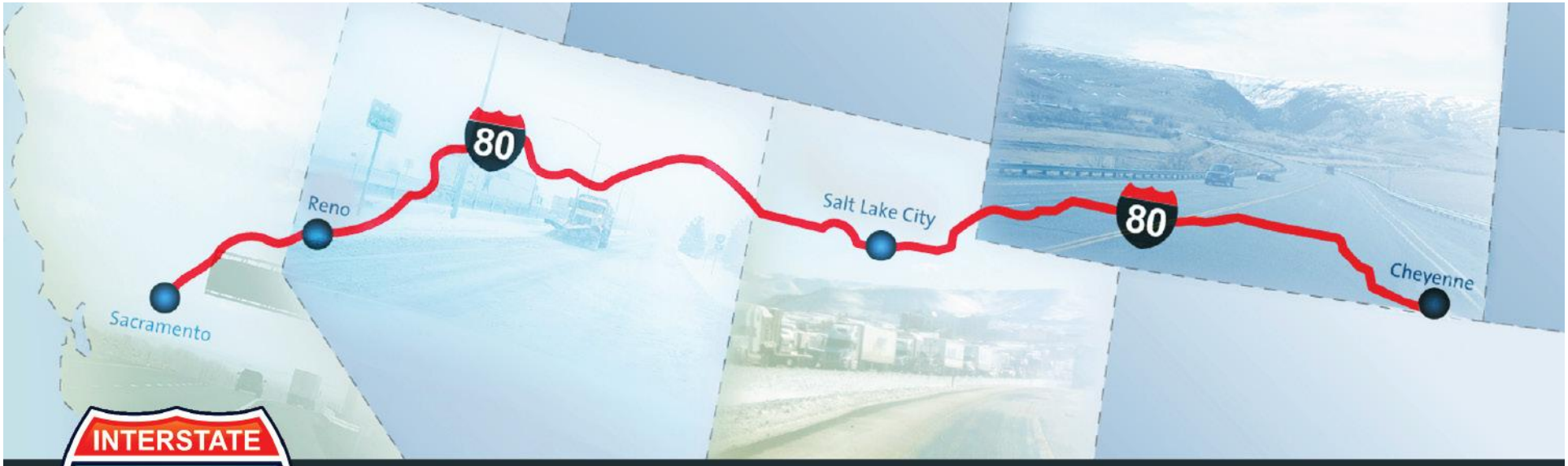


INTERSTATE 80

WINTER OPERATIONS COALITION

Fall 2012 Workshop

SEPTEMBER 25-26, 2012 – RENO, NEVADA

PREPARED BY

Kimley-Horn and Associates, Inc.

Welcome and Introductions

I-80 Coalition Partners:

- Caltrans
- Nevada DOT
- Utah DOT
- Wyoming DOT
- Nebraska DOR

Additional Attendees:

- Wal-Mart
- NWS

Featured Speakers:

- NHP
- NDOT's 511 System
- Caltrans Get Across I-80
- I-80 CSMP

Team:

- Kimley-Horn
- NarwhalMet

Format of Workshop

DAY 1

- Welcome and Introductions
- Workshop Objectives
- State DOT Presentations
- RWIS Strategic Plan
- Incident Management
- Freight

DAY 2

- Traveler Information Updates
- Training/Information Sharing
- Organizing for Success – Moving the Coalition Forward

Workshop Objectives

- Build on the momentum!
- Advance agency knowledge of activities of interest
- Corridor-wide weather data needs and recommendations
- Sharing innovative projects/programs
- Collaboration – training, research, operations
- Coalition championing moving forward

State DOT Presentations

- Nebraska
- Wyoming
- Utah

– BREAK –

State DOT Presentations

- Nevada
- California
- Open Discussion

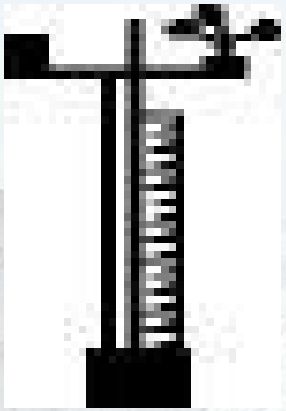
– LUNCH –

RWIS Strategic Plan – Objective

- Strategies
- Actions
- Best Practices

Components

- Analyze current system
- 5 year Deployment Plan
- Data Collection and Dissemination Plan
- Preventive Maintenance Program
- Training/Education
- Action Items
- Appendices



System Analysis

- Analyze the current System
  - Full Meta Data
  - Use Analysis
  - Benefit/Cost
- System Upgrade
  - Fixes (NO duct tape)
  - Component Upgrade
- Deployment Plan
  - ITS, Maintenance, TMC/EOC, Meteorologists
  - Site Analysis
- Preventative Maintenance
  - Benefit vs. Cost
  - Schedules

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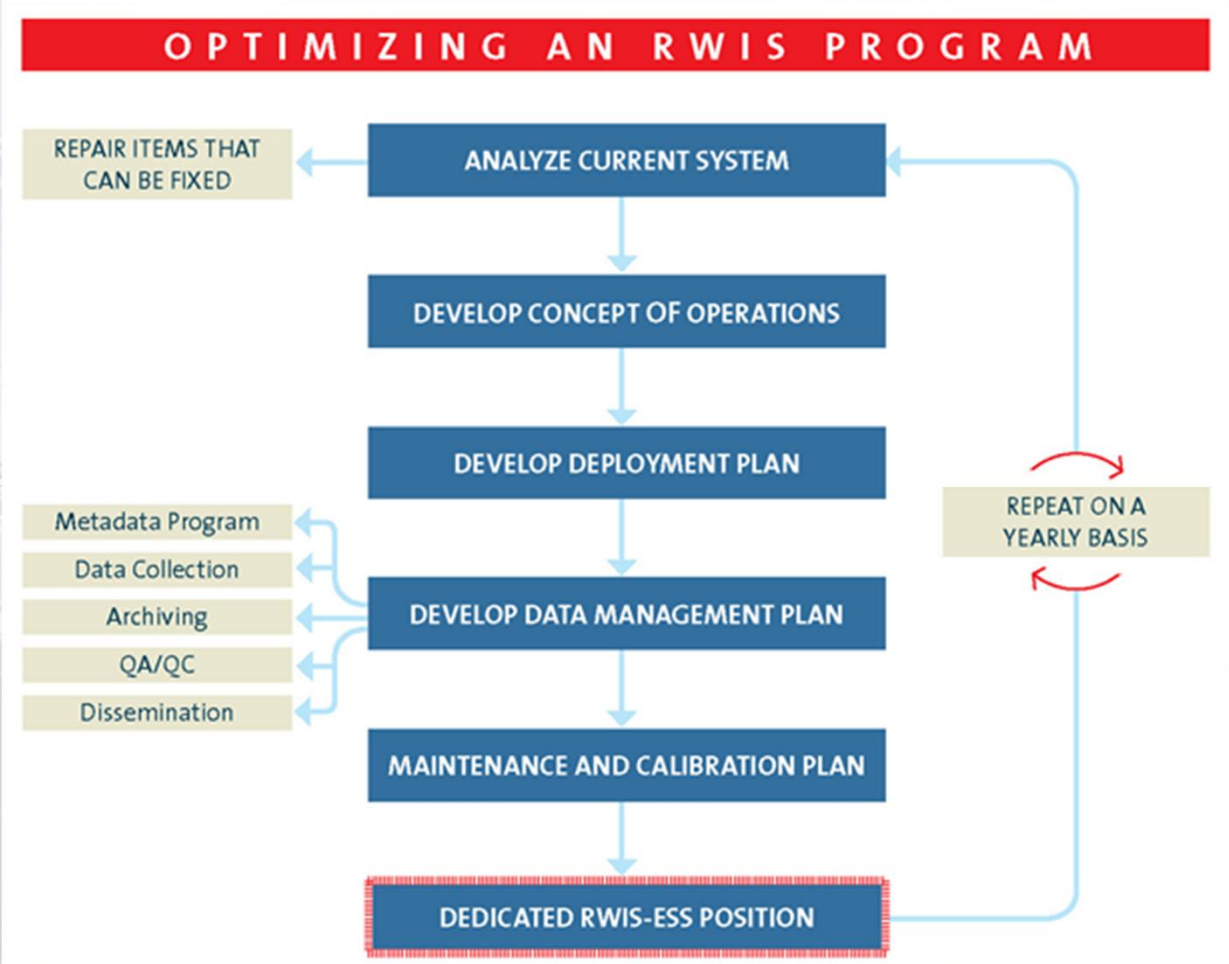
Optimizing Your RWIS-ESS Network

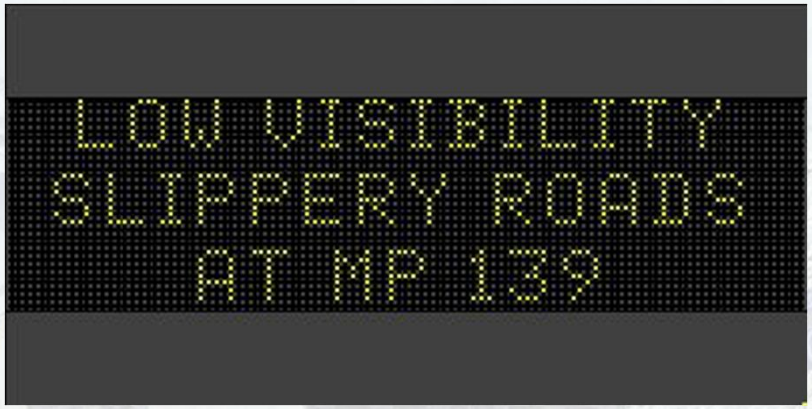


Deployment/Expansion Plan

	Target Phenomena	Comments
Road Maintenance and Operations	Trouble Spots	In close proximity to known hot spots for road ice/snow, blowing snow and other road weather concerns
	Response Time	Travel time to a remote area of 30 minutes or greater
	Storm Characteristics	Overall storm characteristics, i.e., temperature trends (for salt applications), wind direction and intensity (blowing and drifting snow) etc…
	Target Group	**Anticipated Results**
Traveler Information System	Rec/Tourism	Fills a need for inter and intra-state travel
	Commercial Vehicles	Fills a need for inter and intra-state trucking
	Commuter	Fills a need for commuters along urban and rural corridors
	Target Systems	**Anticipated Results**
ITS, Traffic, and Safety	Alert systems	Triggers automated alerts i.e., VMS, HAR
	Auto control devices	Turns on automated systems, i.e., Bridge Deck Spray systems
	Colocation of RWIS-ESS and ITS Devices (ITS Clusters)	These sites combine a myriad of devices including but not limited to: blue-tooth, Radar, ESS etc., to monitor not only road weather but how it is affecting traffic as well.
	Target Storm	**Anticipated Benefits**
Weather Forecasting	Micro Synoptic	Fills forecasting needs for large-scale systems/Statewide
	Meso	Fills forecasting needs for small scale/ Region wide
	Micro	Fills forecasting needs for localized weather phenomena i.e. Lake Effect, Canyon winds etc…

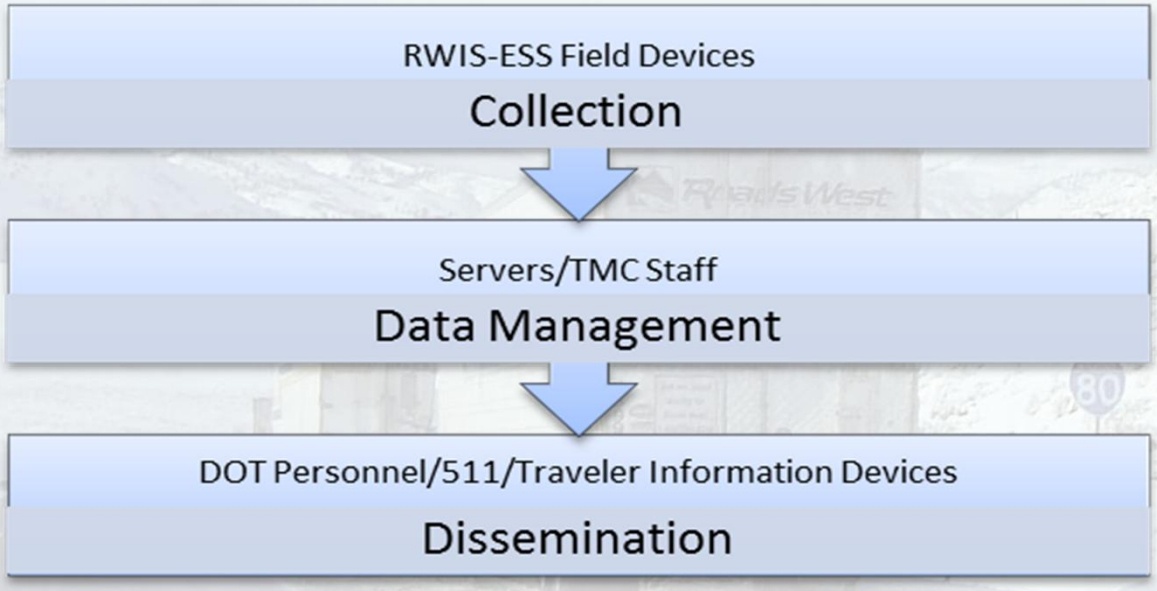
Data/Collection/Dissemination

- Define Targets
  - Operations
  - Commercial Users
  - Commuters
- Define Level of Openness
  - Full Access to RWIS-ESS
  - Limited Access
- 1201 Rule
- Consistent Traveler Information Messaging

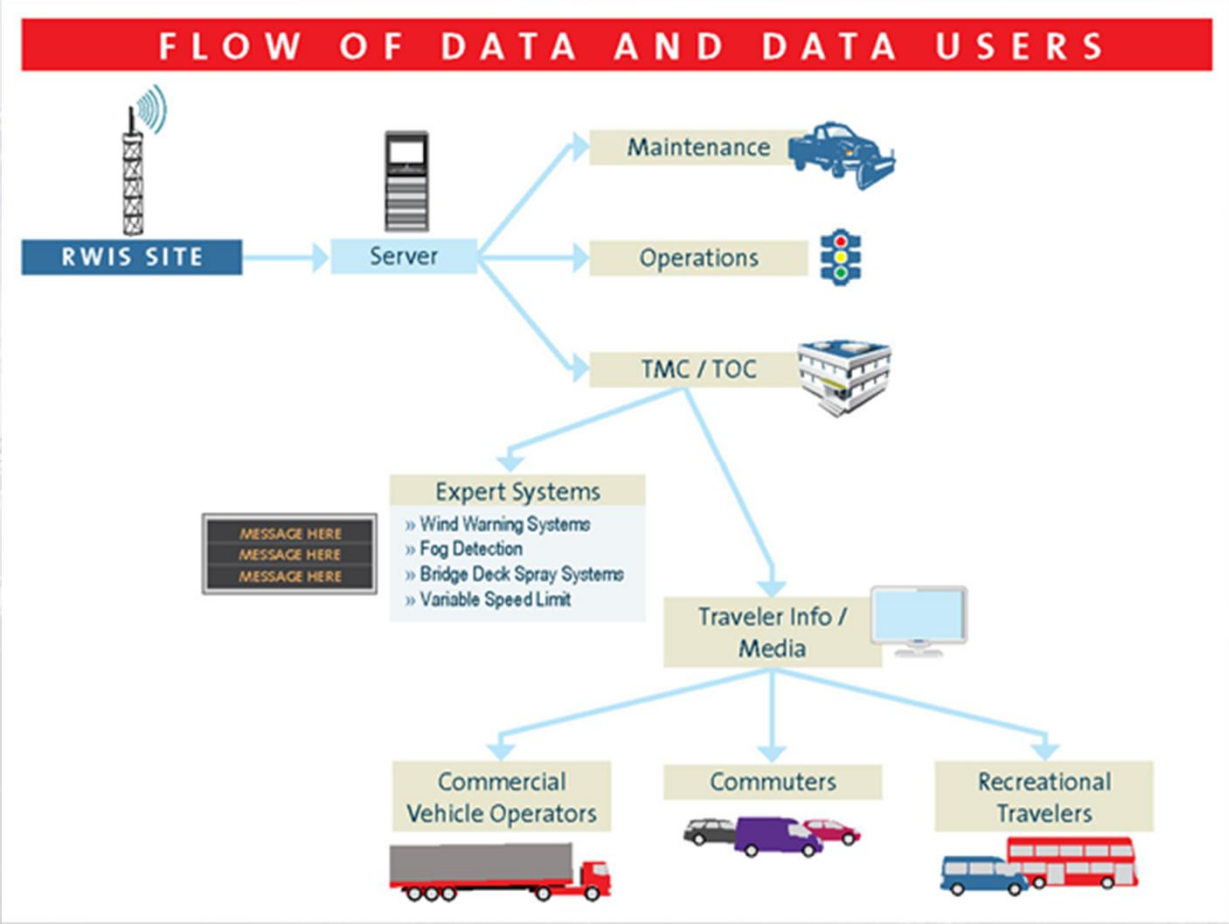


Data Plan

- Collection
- Quality Control
- Archiving
- Dissemination



Flow of Data


FLOW OF DATA AND DATA USERS
RWIS SITE
Server
Maintenance
Operations
TMC / TOC
Expert Systems
» Wind Warning Systems
» Fog Detection
» Bridge Deck Spray Systems
» Variable Speed Limit
MESSAGE HERE
MESSAGE HERE
MESSAGE HERE
Traveler Info / Media
Commercial Vehicle Operators
Commuters
Recreational Travelers

Maintenance Plan

- Define LOS
- Preventative
- Response
- Upgrades

Training

- TMC/EOC Operations
- Maintenance Personnel
- NOAA/NWS

Educate

- Public
- Partners

Marketing

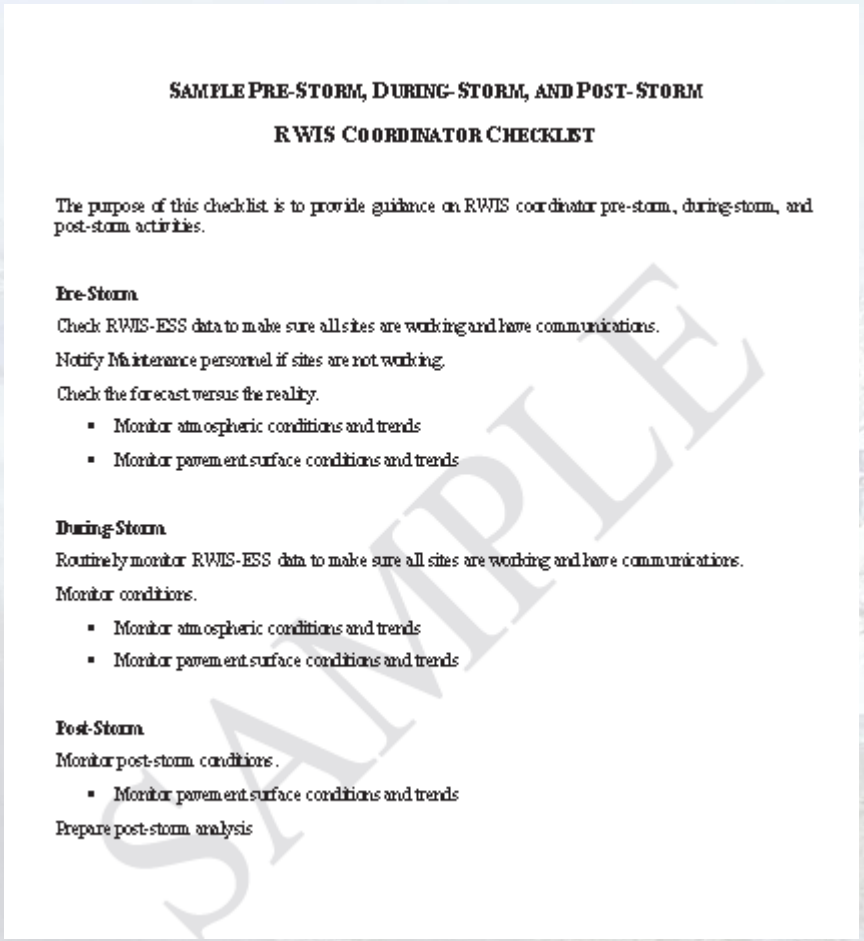
- Media
- NWS

Training

Group	Training	Anticipated Result
TMC Operations	RWIS-ESS	Interpreting trends; determine if the weather getting better or worse
	Traveler information messaging	More efficient use of ITS devices for traveler alerts and warnings
	Local weather pattern identification	Able to disseminate better information to the public and within DOT.
	Local “hot spots” identification	Better able to anticipate trouble spots because staff is educated on where these spots are and atmospheric conditions creating adverse conditions at these locations.
	NWS and private weather service products	Better interpretation of radar, satellite, forecasts, etc.
	Understanding the purpose of a particular RWIS-ESS site	Better understanding of the data obtained from the particular site. A site that was developed to measure high winds will not provide good snowfall information.
Winter Maintenance	How to read trends in the data	Staff appropriately for severe winter events. More efficient treatment of roads.
	Understanding the calibration of pucks in the road – some are calibrated for different types of salts	Understanding of which type of salt to apply or the anticipated results if a different type of salt is used.
	Local weather pattern identification	Able to disseminate better information to the public and within DOT.
	NWS and private weather service products	Better interpretation of radar, satellite, forecasts, etc.
Summer Maintenance	How to read trends in the data	Plan for repaving projects in ideal weather conditions. Apply herbicides in ideal weather conditions.
Emergencies	Wildland Fires	Know conditions, and potential locations of occurrence.
	Flooding	Know conditions, and potential locations of occurrence.
RWIS-ESS Maintenance Personnel	Preventative maintenance training.	More reliable system with less need for responsive maintenance.

Appendices

- EXISTING RWIS-ESS SYSTEM ANALYSIS
- SAMPLE RWIS USER QUESTIONNAIRE
- SAMPLE RWIS-ESS DEPLOYMENT PLAN TEMPLATE
- FHWA SITING GUIDELINES
- FHWA SITING GUIDELINES
- PREVENTATIVE MAINTENANCE CHECKLIST
- PRE-STORM, DURING-STORM, POST-STORM CHECKLIST
- SAMPLE SOLAR POWER BUDGET WORKSHEET



SAMPLE PRE-STORM, DURING-STORM, AND POST-STORM

RWIS COORDINATOR CHECKLIST

The purpose of this checklist is to provide guidance on RWIS coordinator pre-storm, during-storm, and post-storm activities.

Pre-Storm

Check RWIS-ESS data to make sure all sites are working and have communications.

Notify Maintenance personnel if sites are not working.

Check the forecast versus the reality.

- Monitor atmospheric conditions and trends
- Monitor pavement surface conditions and trends

During-Storm

Routinely monitor RWIS-ESS data to make sure all sites are working and have communications.

Monitor conditions.

- Monitor atmospheric conditions and trends
- Monitor pavement surface conditions and trends

Post-Storm

Monitor post-storm conditions.

- Monitor pavement surface conditions and trends

Prepare post-storm analysis

Action Items

- Dynamic webpage
- RWIS-ESS forum
- Leveraging opportunities
- Data sharing
- Share resources across the corridor
- Develop forecast element guidelines

Incident Management

- NHP Incident Response During Winter Weather – Captain Susan Aller-Schilling
  - Public Safety/Law Enforcement Issues and Perspective on I-80 issues

Closing and Reopening I-80

How do the States close and then reopen I-80 due to inclement weather?

- Operationally/Internally?
- Neighboring States?
- Public Information?

Closing/Reopening Roads

What are the perspectives/expectations from the stakeholders?

- Traveler Information Group
- Incident Management
- Law Enforcement
- Maintenance
- TMC Operations
- Traveling Public/CVO

Changing Roles and Responsibilities During Different Events

- Weather
- Fire
- Other natural disasters
- Changes to :
  - Who's involved
  - Lines of communication
  - Protocols
  - Processes

Coalition Take-Away

- How can Coalition be used to help improve coordination, response, communication?

– BREAK –

Freight

- WYDOT Freight Traveler Information – Vince Garcia, WYDOT
- NDOT Truck Parking – Bill Thompson, NDOT
- UDOT Truck Parking Map and Information – UDOT
- Caltrans – Jeff Morneau, Caltrans

Update on Freight Actions

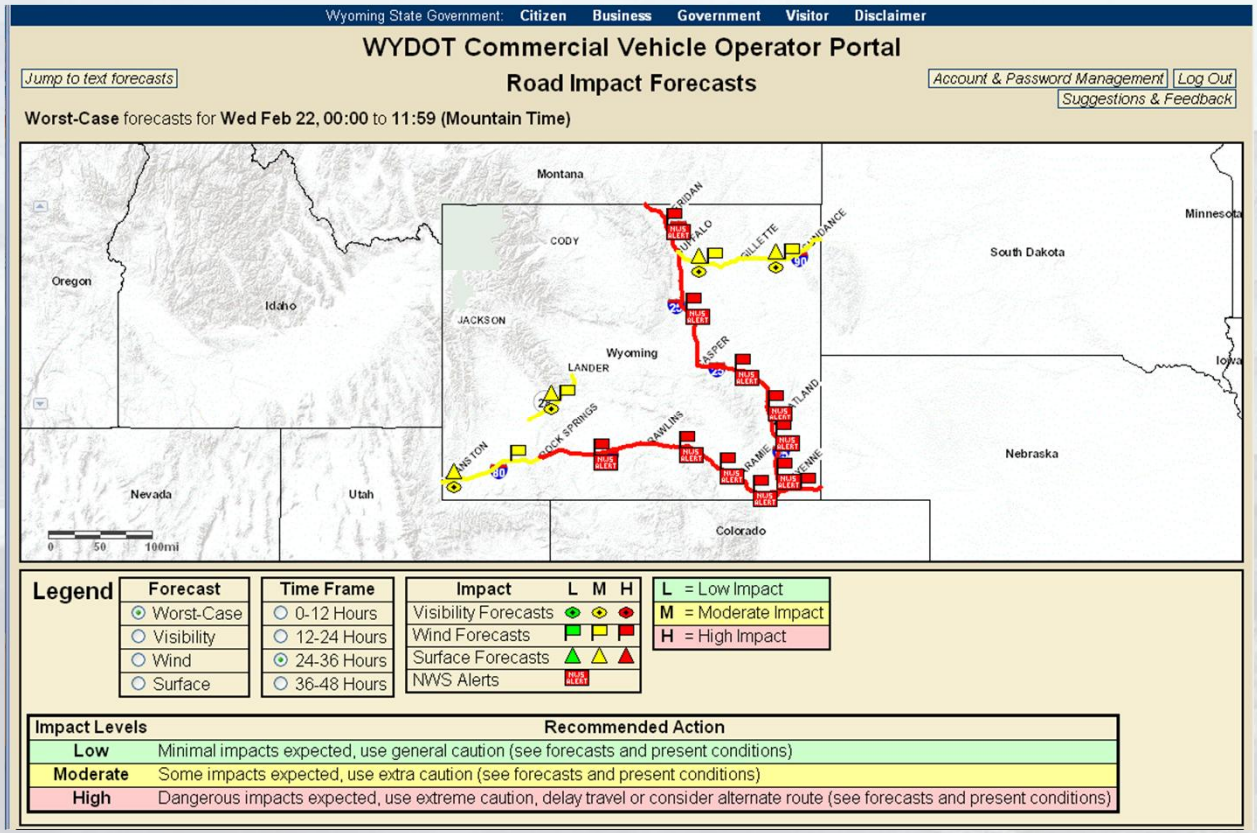
- Truck parking issues near Reno
- Outreach to Trucking Associations
  - Custom article in each state trucking publication
  - Add to freight contact list
  - Other opportunities?

WYDOT Commercial Vehicle Operator Portal

- Road condition impact forecast which provides 12, 24, 36 and 48 hour forecasts for wind, visibility and surface conditions
- Provided in map and text formats
- WYDOT uses knowledge of historical and current maintenance activities to predict surface conditions
- During severe forecasts, more detailed information regarding the visibility, wind and surface forecasts is sent directly to the commercial firms that participate in the portal
- WYDOT will ultimately automate the process using the web services of GovDelivery

WYDOT Commercial Vehicle Operator Portal

- https://apps.wyoroad.info/cvop

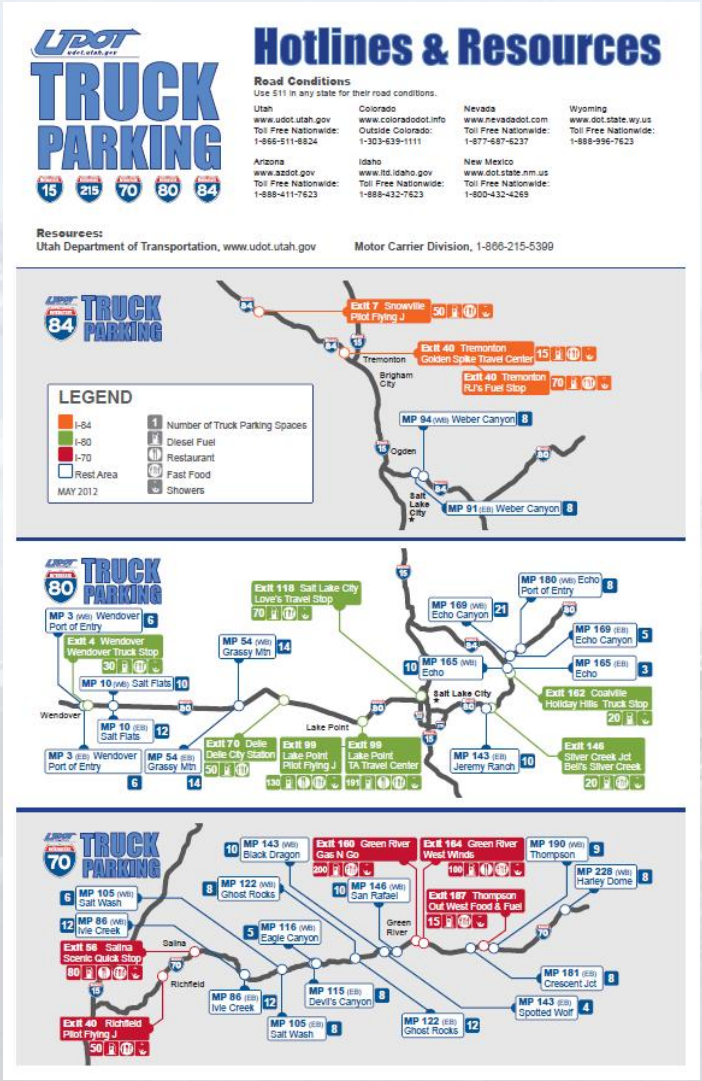


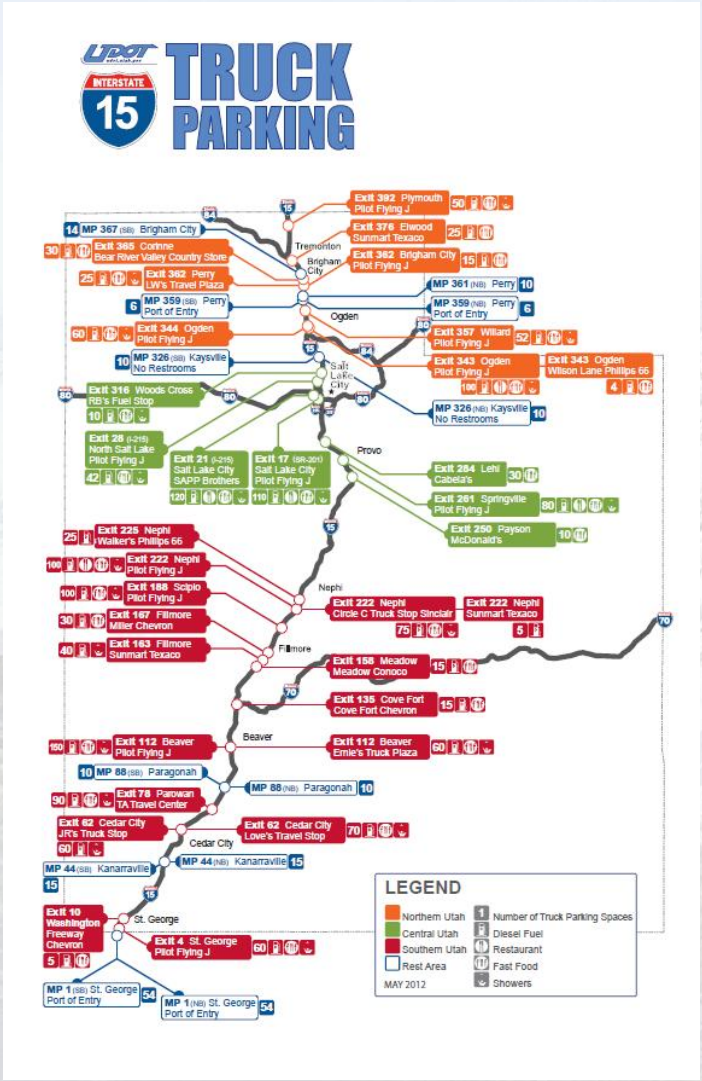
NDOT Freight Update

- Nevada Truck Parking – Bill Thompson, NDOT

UDOT Truck Parking Map

- Printed 10,000 copies
- Distributed 8,500
- Very popular thus far





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Caltrans Freight Planning

- Jeff Morneau, Caltrans

Day 1 Wrap Up

- Lessons learned and outcomes from today
- Schedule overview for Day 2

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WINTER OPERATIONS COALITION

– DAY 2 –

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Format of Workshop

DAY 2

- Traveler Information Updates
- Collaboration – Action Items
- Organizing for Success – Moving the Coalition Forward

Traveler Information Updates

- UDOT's Traffic/Weather Application Demo – Mike Evans, UDOT
- Caltrans new Quickmap website – Steve Kirkpatrick
- NDOT 511 System Upgrade Status Report – Rod Schilling

Traveler Information Updates

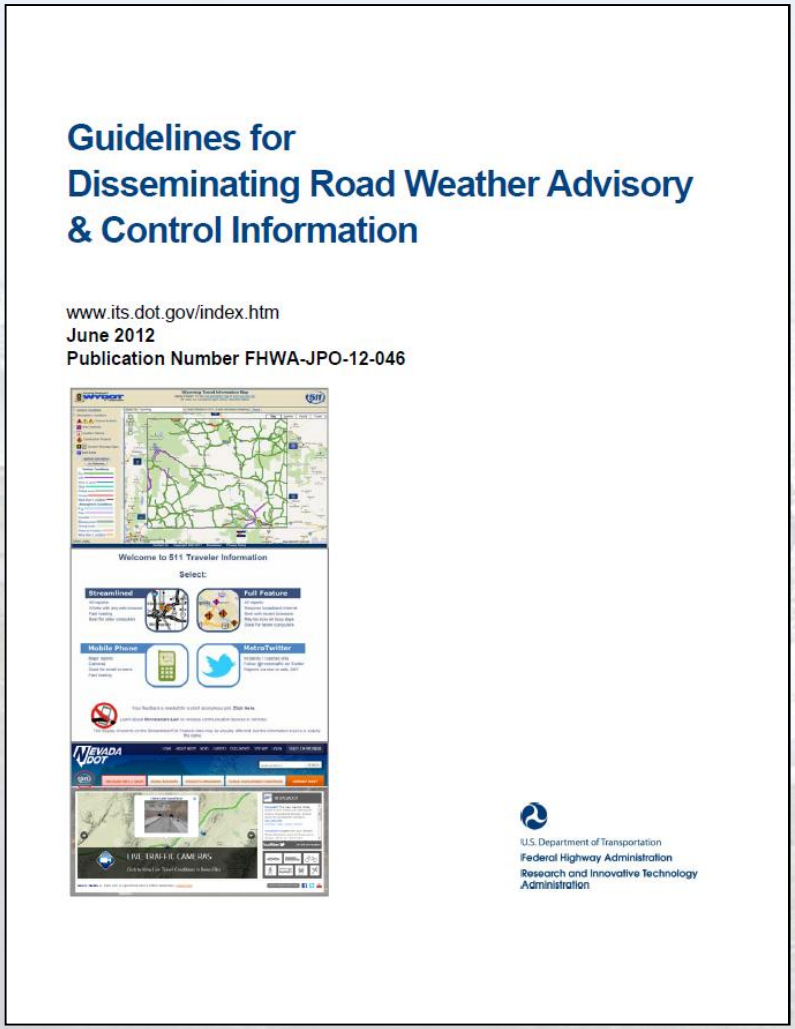
- Steve Kirkpatrick, Caltrans

Traveler Information Updates

- NDOT's 511 System – Rod Schilling, NDOT

FHWA New Guidelines

- Guidelines intended to augment (not replace) MUTCD or other published guidelines
- Best practices and principles for road weather messages
- Best available data on user performance and driver behavior
- DMS, auditory messages and websites



FHWA New Guidelines

- How to Use these Guidelines:
  - Development and presentation of road weather messages
  - Finding additional information about traveler needs and preferences
  - Developing new messages based on traveler information needs

Table 1. Guideline look-up table.

Guideline (Page #)	Content
Chapter 2. Dynamic Message Signs	
2-1. Structuring DMS Message Content (10)	Discussion of common DMS message elements and specific content issues.
2-2. Determining DMS Message Length Limits (12)	Information about determining the appropriate length of a DMS message by considering information units.
2-3. Dividing Information between Display Phases (14)	Guidance on how to divide the information units in a message into phases.
2-4. Determining Phase Timing and Other Dynamic Properties (16)	Information on the length of time to display message phases, the time between phases, and dynamic display methods.
2-5. Creating Acceptable DMS Abbreviations (18)	Information on finding and creating abbreviations that travelers will understand.
2-6. Communicating Travel or Delay Times (20)	Information on clear and succinct ways to describe trip impacts through travel or delay times.
2-7. Communicating Event Location (22)	Information on communicating the location of a weather event in both urban and rural locations.
2-8. Communicating Degree of Urgency on Dynamic Message Signs (24)	Information on communicating the priority, timing, and driving impacts of weather events using dynamic message signs.
2-9. Communicating Degree of Certainty and Enhancing Message Credibility on Dynamic Message Signs (26)	Information on communicating the likelihood of road weather event predictions, conveying the associated impacts, and increasing traveler trust in road weather messages.
Chapter 3. Auditory Messages	
3-1. Structuring Auditory Message Content (30)	Information on auditory message elements to include in 511 and HAR messages.
3-2. Auditory Message Length (32)	Information on developing concise auditory messages.
3-3. Auditory Message Delivery (34)	Guidance for operators who deliver auditory weather messages.

Design Guideline

- The basic DMS message content is often determined using the acronym PLA, which stands for:
  - **P**roblem
  - **L**ocation
  - **A**ction
- Do not preface a message with a signal word such as: Danger, Warning, Caution.
- Avoid the use of symbols.

Definitions and examples of the basic DMS message elements.

Message Element	Definition of Message Element	Example Element
Problem	Provides information about the situation that the driver will encounter.	Flooding
Location	Describes the location or distance to the situation.	At US-23
Action	A recommendation to the driver in response to the problem and location information.	Use I-280 East

Examples of poor and improved message phasing, corresponding to each guideline listed above.

	Poor Message Phasing	Improved Message Phasing
A	FLOODING AT US-23 NEW YORK USE I-280 EAST OR OTHER ALTERNATE ROUTES	FLOODING AT US-23 NEW YORK USE I-280 EAST
B	NO LIGHT TRAILERS WINTON TO GROTTO STRONG WIND GUSTS 50+ MPH	NO LIGHT TRAILERS WINTON TO GROTTO STRONG WIND GUSTS 50+ MPH
C	DO NOT USE CRUISE CONTROL DURING SNOW DRIVE WITH CAUTION	DO NOT USE CRUISE CONTROL DURING SNOW DRIVE WITH CAUTION
D	REDUCED VISIBILITY USE HEADLIGHTS USE CAUTION	REDUCED VISIBILITY USE HEADLIGHTS USE CAUTION
E	BLOWING SNOW METRO AREA REDUCE SPEED BLOWING SNOW METRO AREA TUNE TO 530 AM	BLOWING SNOW METRO AREA REDUCE SPEED TUNE TO 530 AM

Design Guideline

Message Elements	Examples (adapted from References 1, 2 or from TMCs)
Introductory Statement	• *"This is WPQB 669 Providence, The Rhode Island Department of Transportation's Highway Advisory Radio System, broadcasting on 1630 AM"* • *"This message is current as of 8:36 PM, Friday, April 13, 2012"* • *"Attention Eastbound Interstate 10 Traffic"*
Problem Statement	• *"Snowfall and high winds have caused drifting snow and limited visibility"* • *"There are strong and gusty crosswinds"*
Good Reason for Followi the Advice	• *"To avoid a major delay"*
Location Statement	
Action Statement	• *"Look out for slush on the roadway"* • *"Be prepared to stop"*

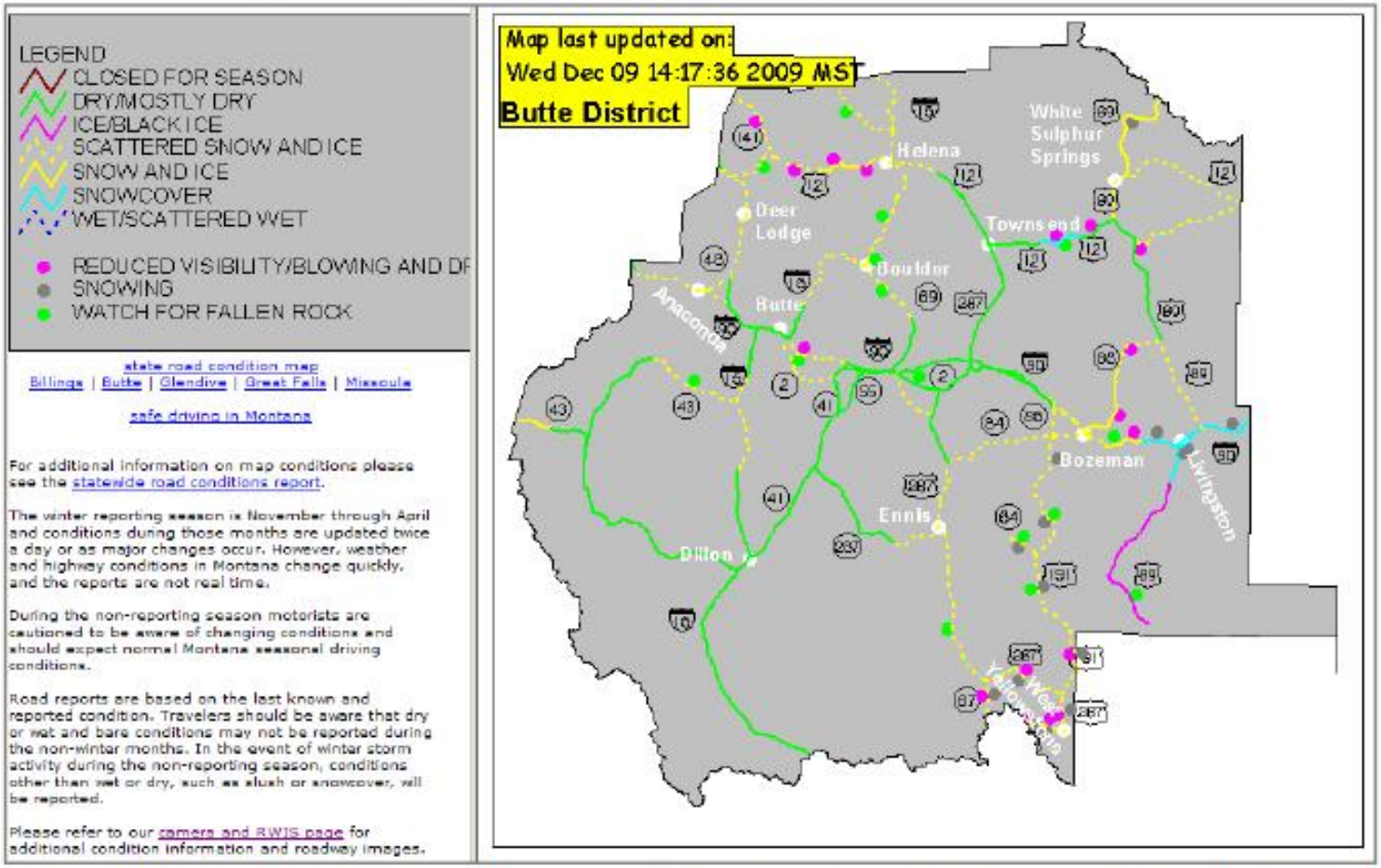
Example message from WSDOT showing various message elements.

At 9:19am, March 29, 2012, Stevens Pass, US-2.
Conditions: Snowing. Compact snow and ice on the roadway.
Advanced notice for avalanche control work planned for Stevens Pass from milepost 58, near Scenic to milepost 64, near the summit between 11 am and 3 pm.
Motorists should expect 20 minute delays and be prepared to stop.
Restrictions: Traction tires advised, oversized vehicles prohibited.

Design Guideline

- Load witl
- Icons can sensors, e
- Choose ic
- Many ma
- Color coc the same
- Include a updated i
- If the map that does

Example of color coding and line-style coding to show road conditions.



Source: Montana DOT Website, retrieved December 9, 2009, from http://www.mdt.mt.gov/travinfo/map/butmap_frame.ht

Traveler Information Take-aways

- Ideas on sharing info across the Coalition
- Reaching the right audience?

I-80 Corridor Connectivity Concepts

- Advance plans and discussions toward real-world connectivity
- Initial concept in Multi-State Corridor Ops Grant
- Create an ops-focused platform, translate to an external platform
- Key questions:
  - Address a key need for ops and maintenance?
  - Feasibility of data sharing (institutionally)

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State Operator and Maintenance Inputs
- Alerts—event, weather, incident
- Segment conditions
- Initiate NWSChat and enable conversations to be accessible via platform
- Potential alternate routes for trucks
- Maintenance and snow management activity

Caltrans, NDOT, UDOT, WYDOT and NDOR State Database Inputs
- Road conditions reporting system
- Detectors and private sector speeds
- Construction
- RWIS status
- CCTV images and DMS messages
- 511 floodgate messages
- Truck restrictions based on incidents/weather

CA NV UT WY NE

Secure Login

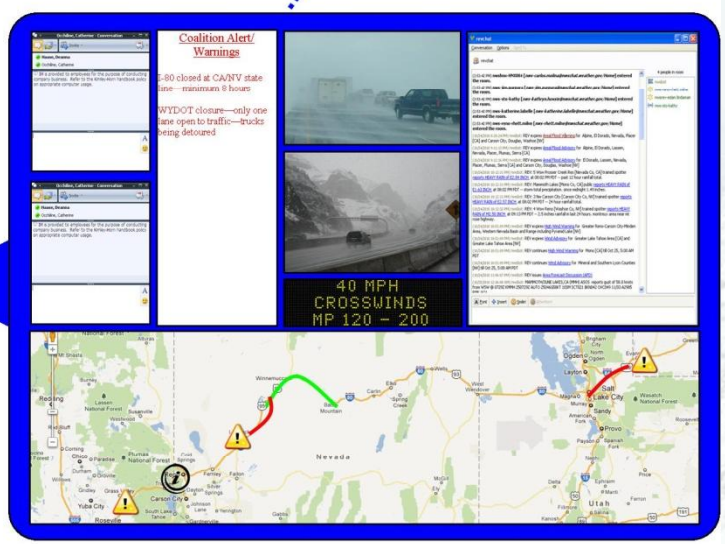
CA NV UT WY NE OSS

Alerts
- Freight dispatch
- State public information officers
- Tourism—locations
- Public safety/law enforcement

Integrated Mobile Observation Data (NCAR)

I-80 Operations Platform

Peer Mobile Application of Platform
- iPad/tablet
- Smart phone



Private Sector
- Speeds
- Suggested alternate routes (if provided)
- Private weather services

National Weather Service
- Weather alerts
- Forecasts for corridor segments
- Watches/warnings/ advisories

State Static Information
- Locations of truck parking lots/facilities
- Truck restrictions on routes

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– BREAK –

Related project updates

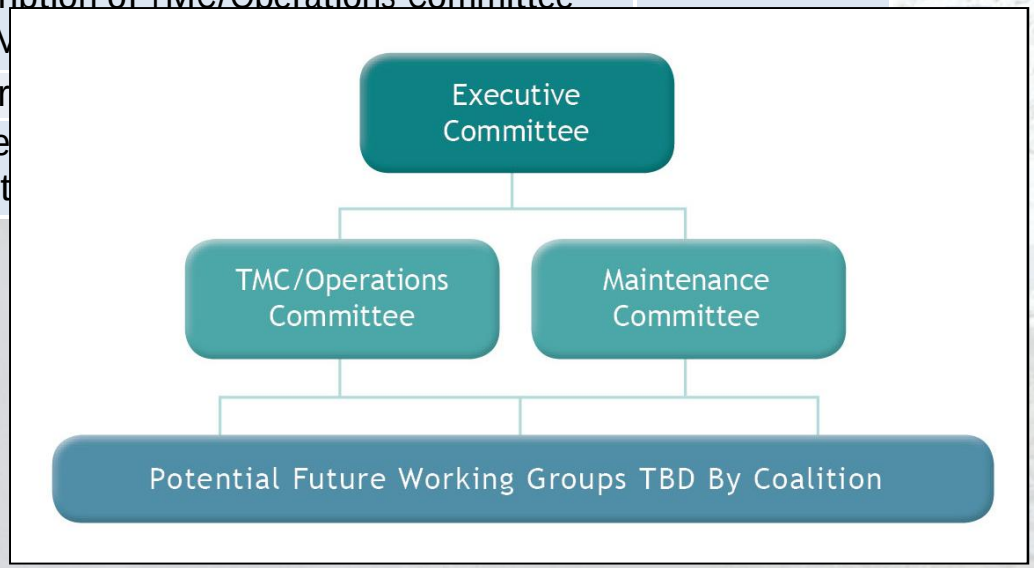
- Coy Peacock, NDOT – I-80 Corridor System Master Plan
- Connecting Nevada

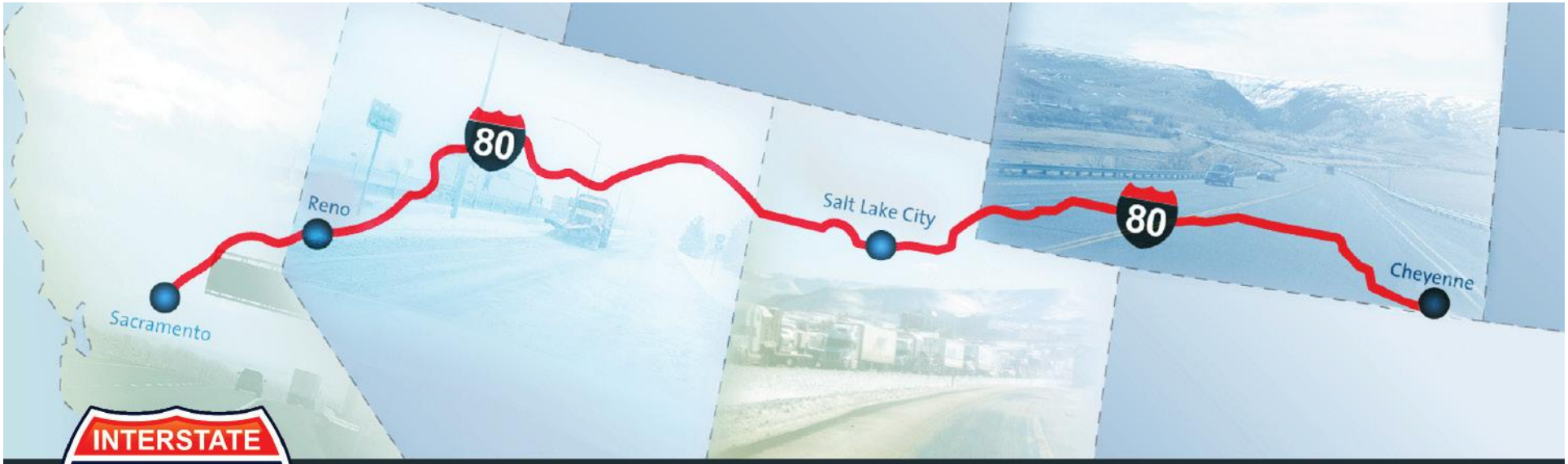
Positioning I-80 for Potential Future Opportunity

- Partner support going forward
- May be a critical factor in future federal funding
- Sustainability of the Coalition
- More formal agreement

Draft Charter

Element	Definition	Description/Focus
Coalition Overview	Description of the Coalition	
Charter Purpose	Sets boundaries, constraints and requirements	
Goals and Objectives	Goals and objectives for the Coalition	
Stakeholder Involvement	Types of agencies and companies involved	
Membership Voting	Description of roles in voting for Coalition activities	
New Member Process	Method for bringing on new members	
Executive Committee Structure and Roles	Description of Executive Committee and roles	
TMC/Operations Committee and Maintenance Committee Structure and Roles	Description of TMC/Operations Committee and M	
Coalition Working Groups Structure and Roles	Descr	
Charter Change Control	Proce struct	





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THANK YOU!

Lunch and then safe travels home!

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