Rd (Exit 46)
  - › W Franklin Rd on I-184
  - › N Curtis Rd
- **Regional Ramp Metering Software** for remote control of ramp meters to adjust peak-hour volume flow into mainline traffic.

TIMEFRAME

NEAR TERM:
- Planning & Engineering Design *(Years 1–2)*

PERFORMANCE COMPARED TO THE PROJECT GOALS

GOAL 1: SAFETY

GOAL 2: CAPACITY & RELIABILITY

GOAL 3: INTEGRATED TRANSPORTATION SYSTEM

GOOD

GOOD

POOR

GRANT FUNDING OPPORTUNITIES

- Surface Transportation Block Grant Program

- Congestion Relief Program

- Nationally Significant Freight and Highway Project Program

CAPITAL COSTS

- Ramp Meter (17 site installations): $1,173,000 per site, $16,422,000 total

- Central ramp metering software and equipment: $1,265,000

OPERATING COSTS

- $102,000/year central ramp metering software and equipment operations and maintenance

- $3,250/year per field ramp meter maintenance

STRATEGIES ADDRESSED

- ☒ **Traffic Management**
- ☐ Incident & Emergency Management
- ☐ Road Weather Management
- ☒ **Public Transportation**
- ☐ Work Zone Management

RELATED INITIATIVES

- ITD Advanced Transportation Management System

- Regional Video & Data Sharing for adaptive ramp meters

- Roadside Traveler Information (DMS)

- Dynamic Roadway Warning

- On-Ramp Configuration and Auxiliary Lanes

- Shoulder Running Transit for future ramp meter expansions

ANTICIPATED BENEFITS

- Reduces abrupt speed changes that can potentially lead to rear-end crashes and degrade mainline operations.

- Improves interstate mainline operations.

- Relieves mainline bottlenecks by managing traffic volume flow into mainline traffic.

REGIONAL COORDINATION AND COLLABORATION

- Develop a funding plan and agreement.

- Create operating procedures of ramp metering timing during peak hour or under certain circumstances (incidents, weather events, planned events, work zones).

- Develop engineering plans and designs for supporting communications and system.

PHASING OPPORTUNITIES

PHASE 1: Complete deployment of a small group of ramp meters in the high congestion area and evaluate performance.

PHASE 2: Expand ramp meters and integrate ramp meters into a central ramp metering for daily operations.

Roadside Traveler Information

DESCRIPTION

This tactic alerts drivers of changing corridor conditions to enhance driver situational awareness and support informed route choices through Dynamic Message Signs (DMS). Feasibility of DMS integration parallels in many ways to regional video sharing.

This tactic uses work zone, event, incident response, traffic detection sensors, travel time, freight, video camera, weather, and other data to disseminate to drivers. This tactic is high-cost and requires field infrastructure, it can be combined with other tactics for cost savings such as Active Traffic Management and Dynamic Roadway Warning. Due to its cost, it has a low B/C ratio but yield benefits in majority of strategies addressed and project goals.

BENEFIT-COST = 0.36 TO 1

LEAD AGENCY

- Idaho Transportation Department

PARTICIPATING AGENCIES:

- State Comm
- Ada County Highway District
- City of Nampa
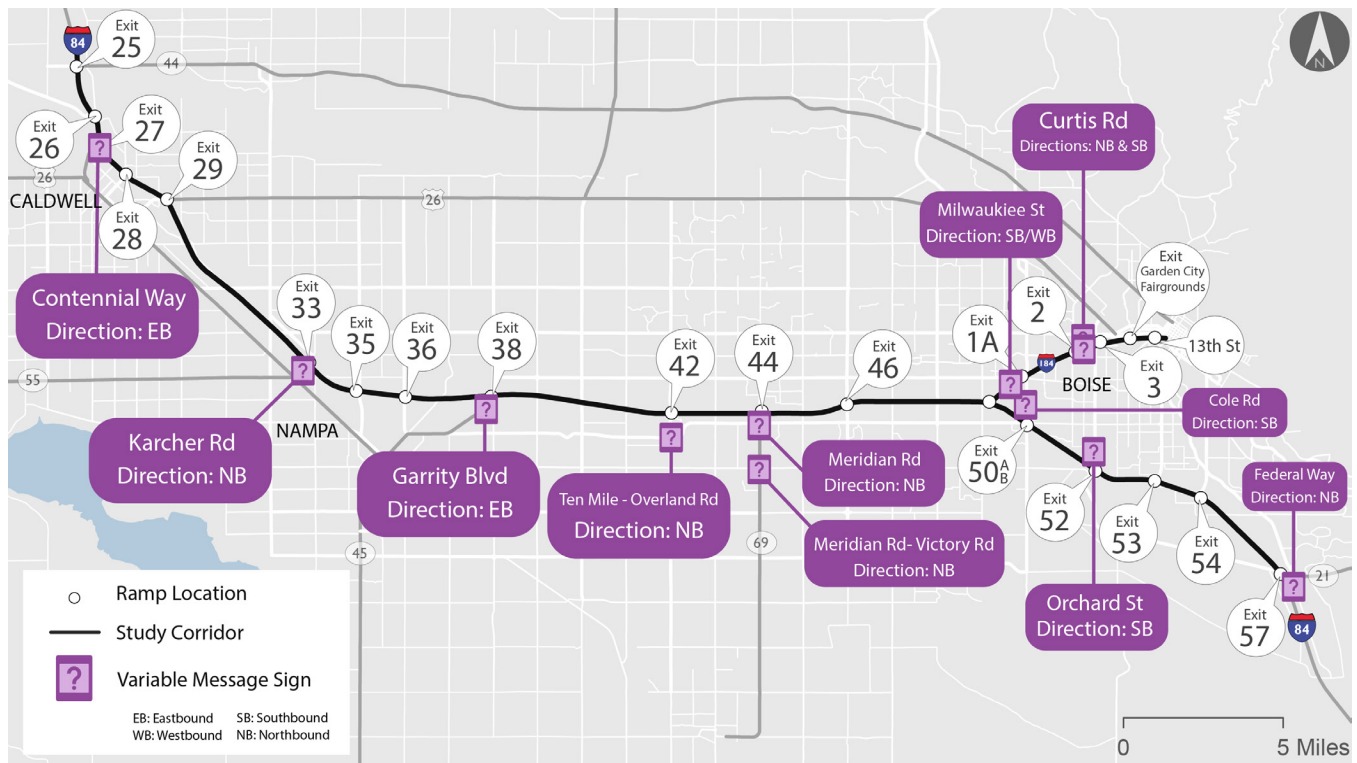
COMPONENTS

- **Dynamic Message Sign (DMS) deployment at twelve locations:**

  › I-84 Eastbound near (Exit 26)
  › Karcher Road (SH 55) Eastbound
  › Garrity Blvd Eastbound
  › Ten Mile Road Northbound
  › Meridian Road (SH 69) Northbound
  › Meridian Road (SH 69) Northbound

  › Milwaukee Street and Franklin Road Westbound I-184 on-ramp
  › Cole Road Southbound
  › Curtis Road Northbound
  › Curtis Road Southbound
  › Orchard Street Southbound
  › Federal Way Northbound to Gowen Road

TIMEFRAME

NEAR TERM:

- Planning & Design *(Years 1–2)*

PERFORMANCE COMPARED TO THE PROJECT GOALS

GOAL 1: SAFETY

GOAL 2: CAPACITY & RELIABILITY

GOAL 3: INTEGRATED TRANSPORTATION SYSTEM

FAIR

GOOD

GOOD

GRANT FUNDING OPPORTUNITIES

- Advanced Transportation Technologies and Innovative Mobility Deployment Program
- National Highway Performance Program
- Surface Transportation Block Grant Program
- Congestion Relief Program
- Highway Safety Improvement Program
- Nationally Significant Freight and Highway Projects Program
- Strengthening Mobility and Revolutionizing Transportation

CAPITAL COSTS

- Sign (12 site installations): $931,500 per site, $11,178,000 total

OPERATING COSTS

- 12,150/year per sign operations and maintenance

STRATEGIES ADDRESSED

- **Traffic Management**
- **Incident & Emergency Management**
- **Road Weather Management**
- Public Transportation
- **Work Zone Management**

RELATED INITIATIVES

- ITD Advanced Transportation Management System
- Regional Video & Data Sharing
- Dynamic Roadway Warning
- Enhanced Detour Plans
- Interoperable Communications Procedures/Operations Playbook (SOP)
- Smart Work Zones
- Event Management
- Active Traffic Management

ANTICIPATED BENEFITS

- Support driver decisions in making alternate route choices.
- Mitigate congestion during construction, traffic, incidents, and hazardous conditions.

REGIONAL COORDINATION AND COLLABORATION

- Update operating procedures to support decisions and outline pre-approved messages used by State Comm.
- Integrate systems and data into a backend software.

PHASING OPPORTUNITIES

DMS can be installed as a standalone site or combined with multiple site locations depending on available funds.

PHASE 1: Complete deployment of DMS and sharing protocols for specific event types. Portable DMS could be used in the interim period before permanent DMS signs are constructed.

PHASE 2: Deploy additional DMS until full coverage on I-84 and adjacent arterial roadways.

Dynamic Roadway Warning

DESCRIPTION

Dynamic Roadway Warning aims to enhance safety and alert drivers to hazardous conditions along the corridor, especially during extreme weather conditions and rain events. This can be implemented with or after roadside traveler information to increase its feasibility.

This tactic would use data relates to hazards, incidents, congestion, weather conditions, etc. collected via traffic detection sensors or video cameras. This is relatively inexpensive tactic for the high benefits it yields in reducing crash risks. The dynamic roadway warning system provides benefits in safety and multiple strategies addressed.

The location shown in the map below pinpoints a location with occasional water over the roadway and would use sensors and signs to automatically detect the water over roadway condition and alert drivers.

BENEFIT-COST = 2.04 TO 1

LEAD AGENCY

- Idaho Transportation Department

PARTICIPATING AGENCIES:

- Ada County Highway District

Legend:
- ○ Ramp Location
- — Study Corridor
- 💧 Road Weather Information System
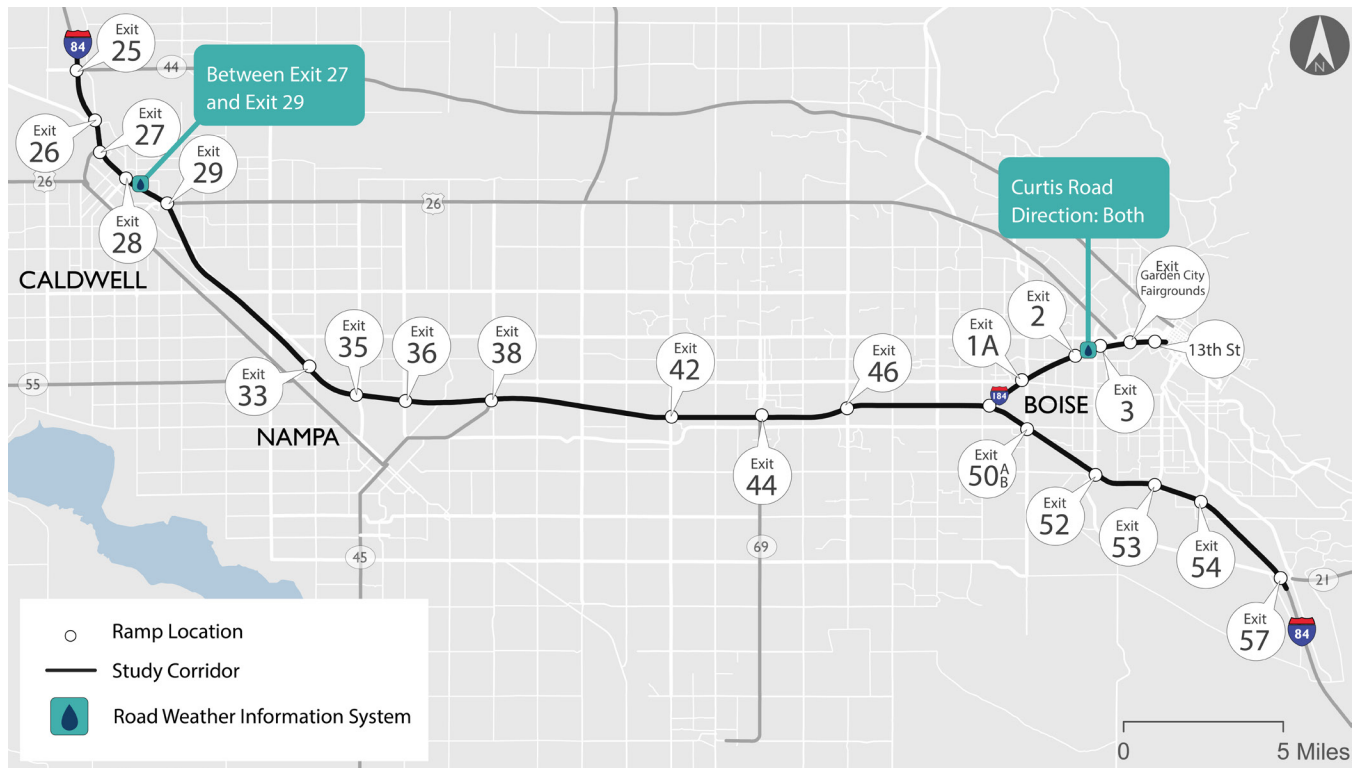
COMPONENTS

- **Dynamic Roadway Warning System** located near Curtis Road.

- **Road Weather Information System (RWIS)** for collecting, monitoring, and communicating real-time weather information such as temperature, wind speed, fog, precipitation, water depth, and relative pavement friction located near Curtis Road.

TIMEFRAME

NEAR TERM:

- System Planning and Implementation *(Years 1–3)*

PERFORMANCE COMPARED TO THE PROJECT GOALS

GOAL 1: SAFETY

GOAL 2: CAPACITY & RELIABILITY

GOAL 3: INTEGRATED TRANSPORTATION SYSTEM

GOOD

FAIR

FAIR/POOR

GRANT FUNDING OPPORTUNITIES

- Advanced Transportation Technologies and Innovative Mobility Deployment Program
- National Highway Performance Program
- Surface Transportation Block Grant Program
- Congestion Relief Program
- Highway Safety Improvement Program
- Nationally Significant Freight and Highway Projects Program

CAPITAL COSTS

- Dynamic Roadway Warning System (1 location assumed): $402,500/system, $402,200 total

OPERATING COSTS

- $3,330/location /year operations and maintenance

STRATEGIES ADDRESSED

■ **Traffic Management**

■ **Incident & Emergency Management**

■ **Road Weather Management**

☐ Public Transportation

☐ Work Zone Management

RELATED INITIATIVES

- ITD Advanced Transportation Management System
- Roadside Traveler Information
- Smart Work Zones
- Active Traffic Management

ANTICIPATED BENEFITS

- Reduces crashes by informing drivers or hazardous roadway conditions such as water over the roadway.
- Supports alternative route decisions.
- Grip factors provided by weather stations can link to variable message signs to alert drivers.
- Weather stations can collect, monitor, and communicate real-time weather information (pertaining to temperature, wind, fog, precipitation, water depth, and pavement friction.

REGIONAL COORDINATION AND COLLABORATION

- Update operating procedures to support decisions and configure pre-approved messages.

PHASING OPPORTUNITIES

PHASE 1: "Quick start" opportunity to address I-184 flooding and icing in the near term.

PHASE 2: Expand dynamic roadway warning systems to other regional locations if identified to be beneficial.

Traffic Signal Management and Operations

DESCRIPTION

This tactic uses Automated Traffic Signal Performance Measures (ATSPMs) combined with incident detour plans to enable traffic signal operating agencies to proactively respond to changing traffic conditions. ATSPMs provide detailed information about the effectiveness of traffic signal operations and enables traffic signal operators to adjust signal timings to best match the traffic conditions. Ultimately, this tactic improves the safety and reliability of arterial traffic diverting around incidents on the Interstate corridors.

This tactic can use a combination of data from detectors at the traffic signal and third party data from connected vehicles. This tactic is relatively inexpensive because the region already has communications to the traffic signals and detection that could be used to produce the ATSPMs.

Although the traffic signal management and operations tactic has a low benefit-cost ratio due to the infrequence of events or incidents, the overall system provides information useful during normal operating conditions that enhances the overall benefit. It can enhance the capacity and reliability of the corridor during events or incidents.

BENEFIT-COST = 0.68 TO 1

LEAD AGENCIES
- Idaho Transportation Department (for owned/operated signals)
- Ada County Highway District (for owned/operated signals)
- City of Nampa (for owned/operated signals)

COMPONENTS

- **Region-Wide Traffic Signal Management** for prioritizing certain traffic flow around high-incident locations during peak hours or severe weather events that could reduce incident response times.

- **Vehicle Detection** may require additional detection at traffic signals.

- **Connected Vehicle Data** requires additional ongoing fees to provide the data.

TIMEFRAME

NEAR TERM:
- Agreements *(Year 1)*
- Data Access and Integration *(Years 2–3)*

PERFORMANCE COMPARED TO THE PROJECT GOALS

GOAL 1: SAFETY

FAIR/POOR

GOAL 2: CAPACITY & RELIABILITY

GOOD

GOAL 3: INTEGRATED TRANSPORTATION SYSTEM

GOOD/FAIR

GRANT FUNDING OPPORTUNITIES

- Advanced Transportation Technologies and Innovative Mobility Deployment Program
- National Highway Performance Program
- Congestion Relief Program
- Nationally Significant Freight and Highway Projects Program
- Strengthening Mobility and Revolutionizing Transportation
- State of Good Repair

CAPITAL COSTS

- Traffic Signal Management Equipment (3 locations assumed): $230,000 per site, $690,000 total

OPERATING COSTS

- $1,000/year per signal maintenance

STRATEGIES ADDRESSED

- ☑ **Traffic Management**
- ☑ **Incident & Emergency Management**
- ☐ Road Weather Management
- ☑ **Public Transportation**
- ☐ Work Zone Management

RELATED INITIATIVES

- ITD Statewide Traffic Management System Software Replacement
- ITD Advanced Transportation Management System
- City of Nampa Traffic Management Center
- Smart Work Zones

ANTICIPATED BENEFITS

- Informs the traffic signal operators of the effectiveness of signal timings. With this information, the Agency can change signal timings to best match the condition and reduce traffic signal delay and improve safety.
- Helps manage congestion during planned events or significant incidents.
- Reduces delays on parallel arterials due to lane-blocking incidents on the Interstate.

REGIONAL COORDINATION AND COLLABORATION

- Integrate detection systems into backend software.
- Create operating procedures to outline circumstances, routes, and timing that traffic signal synchronization would be used (events, detours, etc.).
- Train traffic signal engineering staff.

PHASING OPPORTUNITIES

PHASE 1: Pilot deployment can focus on a specific corridor.

PHASE 2: Expand traffic signal management and operations. Train traffic signal engineering staff and signal timing implementation procedures for real-time responses.

On-Ramp Configuration and Auxiliary Lanes

DESCRIPTION

This tactic aims to improve corridor efficiency regarding operations and safety through ramp and auxiliary lanes re-configurations. Improvements involve auxiliary lanes and new shoulders. Interchange Modification Reports will be completed for both Meridian Road and Eagle Road Interchanges.

Due to engineering requirements and capital improvements, this tactic is viewed as medium- to long-term implementation.

LEAD AGENCY

- Idaho Transportation Department

PARTICIPATING AGENCIES:

- Ada County Highway District
- City of Nampa
- City of Caldwell
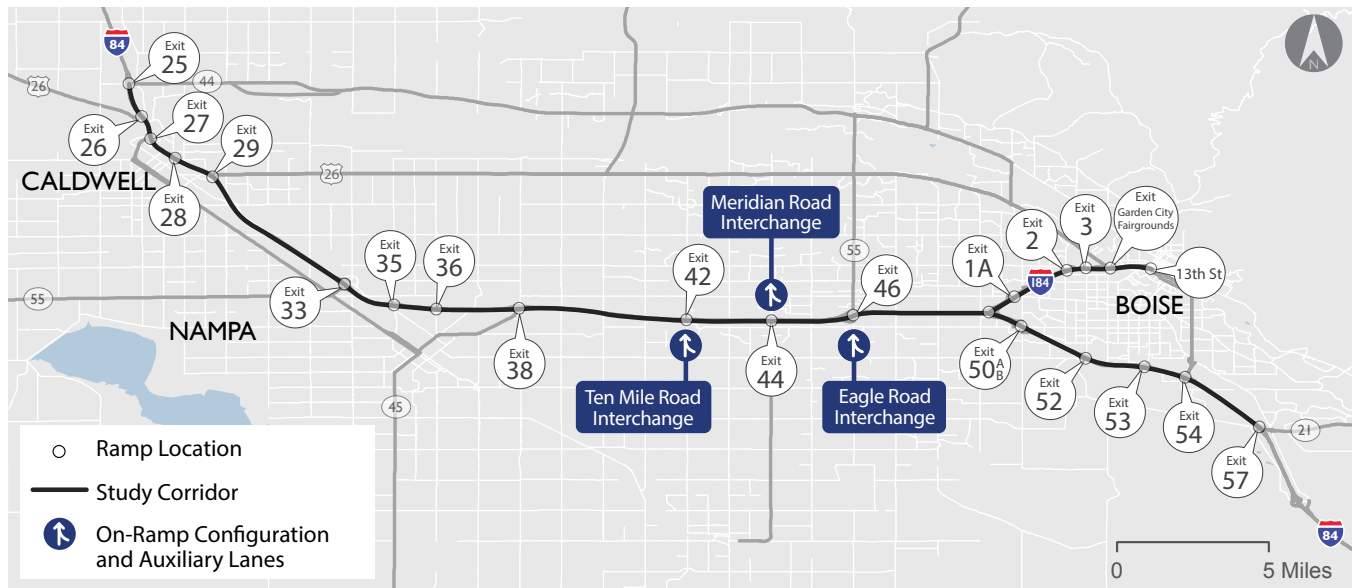
COMPONENTS

- **On-Ramp Configuration and Auxiliary Lanes** construction at three interchanges:
  - › Ten Mile Road Interchange (Exit 42)
  - › Meridian Road Interchange (Exit 44)
  - › Eagle Road Interchange (Exit 46)

TIMEFRAME

NEAR TERM:

- Engineering Design *(Years 1–2)*

PERFORMANCE COMPARED TO THE PROJECT GOALS

GOAL 1: SAFETY

GOAL 2: CAPACITY & RELIABILITY

GOAL 3: INTEGRATED TRANSPORTATION SYSTEM

FAIR/POOR

FAIR

POOR

GRANT FUNDING OPPORTUNITIES

- Congestion Relief Program
- Nationally Significant Freight and Highway Projects Program
- State of Good Repair

CAPITAL COSTS

- Ramp re-configuration (3 interchange, may include edgeline markings, or auxiliary lanes or new shoulders): TBD with the ITD auxiliary lane project

STRATEGIES ADDRESSED

- ☒ **Traffic Management**
- ☐ Incident & Emergency Management
- ☐ Road Weather Management
- ☐ Public Transportation
- ☐ Work Zone Management

RELATED INITIATIVES

- Ramp Metering
- Shoulder Running Transit

ANTICIPATED BENEFITS

- Reduces number of crashes.
- Improves merging and weaving movements.

REGIONAL COORDINATION AND COLLABORATION

- Develop engineering plans and designs (for edgeline markings, or improved lighting conditions).

PHASING OPPORTUNITIES

PHASE 1: Prioritize locations with relatively low engineering or cost barriers to implementation to serve as a proof-of-concept.

PHASE 2: Expand on-ramp configuration and auxiliary lanes to rest of locations.

Corridor Operations Team

DESCRIPTION

The Corridor Operations Team is a group of multi-agency representatives meeting regularly to identify issues and improve corridor management and operations techniques through coordination, communication, and cooperation. The Corridor Operations Team will improve the overall day-to-day effectiveness of coordinated incident response through multi-jurisdiction collaboration of traffic management and emergency response pre- and post-incident and event coordination. This group can also be used for continual improvements in partnerships and implementation of tactics.

The Corridor Operations Team activities may include debriefs of major incident responses, pre-construction coordination, major event planning, ITS project implementation, training, operating procedures update, etc. This tactic is highly beneficial to corridor operations and requires a small operating budget and staff support. It addresses multiple strategies and performance against project goals.

LEAD AGENCIES

- Idaho Transportation Department as the facility owner
- COMPASS as the regional planning organization

PARTICIPATING AGENCIES:

- Idaho Transportation Department (HQ and District 3)
- State Comm
- Idaho State Patrol
- Ada County Highway District
- Ada County Sheriff
- Canyon County Sheriff
- City of Nampa
- Valley Regional Transit
- COMPASS
- Representatives of Private Tow Operators

CORRIDOR OPERATIONS TEAM

TIMEFRAME

NEAR TERM:

- Agreements *(Years 1–2)*

COMPONENTS

- Organize and facilitate a Corridor Operations Team to lead the planning and activities for ongoing corridor management, operations, and incident response.

PERFORMANCE COMPARED TO THE PROJECT GOALS

GOAL 1: SAFETY

GOAL 2: CAPACITY & RELIABILITY

GOAL 3: INTEGRATED TRANSPORTATION SYSTEM

FAIR

FAIR/GOOD

FAIR/POOR

GRANT FUNDING OPPORTUNITIES

- Congestion Relief Program
- Highway Safety Improvement Program
- Nationally Significant Freight and Highway Projects Program

CAPITAL COSTS

- 0.25 FTE for lead agency Corridor Operations Team coordinator
- 0.1 FTE for other Corridor Operations Team Participants

OPERATING COSTS

- Participating staff time only – est. 0.25 FTE or less per year

STRATEGIES ADDRESSED

- ■ **Traffic Management**
- ■ **Incident & Emergency Management**
- ■ **Road Weather Management**
- ☐ Public Transportation
- ■ **Work Zone Management**

RELATED INITIATIVES

- Treasure Valley Regional Operations Work Group (ROWG)
- Enhanced Detour Plans
- Interoperable Communications Procedures/Operations Playbook (SOP)
- Smart Work Zones
- Event Management

ANTICIPATED BENEFITS

- Enhances operational partnerships and agreements.
- Supports implementation of technological/ infrastructure, training, and performance monitoring improvements.

REGIONAL COORDINATION AND COLLABORATION

- Develop an interagency agreement that defines team objectives, daily and special operations, etc.
- Update corridor-wide operating procedures to responsibilities of corridor operations team.

PHASING OPPORTUNITIES

PHASE 1: Pilot Corridor Operations Team before establishing as a full-time committee.

Enhanced Detour Plans

DESCRIPTION

The Enhanced Detour Plans tactic establishes pre-determined detour routes for vehicles and freight in the case of an emergency to lessen the impacts of congestion or road closures (due to weather or events). The region's stakeholders have developed I-84 detour plans, but this tactic focuses on enhancements that may include integration with traffic management systems, automation, performance measurement, or locations where network or significant traffic changes have occurred to improve its effectiveness.

Updates can be planned mid-long term since existing detour plans have been updated fairly recently. This tactic is relatively low cost and yields benefits in multiple strategies and goals. Enhanced Detour Plans can be supported by other tactics and temporary equipment.

LEAD AGENCIES

- COMPASS as the lead in maintaining and updating detour plan
- Idaho Transportation Department as oversight of implementation and training activities

PARTICIPATING AGENCIES:

- State Comm
- Ada County Highway District
- City of Nampa
- Idaho State Police
- Local Law Enforcement
- City of Caldwell
- City of Meridian
- City of Boise
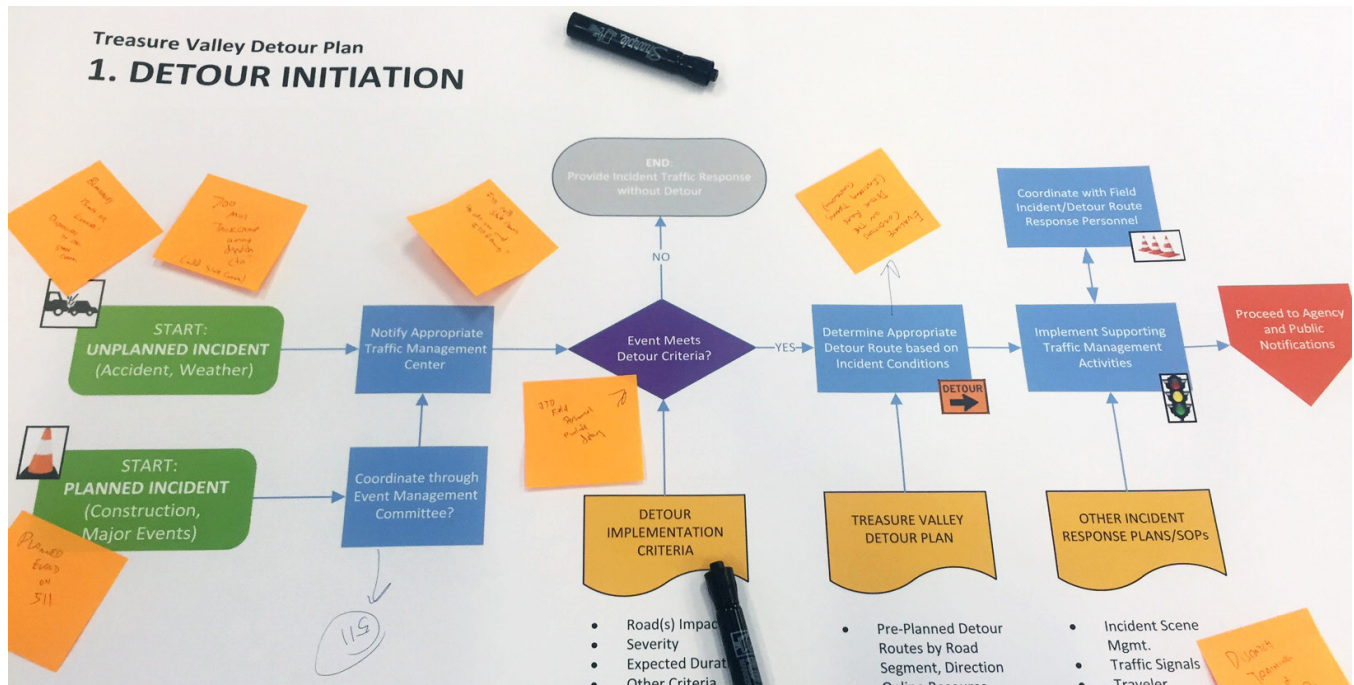
COMPONENTS

- Enhanced Detour Plan for managing incidents and emergencies implemented corridor wide.
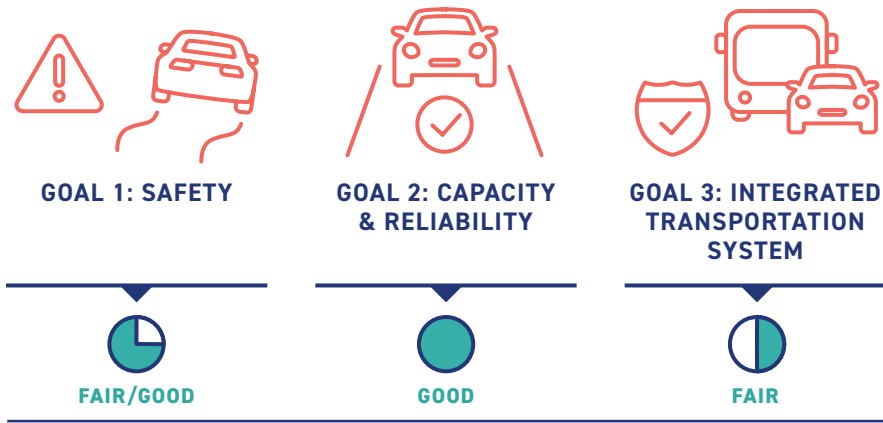
TIMEFRAME

NEAR TERM:

- Revise Plans *(Years 1–2)*

PERFORMANCE COMPARED TO THE PROJECT GOALS

GOAL 1: SAFETY

GOAL 2: CAPACITY & RELIABILITY

GOAL 3: INTEGRATED TRANSPORTATION SYSTEM

FAIR/GOOD

GOOD

FAIR

GRANT FUNDING OPPORTUNITIES

- Congestion Relief Program
- Nationally Significant Freight and Highway Projects Program

CAPITAL COSTS
- Detour Plan Update: $75,000 per update

STRATEGIES ADDRESSED

☐ Traffic Management

☐ **Incident & Emergency Management**

☐ **Road Weather Management**

☐ Public Transportation

☐ **Work Zone Management**

RELATED INITIATIVES

- Treasure Valley Regional Operations Work Group (ROWG)
- Enhanced Detour Plans
- Interoperable Communications Procedures/Operations Playbook (SOP)
- Smart Work Zones
- Event Management

ANTICIPATED BENEFITS

- Establishes a standard procedure and guidelines for planning, designing, and implementing detour plans.
- Pre-determines the best alternative routes to reduce traffic disruption and shorten the period of incident plan management.
- Reduces traffic interruptions in travel and freight movement.
- Enables an efficient and effective response when dispatched to support any jurisdiction.

REGIONAL COORDINATION AND COLLABORATION

- Designate a lead agency who will lead operational implementation of detour plans, in collaboration with COMPASS and other participating agencies.
- Designate a committee to oversee plan implementation and training.

Interoperable Communication Procedures/Operations Playbook (SOP)

DESCRIPTION

This tactic clarifies roles/responsibilities, decision making, and response actions to improve efficiency of operations under common Interstate and incident management scenarios.

It would be beneficial to prioritize this tactic to include all participating agencies and their assets in corridor wide operations. This tactic would support broader interagency collaboration and coordination to improve overall operations.

COMPONENTS

• Interoperable Communication Procedures/ Operations Playbook to establish pre-approved guidelines for participating agencies.

LEAD AGENCY

• Idaho Transportation Department

PARTICIPATING AGENCIES:

• State Comm
• Ada County Highway District
• City of Nampa
• Idaho State Patrol
• Local Law Enforcement

TIMEFRAME

NEAR TERM:

• Revise Plans *(Years 1–2)*

PERFORMANCE COMPARED TO THE PROJECT GOALS

GOAL 1: SAFETY

GOAL 2: CAPACITY & RELIABILITY

GOAL 3: INTEGRATED TRANSPORTATION SYSTEM

FAIR

FAIR/GOOD

GOOD

GRANT FUNDING OPPORTUNITIES

- Congestion Relief Program
- Nationally Significant Freight and Highway Projects Program

CAPITAL COSTS

- Interoperable Communication Procedures/ Operations Playbook Update: $75,000 per update

OPERATING COSTS

- Staff costs for periodic review and updates

STRATEGIES ADDRESSED

- ☒ **Traffic Management**
- ☒ **Incident & Emergency Management**
- ☐ Road Weather Management
- ☐ Public Transportation
- ☐ Work Zone Management

RELATED INITIATIVES

- Regional Video & Data Sharing
- Roadside Traveler Information (DMS)
- Dynamic Roadway Warning
- Traffic Signal Management and Operations
- Corridor Operations Team
- Enhanced Detour Plans
- Roadway Service Patrols
- Traffic Incident Management Laws
- Regional Performance Management Systems
- Smart Work Zones
- Event Management
- Shoulder Running Transit
- Active Traffic Management

ANTICIPATED BENEFITS

- Reduces traffic interruptions in travel and freight movement.
- Enables an efficient and effective response when dispatched to support any jurisdiction.

REGIONAL COORDINATION AND COLLABORATION

- Form a committee to lead SOP updates with collaboration of participating agencies.

Roadway Service Patrols

DESCRIPTION

This tactic serves stranded vehicles and clears minor incidents and hazardous debris. Vehicles would be outfitted with onboard DMS signs and push bumpers for emergency and non-emergency events.

Roadway Service Patrols are a highly feasible addition and "early win" to many aspects of incident management by responding to minor incidents and assisting larger events.

LEAD AGENCY

- Idaho Transportation Department

COMPONENTS

- Roadway Service Patrols full time employees addressing minor incidents and obstructions on highway that would operate corridor wide.

- Roadway Service Patrol vehicles outfitted (with onboard DMS signs and push bumpers) and pre-positioned at high-incident locations during peak hours or severe weather events to reduce incident response times.

TIMEFRAME

NEAR TERM:

- Outfitted Vehicles and Equipment *(Years 1–3)*

PERFORMANCE COMPARED TO THE PROJECT GOALS

GOAL 1: SAFETY

GOAL 2: CAPACITY & RELIABILITY

GOAL 3: INTEGRATED TRANSPORTATION SYSTEM

GOOD

FAIR/GOOD

FAIR

GRANT FUNDING OPPORTUNITIES

- Highway Safety Improvement Program
- Nationally Significant Freight and Highway Projects Program

CAPITAL COSTS

- Roadway Service Patrol vehicle: $100,000 per outfitted vehicle
- 4-6 FTEs for Help Patrol Van Patrols and Operations and Maintenance

STRATEGIES ADDRESSED

- ☐ Traffic Management
- ☒ **Incident & Emergency Management**
- ☒ **Road Weather Management**
- ☐ Public Transportation
- ☐ Work Zone Management

RELATED INITIATIVES

- Enhanced Detour Plans
- Interoperable Communications Procedures/Operations Playbook (SOP)
- Traffic Incident Management Laws
- Smart Work Zones
- Event Management

ANTICIPATED BENEFITS

- Reduces interstate bottlenecks and delays due to blocked lanes and roadside incidents.
- Reduces potential for crashes and serious injuries caused by unexpected debris, lane closures, or slowed/stopped traffic.
- Support for law enforcement incident response, detour implementation, and event management.
- Increased public services and safety for disabled motorists.

REGIONAL COORDINATION AND COLLABORATION

- Hire and train new incident response operators.
- Procure and operate additional incident response vehicles.
- Update corridor-wide operating procedures to responsibilities of roadway service patrols.

Traffic Incident Management Program

DESCRIPTION

This tactic includes policies, programs, and training that support coordinated response to traffic incidents in the I-84 corridor, generally known as Traffic Incident Management (TIM) programs. The National Traffic Incident Management Coalition has established a National Unified Goal for TIM programs, including guidelines for agency coordination, policies, performance measures, and awareness. Enforceable quick clearance and move-over laws to removal disabled vehicles from travel lanes have proven effective nationally to speed incident clearance times and reduce risks of secondary crashes. There is also a need for sustained traffic incident response training programs to maintain safety and effectiveness of the significant number of transportation personnel, first responders, towing companies, HAZMAT crews, and others participating in TIM activities across the Treasure Valley.

LEAD AGENCY

- Idaho Transportation Department

PARTICIPATING AGENCIES:

- State Communications
- Idaho State Patrol
- Ada County Highway District
- City of Nampa
- Other law enforcement agencies

COMPONENTS

- Review of Idaho TIM policies and programs, with the goal of continual improvement of operational response capabilities and effectiveness within the National Unified Goal framework.

- Sustained regional TIM training program, including full-time instructors to provide ongoing training and public awareness activities.

- Establish and monitor performance targets and clearance goals to measure effectiveness of TIM programs.

- Perform incident debriefs through Corridor Operations Team.

- Review Traffic Incident Management policies and laws to evaluate effectiveness and potential changes.

- Use roadside signage and awareness campaigns to notify public of quick clearance and move-over laws.

- Coordinate with development of complementary regional response plans and SOPs, such as traveler information and detour planning.

TIMEFRAME

NEAR TERM:

- TIM Operational Effectiveness Review and Action Plan *(Years 1–2)*

PERFORMANCE COMPARED TO THE PROJECT GOALS

GOAL 1: SAFETY

FAIR/POOR

GOAL 2: CAPACITY & RELIABILITY

GOOD/FAIR

GOAL 3: INTEGRATED TRANSPORTATION SYSTEM

GOOD

GRANT FUNDING OPPORTUNITIES

- Congestion Relief Program
- Highway Safety Improvement Program
- Nationally Significant Freight and Highway Projects Program

CAPITAL COSTS

- TIM Operational Effectiveness Review: $80,000
- Initial training/ public awareness campaign: $200,000
- Static roadside signage: $30,000

OPERATING COSTS

- 2.0 FTE for ongoing training and awareness activities
- Additional TIM training, coordination, and awareness programs budget: $200,00/year

STRATEGIES ADDRESSED

- ☐ Traffic Management
- ☒ **Incident & Emergency Management**
- ☐ Road Weather Management
- ☐ Public Transportation
- ☐ Work Zone Management

RELATED INITIATIVES

- Corridor Operations Team
- Interoperable Communications Procedures/Operations Playbook (SOP)
- Roadway Service Patrols
- Shoulder Running Transit

ANTICIPATED BENEFITS

- Reduces incident duration, traffic delays, and bottlenecks caused by operable vehicles blocking interstate travel lanes.
- Improves safety for persons involved in traffic incidents due to safe relocation from travel lanes.
- Reduces secondary incidents and safety hazards due to unexpected debris, lane closures, or slowed/ stopped traffic.

REGIONAL COORDINATION AND COLLABORATION

- Build partnership among ITD and other transportation/first responders to support TIM program evaluation and strengthening.

PHASING OPPORTUNITIES

PHASE 1: Complete TIM Effectiveness Review and implement early action recommendations

PHASE 2: Build agency momentum and support for full funding and implementation of TIM programs in the mid- to long-term
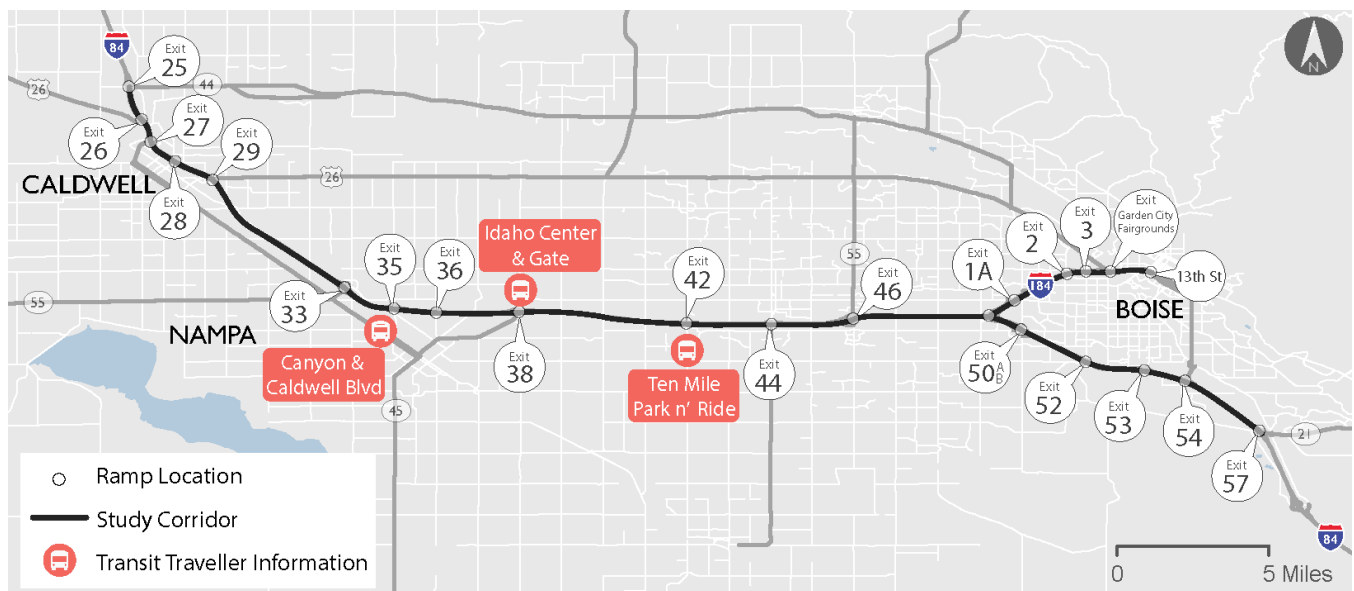
Real-Time Transit Information

DESCRIPTION

The real-time transit information tactic informs transit riders via information kiosks or signs (or through third party services as a reduced expense alternative) of trip updates and service alerts to assist trip planning and enhance customer experience and transit reliability. This tactic would serve Valley Regional Transit's (VRT) interregional routes.

Public information would be automated using transit data provided by existing real-time GTFS data feeds generated by VRT. Information can pertain to bus arrival time, bus location, expected travel time, and other potential information related to corridor conditions and incidents.

BENEFIT-COST = 1.21 TO 1

LEAD AGENCY

- Valley Regional Transit

Legend:
- ○ Ramp Location
- — Study Corridor
- 🚌 Transit Traveller Information

COMPONENTS

- **Real-Time Transit Information** kiosks or signs at initial locations:
  - › Ten Mile Park n' Ride
  - › Canyon/Caldwell VRT Transit Stop

  - › North Idaho Center Boulevard/ East Gate Boulevard VRT Transit Stop

- **Transit Traveler Information through Third-Party Services** with Valley Regional Transit provided data.

TIMEFRAME

NEAR TERM:

- Systems and Equipment *(Years 1–3)*

PERFORMANCE COMPARED TO THE PROJECT GOALS

GOAL 1: SAFETY

GOAL 2: CAPACITY & RELIABILITY

GOAL 3: INTEGRATED TRANSPORTATION SYSTEM

POOR

GOOD

GOOD/FAIR

GRANT FUNDING OPPORTUNITIES

- Advanced Transportation Technologies and Innovative Mobility Deployment Program
- National Highway Performance Program
- Surface Transportation Block Grant Program
- Nationally Significant Freight and Highway Projects Program
- Strengthening Mobility and Revolutionizing Transportation
- State of Good Repair

STRATEGIES ADDRESSED

☐ Traffic Management

☐ Incident & Emergency Management

☐ Road Weather Management

☒ **Public Transportation**

☐ Work Zone Management

RELATED INITIATIVES

- Valley Regional Transit System-Wide Customer Information Strategy
- Valley Regional Transit third-party services
- Regional Video & Data Sharing

CAPITAL COSTS

- Trip Planning Software and Equipment (3 assumed): $690,000 per location, $2,070,000 total

OPERATING COSTS

- $2,000 per location

ANTICIPATED BENEFITS

- Provides information to riders on real-time bus location, arrival time, and other operational information.

REGIONAL COORDINATION AND COLLABORATION

- Develop engineering plans and designs for transit information equipment and supporting infrastructure.

Regional Performance Management System

DESCRIPTION

This tactic implements a regional performance management system such as the Regional Integrated Transportation Information System (RITIS) to provide data-driven insights about the corridor operations. The system uses data from a variety of sources including the ITS infrastructure on the corridor as well as other available data such as weather and more. Ultimately, the system enables the region to monitor the corridor performance measures defined to help achieve the corridor operating goals and objectives.

This tactic is largely focused on data systems integration and could be implemented near term. The regional performance management system supports all the regional goals. It can be used to demonstrate the contributions of TSMO technologies, programs, and future improvements to regional transportation goals.

LEAD AGENCIES

- COMPASS to archive and analyze regional transportation data and combining regional transportation performance measures
- Idaho Transportation Department

PARTICIPATING AGENCIES:

- Ada County Highway District
- City of Nampa
- City of Caldwell
- Valley Regional Transit

Photo Credit: ACHD

COMPONENTS

- Regional Performance Management System Software across the entire Treasure Valley, Ada and Canyon Counties.

TIMEFRAME

NEAR TERM:

- Agreements *(Years 1–2)*
- Data Integration *(Years 3–4)*

PERFORMANCE COMPARED TO THE PROJECT GOALS

GOAL 1: SAFETY

GOAL 2: CAPACITY & RELIABILITY

GOAL 3: INTEGRATED TRANSPORTATION SYSTEM

GOOD/FAIR

GOOD/FAIR

GOOD

GRANT FUNDING OPPORTUNITIES

- Advanced Transportation Technologies and Innovative Mobility Deployment Program
- National Highway Performance Program
- Surface Transportation Block Grant Program
- Nationally Significant Freight and Highway Projects Program
- Strengthening Mobility and Revolutionizing Transportation

CAPITAL COSTS

- Central data management system upgrades, ITS systems data integration, dashboard/analysis tools, and software licensing: Estimated $150,000-$250,000

STRATEGIES ADDRESSED

- ☐ **Traffic Management**
- ☐ Incident & Emergency Management
- ☐ Road Weather Management
- ☐ Public Transportation
- ☐ Work Zone Management

RELATED INITIATIVES

- ITD Statewide Traffic Management System Software Replacement
- COMPASS Regional Transportation Data Repository
- Regional Video & Data Sharing
- Interoperable Communications Procedures/Operations Playbook (SOP)

ANTICIPATED BENEFITS

- Data-driven insights into regional operations issues, including non-recurring events.
- Data repository and analysis tools to help measure the efficacy of operational strategies implemented.
- Supports regional transportation performance measurement, for metrics that rely on operations data and/or provide insight into operations measures like travel time reliability.

REGIONAL COORDINATION AND COLLABORATION

- Develop a data sharing agreement.
- Update operating procedures to include data sharing, device management, and performance measurement.
- Integrate data into a backend software.

PHASING OPPORTUNITIES

System can be implemented near term or on an ongoing incremental basis.

Smart Work Zones

DESCRIPTION

The Smart Work Zone tactics improve safety for all motorists and construction workers by providing real-time information and warnings can alert approaching traffic. Automated Work Zone Information Systems would alert motorists before entering work zones to support alternative route decisions.

Smart work zone technologies typically focus on (a) improving traveler information and (b) warning about queuing ahead. The methods to communicate this information to travelers typically includes:

- Portable variable message signs
- Dynamic message signs
- Variable speed signs
- Connected vehicle technologies
- Smart phone applications

This tactic provides travel times, delays, and current speeds in an automated fashion, resulting in relatively low operating costs. Safety benefits accrue for travelers, construction zone workers, law enforcement personnel, and incident first responders due to increased driver compliance with regulations and speeds, leading to fewer work zone crashes.

BENEFIT-COST = 2.53 TO 1

LEAD AGENCY
- Idaho Transportation Department

PARTICIPATING AGENCIES:
- Partnered Construction Contractors

TIMEFRAME

NEAR TERM:
- Pilot and Equipment *(Years 1–3)*

COMPONENTS

- Smart Work Zones supported by temporary Automated Work Zone Information Systems all along I-84 and I-184.

- Queue warning systems alerting drivers of slowed traffic ahead. Information can be delivered via electronic roadside signs or using connected vehicle communications

- Variable speed signs communicating the reduced speed in the work zone

- Video analytics, which could come from cameras on-board vehicles, to identify the location of work zone equipment and make available for traveler information systems and connected vehicles

- Work zone data exchange (WZDx)[1], which is a national standard that aims to make work zone data available for third party use in a nationwide standard format.

- Speed detection systems that determine current speed and length of queue to share with the public via traveler information systems.

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1   https://www.transportation.gov/av/data/wzdx, accessed June 5, 2022

PERFORMANCE COMPARED TO THE PROJECT GOALS

GOAL 1: SAFETY	GOAL 2: CAPACITY & RELIABILITY	GOAL 3: INTEGRATED TRANSPORTATION SYSTEM
FAIR	FAIR/POOR	FAIR/POOR

GRANT FUNDING OPPORTUNITIES

- National Highway Performance Program
- Surface Transportation Block Grant Program
- Congestion Relief Program
- Highway Safety Improvement Program
- Nationally Significant Freight and Highway Projects Program
- Strengthening Mobility and Revolutionizing Transportation

CAPITAL COSTS
- Deployment: $310,500 per work zone event

OPERATING COSTS
- $3,360/location /year operations and maintenance

STRATEGIES ADDRESSED

- ☐ Traffic Management
- ☐ Incident & Emergency Management
- ☐ Road Weather Management
- ☐ Public Transportation
- ☒ **Work Zone Management**

RELATED INITIATIVES

- ITD Advanced Transportation Management System
- Regional Video & Data Sharing
- Roadside Traveler Information (DMS)
- Corridor Operations Team
- Enhanced Detour Plans
- Interoperable Communications Procedures/Operations Playbook (SOP)
- Roadway Service Patrols
- Active Traffic Management

ANTICIPATED BENEFITS

- Provides work zone information to drivers so they can divert, merge into a proper lane, or adjust speeds to match work zone conditions.
- Improves safety for travelers and construction workers.

REGIONAL COORDINATION AND COLLABORATION

- Develop standard operating procedures utilizing existing assets and potentially other tactics.
- For each work zone event, develop a traffic operations and management agreement with participating agencies and construction contractor.

PHASING OPPORTUNITIES

PHASE 1: Implement Pilot Smart Work Zones supported by equipment from other divisions and tactics. Deploy Smart Work Zones with a concept of operations per work zone.

PHASE 2: Potentially implement additional smart work zone tactics in future pilots as a proof of concept.

Event Management

DESCRIPTION

This tactic aims to improve traffic management and maintain reliability during large events using a pre-established plan. Event management is a proactive and coordinated process involving transportation, law enforcement, and event venue agencies. These partners work together to pre-plan and execute programs to address the unique travel patterns and congestion that can arise with major events like sports, festivals, and concerts.

Event management can be supported by portable equipment (e.g. message signs) or permanent equipment (e.g. traffic signal systems) at areas with frequent events to smooth traffic flow.

The B/C ratio of this tactic is low due to the infrequency of events. This would promote interagency coordination, event management coordination, and event plan preparation.

COMPONENTS

- Event Transportation Management Systems for critical event locations and additional locations, along with connecting interstate roadways and ramps, that may also justify a pre-planned event management response:
  - › Ford Idaho Center in Nampa
  - › Albertsons Stadium in Boise

PARTICIPATING AGENCIES:

- City of Nampa
- Idaho Transportation Department
- Ada County Highway District
- Ford Idaho Center Management
- Law Enforcement
- Venue Operators

TIMEFRAME

NEAR TERM:

- Agreements and Plans *(Years 1– 3)*

PERFORMANCE COMPARED TO THE PROJECT GOALS

GOAL 1: SAFETY

GOAL 2: CAPACITY & RELIABILITY

GOAL 3: INTEGRATED TRANSPORTATION SYSTEM

POOR

GOOD/FAIR

FAIR/POOR

GRANT FUNDING OPPORTUNITIES

- Congestion Relief Program
- Nationally Significant Freight and Highway Projects Program

CAPITAL COSTS

- Development of Event Management: $310,500 per work zone event

STRATEGIES ADDRESSED

- ☑ **Traffic Management**
- ☐ Incident & Emergency Management
- ☐ Road Weather Management
- ☐ Public Transportation
- ☐ Work Zone Management

RELATED INITIATIVES

- Corridor Operations Team Tactic
- Enhanced Detour Plans Tactic
- Interoperable Communications Procedures/ Operations Playbook (SOP) Tactic
- Roadway Service Patrols Tactic

ANTICIPATED BENEFITS

- Formulates specific response plans for major recurring event and construction scenarios in the Treasure Valley
- Improved coordination across multiple agencies involved in event traffic management
- Leverages ITS assets and personnel for a new use case, beyond traditional peak-period commuting and incident scenarios.

REGIONAL COORDINATION AND COLLABORATION

- Corridor Operations Team could oversee the I-84 transportation management response for events.
- Develop standard operating procedures utilizing existing assets and potentially other tactics.
- For each event, develop a traffic operations and management agreement with participating agencies and event vendor.

PHASING OPPORTUNITIES

Event management tactics can be implemented on an ongoing incremental basis or pilot approaches.

Shoulder Running Transit

DESCRIPTION

This tactic aims to improve transit performance under congestion conditions by allowing VRT transit buses to using existing hard shoulders to bypass slowed or stopped traffic on the freeway (e.g., when freeway speeds drop below 35 MPH).

This tactic addresses the travel time reliability challenge of VRT inter-county express routes using the I-84 corridor. Congestion delays significantly effect bus schedules and inconvenience passengers. Shoulder Running Transit provides a travel time advantage that may make express buses a more attractive commuting option compared to driving.

Costs are relatively low where the shoulder is sufficiently wide without needing significant modifications but requires real-time coordination and drivers who are trained to expect bus operations within the shoulder under certain conditions.

Shoulder Running Transit can be integrated with future ramp metering to hold oncoming traffic at ramp meter positions, thereby creating a gap in merging traffic that allows shoulder-running buses to pass.

LEAD AGENCY

• Valley Regional Transit

PARTICIPATING AGENCY:

• Idaho Transportation Department
• COMPASS

TIMEFRAME

NEAR TERM:

• Pilot
  (Years 1–3)

COMPONENTS

• Shoulder Running Transit for Valley Regional Transit Intercounty bus routes (40, 42, 43, and 45) at segments:

  › I-184 from South 13th St in downtown Boise to the "Y" junction with I-84 (Exit 50)

  › I-84 from the "Y" junction (Exit 50) with I-184 to Franklin Road, Caldwell (Exit 29)

  › I-84 from the "Y" junction in the east to Caldwell. This includes the most frequently congested segment of I-84 between Exits 42 and 46, which could be a priority segment for implementation

• Roadside signs to support shoulder running transit and indicate beginning and end of segments.

PERFORMANCE COMPARED TO THE PROJECT GOALS

GOAL 1: SAFETY

GOAL 2: CAPACITY & RELIABILITY

GOAL 3: INTEGRATED TRANSPORTATION SYSTEM

POOR

FAIR

POOR

GRANT FUNDING OPPORTUNITIES

- Congestion Relief Program
- Nationally Significant Freight and Highway Projects Program
- State of Good Repair

CAPITAL COSTS

- Implementation Planning: $100,000
- Operator Training and Public Outreach: $50,000
- Roadside Signage and Striping: $75,000
- Pilot Project Evaluation: $30,000

STRATEGIES ADDRESSED

- ☑ **Traffic Management**
- ☐ Incident & Emergency Management
- ☐ Road Weather Management
- ☑ **Public Transportation**
- ☐ Work Zone Management

RELATED INITIATIVES

- Ramp Metering Tactic
- On-Ramp Configuration and Auxiliary Lanes Tactic
- Interoperable Communications Procedures/Operations Playbook (SOP) Tactic

ANTICIPATED BENEFITS

- Provides competitive travel time advantage for Intercounty transit routes, without significant new investments in roadway infrastructure.
- Use of professional bus drivers simplifies implementation and reduces risk compared to general purpose shoulder running schemes.

REGIONAL COORDINATION AND COLLABORATION

- ITD permission and pre-approved conditions for running transit on shoulders (ex. congested traffic conditions, 35 mph corridor speed, shoulders not in use for incident clearance).
- Implemented on a trial basis before committing to long term implementation.

PHASING OPPORTUNITIES

PHASE 1: Implement and evaluate pilot Shoulder Running Transit with signage, lane striping, and real-time coordination.

PHASE 2: Deploy Shoulder Running Transit at rest of locations.

Active Traffic Management

DESCRIPTION

This tactic improves the efficiency and safety of the transportation system by detecting changing conditions and automatically displaying information including the variable speed limits, queue warning, and dynamic lane control messages. Automation of device operations can be integrated into ITD's future traffic management system.

This tactic has a relatively high cost but can be combined with other tactics for cost savings such as Dynamic Roadway Warning and Roadside Traveler Information. The Active Traffic Management tactic would benefit from a public education campaign before the system is activated. This would provide benefits to regional operations, incident and event management, and work zones management.
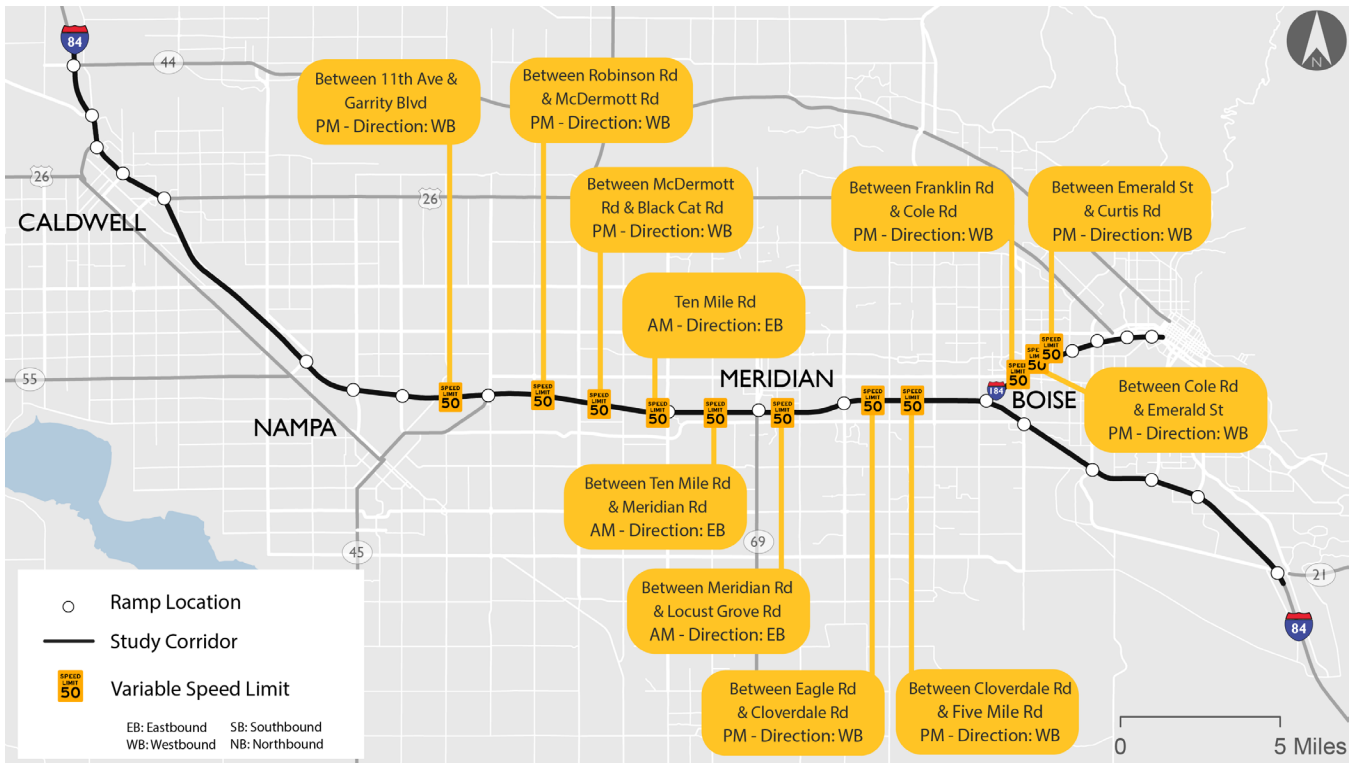
BENEFIT-COST = 0.73 TO 1

LEAD AGENCY

- Idaho Transportation Department

PARTICIPATING AGENCY:

- State Comm
- Ada County Highway District

COMPONENTS

- Active Traffic Management Systems deployed at 11 locations:
  - › Between 11th Avenue and Garrity Blvd exit
  - › Between Robinson Rd overpass and McDermott Rd
  - › Between McDermott Rd and Black Cat Rd overpass
  - › Ten Mile Rd exit
  - › Between Ten Mile Rd exit and Meridian Rd exit
  - › Between Meridian Rd exit and Locust Grove Rd overpass
  - › Between Eagle Rd exit and Cloverdale Rd overpass
  - › Between Cloverdale Rd overpass and Five Mile Rd overpass
  - › Between Franklin Rd exit and Cole Rd overpass
  - › Between Cole Rd overpass and Emerald St overpass
  - › Between Emerald St overpass and Curtis Rd exit
- Central Active Traffic Management Software and Equipment

TIMEFRAME

NEAR TERM:

- Software and Field Equipment *(Years 1–6)*

PERFORMANCE COMPARED TO THE PROJECT GOALS

GOAL 1: SAFETY

FAIR/GOOD

GOAL 2: CAPACITY & RELIABILITY

FAIR/POOR

GOAL 3: INTEGRATED TRANSPORTATION SYSTEM

POOR

GRANT FUNDING OPPORTUNITIES

- Advanced Transportation Technologies and Innovative Mobility Deployment Program
- National Highway Performance Program
- Surface Transportation Block Grant Program
- Congestion Relief Program
- Highway Safety Improvement Program
- Nationally Significant Freight and Highway Projects Program
- Strengthening Mobility and Revolutionizing Transportation

CAPITAL COSTS

- Central Active Management Software and Equipment: $1,667,500
- Systems including overhead and roadside locations (11 locations total): $14,679,750 total

OPERATING COSTS

- $81,250/year for Central Active Traffic Management
- $310,000/year for Field Equipment

STRATEGIES ADDRESSED

- ■ **Traffic Management**
- ■ **Incident & Emergency Management**
- ■ **Road Weather Management**
- ☐ Public Transportation
- ■ **Work Zone Management**

RELATED INITIATIVES

- ITD Advanced Transportation Management System
- Regional Video & Data Sharing
- Roadside Traveler Information (DMS)
- Dynamic Roadway Warning
- Interoperable Communications Procedures/Operations Playbook (SOP)
- Event Management
- Smart Work Zones

ANTICIPATED BENEFITS

- Provides real-time information to drivers for advisory speeds, queue warnings, and lane closures.
- Reduces rear-end crashes approaching congested areas caused by both recurring and non-recurring events.

REGIONAL COORDINATION AND COLLABORATION

- Share status of variable speed and DMS messages with partner agencies.
- Determine agency responsibilities per Active Traffic Management tactic (for variable speed limits, queue warning, and dynamic lane control).
- Create operating procedures of Active Traffic Management systems to direct operations during peak hour or under certain circumstances (incidents, weather events, planned events, work zones).

PHASING OPPORTUNITIES

Active traffic management tactics can be implemented long term, on an ongoing incremental basis, or pilot basis.