NDOT
Statewide Integrated Transportation Reliability Program

Executive Summary

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1. PROJECT HIGHLIGHTS

The Nevada Department of Transportation (NDOT) is taking a proactive approach to coordinating among NDOT Districts and with regional and local agencies throughout the state for transportation reliability and congestion management. The goal of the Nevada Statewide Integrated Transportation Reliability Program (ITRP) is to identify regional and statewide strategies to improve the reliability of travel within Nevada including urban areas as well as interregional rural corridors. For the purposes of this project, there is a greater focus on ‘reliability’ rather than ‘congestion’ in order to capture the overall goal of providing the traveler with a trip duration and route that can be relied upon with some level of accuracy no matter what may disrupt travel along the way.

1.1 ITRP Project Overview

The components of the ITRP project are shown in Figure 1.

![Figure 1 – NDOT ITRP Project Overview](image)

Key elements of the ITRP project included:

- System Identification
- Current Nevada Practices
- Best Practices References Guide
- Gap Analysis
- Short and Long Range Implementation Strategies
- Performance Measurement Plan
- Implementation and Management Plan
- Executive Summary and Overview Presentation.

1.2 Stakeholder Involvement

The following specific stakeholder involvement strategies were used throughout the project to maintain consistent focus on the project objectives:

- **Introductory presentations** to stakeholders in northern and southern Nevada as part of already established meetings to inform stakeholders that this project was being developed and to request their participation and input;
- **One-on-one meetings** with various stakeholder agencies throughout the state to better understand the current plans and processes relating to travel reliability and congestion planning;
- **Stakeholder workshops** to gather stakeholders together to review existing conditions, best practices, and strategize about potential integration needs within Nevada; and
- **A project website** to provide a one-stop resource for project deliverables, meeting dates, and important links to other web sites. The website URL is: [http://www.kimley-horn.com/projects/NevadaITRP/index.shtml](http://www.kimley-horn.com/projects/NevadaITRP/index.shtml) which can be accessed through the NDOT website ([www.nevadadot.com](http://www.nevadadot.com)) and clicking on the ‘Major Projects & Corridor Studies’ link.

Agencies that participated in the aforementioned stakeholder discussions are listed in **Table 1**.

**Table 1 – Project Stakeholder List**

<table>
<thead>
<tr>
<th>Region</th>
<th>Stakeholder Agency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Region 1 – Las Vegas Metropolitan Area</td>
<td>City of Henderson</td>
</tr>
<tr>
<td></td>
<td>City of Las Vegas</td>
</tr>
<tr>
<td></td>
<td>City of North Las Vegas</td>
</tr>
<tr>
<td></td>
<td>Clark County</td>
</tr>
<tr>
<td></td>
<td>FAST</td>
</tr>
<tr>
<td></td>
<td>Nevada Highway Patrol (NHP) – Southern Command</td>
</tr>
<tr>
<td></td>
<td>NDOT District 1</td>
</tr>
<tr>
<td></td>
<td>Regional Transportation Commission (RTC) of Southern Nevada</td>
</tr>
<tr>
<td>Region 2 – Reno/Sparks/Carson City/Lake Tahoe Area</td>
<td>City of Reno</td>
</tr>
<tr>
<td></td>
<td>City of Sparks</td>
</tr>
<tr>
<td></td>
<td>NDOT District 2</td>
</tr>
<tr>
<td></td>
<td>NDOT District 3</td>
</tr>
<tr>
<td></td>
<td>Washoe County</td>
</tr>
<tr>
<td></td>
<td>Washoe County Sheriff’s Office</td>
</tr>
<tr>
<td></td>
<td>RTC of Washoe County</td>
</tr>
<tr>
<td></td>
<td>Douglas County</td>
</tr>
<tr>
<td>Region 3 – I-80 Corridor Area</td>
<td>City of Elko</td>
</tr>
<tr>
<td></td>
<td>NDOT District 2</td>
</tr>
<tr>
<td></td>
<td>NDOT District 3</td>
</tr>
<tr>
<td></td>
<td>Elko County Sheriff</td>
</tr>
<tr>
<td></td>
<td>NHP – Central Command</td>
</tr>
<tr>
<td>Region 4 – Rural Corridors Area</td>
<td>NDOT Headquarters</td>
</tr>
<tr>
<td></td>
<td>NDOT Districts 1, 2 and 3</td>
</tr>
<tr>
<td>Statewide</td>
<td>NDOT Headquarters</td>
</tr>
<tr>
<td></td>
<td>Nevada Highway Patrol</td>
</tr>
</tbody>
</table>
1.3 Reliability Focus

The processes, policies, and projects that were created as a result of the ITRP process fall within the following six reliability focus areas:

- Incident Management
- Infrastructure
- Sharing Resources
- Transportation Policy
- Traveler Information
- Work Zone Management

Figure 2 through Figure 7 outline the reliability focus areas by function and define the process of identifying a problem to determining a solution. Reliability focus areas center on the key processes, policies, and projects that will affect that particular function (incident management, traveler information, etc.) and summarize the history of how strategies were developed as well as how strategies could link to measuring improvements in reliability. The process is defined as follows:

- **What are the issues?** Large gaps associated with the reliability focus area are identified.
- **What needs to happen?** Strategies for addressing the gaps are defined.
- **How do we get there?** Processes, policies, and projects are identified.
- **Why are we doing this?** The anticipated benefits on reliability are identified.
- **How do we measure our success?** Performance measures for monitoring success are outlined.
Figure 2 – Reliability Focus: Incident Management

**Problem**

- Incidents on highways cause significant delay, impacts to freight and passenger vehicle throughput
- Limited alternate routes to divert traffic; often result in extensive detours
- Agency resources are geographically spread out – difficult to mobilize and respond directly to remote locations
- Response time in rural areas is a challenge for first responder agencies and tow companies

**Solution**

**How do we get there?**

**Process**
- Enhance NDOT Notification List

**Policy**
- Citations for not Adhering to “Move It” Laws
- Develop Incident Clearance Policies

**Project**
- Marketing Campaign for “Move It” Laws
- Traffic Incident Management (TIM) Coalitions
- Alternate Route Plans for Freeways and Highways
- Transportation Incident Management Manual
- Towing Incentive Feasibility Study and Program
- Arterial Incident Response Team Pilot Program in Southern Nevada

**Why are we doing this?**

- Faster information sharing among key agencies for incident notification, details, and response strategies
- Faster mobilization and response to incidents through resource sharing agreements
- Improved coordination among agencies on detour routing
- Accurate, up-to-date information accessible to travelers about real-time conditions, delays, and alternate routes

**What needs to happen?**

- Coordinate plan for implementing new and shorter detour routes for state highways
- Automate information sharing about incidents
- Create faster response and clearance of incidents
- Coordinate agency response to incidents

**How do we measure our success?**

- Decreased incident response time
- Increased usage of traveler information during incidents
- Decreased road closure time
- Adherence to 30-60-90 policy
- Reduction in secondary crashes
- Increased compliance with “Move It” Laws
Figure 3 – Reliability Focus: Infrastructure

**Problem**

- A comprehensive GIS/CAD based inventory of all communication infrastructure does not exist for Southern and Northern Nevada
- The information that is available is in many different formats and in multiple jurisdictions
- Outdated/compatibility issues with infrastructure

**What are the issues?**

**What needs to happen?**

- Determine existing infrastructure
- Develop inventory that is centrally managed and available
- Identify and test alternative uses of infrastructure that supports more efficient congestion management

**Solution**

**How do we get there?**

- Detailed inventory of traffic/ITS infrastructure
- Continue testing Adaptive Traffic Signal Control (ATSC) in Southern Nevada
- Adaptive Traffic Signal Control (ATSC) pilot study in Northern Nevada

**Why are we doing this?**

- Easily identify future traffic and ITS projects (connectivity and telecommunications) to improve reliability and mobility
- Enhance coordination and maintenance of traffic signal systems by having key corridors with contiguous communication connectivity
- Minimize the need for field review of existing infrastructure on roadway and ITS projects
- The ability of a traffic signal system to adapt to changing conditions reduces overall delay and reduces travel time for a corridor or network

**How do we measure our success?**

- Reduction of delay at traffic signal systems
- Reduction of construction conflicts that could impact system operation and/or down time
Figure 4 – Reliability Focus: Sharing Resources

**Problem**

**What are the issues?**
- Local agencies are not currently sharing resources with responding state agencies (NDOT and NHP) limiting the quickness of incident response
- Distance of corridors in rural areas limits timely notification and incident response by NHP vehicles and NDOT maintenance vehicles
- A centralized resource for comprehensive regional and statewide incident, work zone, weather and other related information collected from multiple agencies does not exist

**What needs to happen?**
- Agreements need to be put in place to define resource sharing between NDOT and agencies
- Develop centralized resource for agency information coordination that provides consistent information about road conditions

**Solution**

**Policy**
- Develop agreements between NDOT and agencies outlining resource sharing

**Project**
- Centralized database for regional and statewide information
- Northern Nevada TMC

**Why are we doing this?**
- Faster mobilization and response to incidents through resource sharing agreements
- Reduced delay for travelers on Nevada freeways and state highways
- Improved coordination between agencies for real-time conditions along Nevada freeways and state highways
- Improved traveler information on a state and regional level for the public
- Improved accuracy and reliability of information across agencies

**How do we measure our success?**
- Decreased incident response time through coordination of resources
- Decreased road closure time
- Improved traffic throughput
Figure 5 – Reliability Focus: Transportation Policy

PROBLEM

What are the issues?

- The current NDOT access management policy does not address mobility and access of today’s urban corridors
- There is a disconnect between local agencies and within agency planning and engineering departments
- There is no requirement for NDOT or RTC of Southern Nevada to review traffic studies prior to project entitlements
- No uniform access management policies that can be applied regionally in Southern Nevada

What needs to happen?

- Modifications to development/entitlement process in Southern and Northern Nevada
- Lead agencies and partner agencies must agree to review traffic studies in specified timeframe to provide input prior to entitlements
- Agreement to collect regional road impact fee by agencies within Southern Nevada
- Prioritize method of funding smaller near-term projects that improve reliability

SOLUTION

Policy

- Reinstate RTC Transportation Capacity Improvement Program (TCIP)
- Develop Land Use Planning Policy for Southern and Northern Nevada
- Update NDOT Access Management Policy to include rural and urban guidelines
- Develop regional road impact fee program for Southern Nevada

Project

- Develop access management standards and policy for Southern Nevada (underway)
- Regional road impact fee feasibility study

Why are we doing this?

- Access management increases capacity and improves operations
- Agencies will have a better understanding of transportation impacts of a development prior to project entitlements
- Transportation improvement requirements (right-of-way dedication, access management standards, bus turnouts) will be incorporated into entitlements for project
- Provide parity between land uses and across jurisdictions

How do we measure our success?

- Construction of capacity related improvements
- Improved access management on NDOT roadways in rural and urban areas
- Improved access management on arterials in Southern Nevada
Figure 6 – Reliability Focus: Traveler Information

**PROBLEM**

What are the issues?
- Centralized resource for regional / statewide traveler information that includes work zone, incident, weather, and other related information does not exist
- Majority of traveler information is distributed through “pull” technology and system
- No formal performance measures are in place to quantify impacts/benefits of new technology and operational strategies to agencies and travelers
- Information is not easily or consistently shared between agencies

What needs to happen?
- Expand traveler information capabilities to provide multiple ways for travelers to receive information
- Develop centralized resource for agency information coordination that provides consistent information about road conditions
- Selectively deploy “push” technology

**SOLUTION**

How do we get there?

Process
- Routine performance measures program

Project
- Evaluate use of private sector data for travel time program
- Centralized Database of Regional and Statewide Information
- Enhance FAST ADUS Software and Reporting of Real-Time Data
- Freight Traveler Information Business Plan
- Expand Traveler Information Capabilities at Welcome Centers and I-80 Rest Areas

Why are we doing this?
- Improved traveler information on a state and regional level for the public
- Improved reliability and consistency in the method of sharing information with travelers
- Help decision makers and the general public recognize the impacts of projects and programs, identify effective/ineffective programs, and provide input to resource allocation

How do we measure our success?
- Increased usage of traveler information
- Quantifying improvements to the transportation system through the reporting of performance measures
Figure 7 – Reliability Focus: Work Zone Management

**Problem**

**What are the issues?**
- There is not a clear and specific requirement for Traffic Incident Management Plans for major work zones.
- Lack of uniform work zone policies/programs for arterials in Southern and Northern Nevada.

**What needs to happen?**
- Develop policy requiring project-specific Traffic Incident Management Plans for major work zones.
- Update Nevada Work Zone Safety & Mobility Implementation Guide to require and define that a Traffic Incident Management plan is required for specific projects.

**Solution**

**Process**
- Require project-specific Traffic Incident Management Plans for major work zones to be more detailed and include broad range of stakeholder input.

**Policy**
- Enhance/Develop Arterial Work Zone Policies/Programs for Southern and Northern Nevada.

**Why are we doing this?**
- Improved work zone management.
- Reduce incident exposure in work zones.
- Coordination of work zone phasing/timing to maximize vehicle throughput and detour plan conflicts.

**How do we measure our success?**
- Reduced crashes through work zones.
- Increased travel times from before to after construction projects.
- Minimized delays incurred in large work zones that last for extended periods of time.
2. **ADDRESSING RELIABILITY IN NEVADA**

The goal of the ITRP program is to identify regional and statewide strategies to improve the reliability of travel within Nevada. The Nevada DOT is prioritizing reliability in Nevada by taking a look at a wide variety of impacts on the traveling public that could be mitigated through the use of a variety of strategies.

### 2.1 What is Congestion and What Does It Cost?

Congestion is more than just a recurring capacity issue. The Federal Highway Administration (FHWA) quantified the various sources of congestion, as shown in Figure 8. Traffic control devices can sometimes add congestion to the roadways as well as fluctuations in normal traffic which is reflected as part of the “Other” category.

![Figure 8 – Sources of Congestion](image)

*Source: 2005 Trends and Advanced Strategies for Congestion Mitigation, FHWA*

Transportation agencies often measure congestion and the effects of congestion in terms of level of service of the facilities related to traffic volumes, speed and mobility as well as delay. Public safety and emergency management agency’s performance measures are affected by congestion during response to incidents and emergencies. Travel times also have a direct relationship to reliability and can provide agencies with a better idea of whether congestion is decreasing or increasing over time on a particular route. The travelers’ perception of travel time is based on the reliability of those travel times for their trips.

Five of the seven sources of congestion often result in unreliable travel times due to unanticipated events or as a result of planned events causing temporary restrictions in capacity.
The costs of congestion can be measured by every hour of traffic delay for every person traveling in Nevada. Costs are associated with lost time and productivity during traffic delay, wasted fuel, and increases in air pollution and carbon dioxide emissions. Each year, the Texas Transportation Institute conducts a comprehensive assessment of the current ‘state of congestion’ around the country in 439 areas classified as ‘urban, and provides more detailed data for the largest 90 metropolitan areas (which includes Las Vegas). Table 2 provides a comparison of congested conditions in Las Vegas with the national average from the 2009 Urban Mobility Report. The 2009 report utilizes data from 2007. On average, travelers in the Las Vegas area experience more than one business week worth of delay each year, which is time spent above and beyond the actual or ‘typical’ commute travel times. More than 50% of the delay in the Las Vegas region is due to incidents.

Table 2 – Comparison of the Costs of Congestion (Las Vegas and National Urban Areas)

<table>
<thead>
<tr>
<th></th>
<th>Las Vegas</th>
<th>National Urban Areas</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Per Traveler</td>
<td>Region Total</td>
</tr>
<tr>
<td>Additional delay</td>
<td>44 hours</td>
<td>34.5 million hours</td>
</tr>
<tr>
<td>Excess Fuel Consumption</td>
<td>30 gallons</td>
<td>23.4 million gallons</td>
</tr>
<tr>
<td>Costs of Delay</td>
<td>$896</td>
<td>$705,000,000</td>
</tr>
</tbody>
</table>

In the 2009 report, the values were calculated using $3.20/gallon for Las Vegas fuel costs and $3.03/gallon for the national urban area average. The value of time and commercial costs were $15.47/hour and $102.12/hour for Las Vegas and the national urban area average respectively.

Outside of the urban areas, delay also has significant cost and time impacts, although these may not be readily or easily quantified. Delays on corridors in the rural areas of Nevada are often the result of incidents or weather. The high volume of freight traffic that utilizes the I-80 corridor stands to experience significant delay if detouring is required or if there are weather delays that impact the safety or operations of the corridor.

2.2 ITRP Project Summary

While travel time reliability is most directly affected by non-recurring sources of congestion, such as an incident or construction related lane closures, recurring/day-to-day congestion has also been examined as part of the ITRP process. For the purposes of this project, there is a greater focus on ‘reliability’ rather than ‘congestion’ in order to capture the overall goal of providing the traveler with a trip duration and route that can be relied upon with some level of accuracy no matter what may disrupt travel along the way. Real-time information, agencies involving one another in decision making and reaction measures, and coordinated planning for recurring and non-recurring congestion impacts are just some of the measures that provide the types of reliability solutions that Nevada has been working toward through many existing initiatives and are built upon with the new initiatives presented in the ITRP project.
The ITRP project was developed in two phases:

- **Phase I** focused on outreach and involvement of key stakeholders and the analysis of transportation reliability and congestion management/mitigation needs throughout the state of Nevada.
- **Phase II** focused on developing strategies, performance measures, and developing an implementation plan to guide the deployment of transportation reliability and congestion management strategies and technologies to address specific issues.

Key elements of the ITRP project included:

- **System Identification** – This document introduces the ITRP project and identifies key stakeholders that have an important role in ITRP strategy development and ultimately implementation. This document identifies the primary transportation networks in Nevada and discusses some of the congestion and reliability issues experienced on those networks.

- **Current Nevada Practices** – This document discusses current practices related to transportation reliability and congestion management processes, policies, and interactions occurring in Nevada at the regional and statewide levels. It summarizes the current plans and programs underway by state, regional, and local agencies in Nevada, as well as raises specific issues raised by stakeholders during the interviews held throughout the state. This information was utilized to identify where there may be gaps in current processes or plans relative to transportation reliability goals that stakeholders established during Phase I.

- **Best Practices References Guide** – Based on some of the reliability issues identified in Nevada, a best practices scan was conducted to identify where other regions and programs are implementing innovative approaches to improving reliability. The best practices scan looks at incident management, agency coordination, traveler information, performance monitoring, and other elements that can contribute to improved operations and enhanced travel time reliability. Case studies were included that detailed measurable results, lessons learned, challenges, and identified how regions or agencies were able to successfully implement high-impact strategies.

- **Gap Analysis** – This document utilizes information gathered in earlier steps of the ITRP to identify and evaluate gaps in current Nevada processes and policies that are impacting the Nevada Department of Transportation (NDOT) and partner agencies’ abilities to proactively plan for and address reliability issues. This technical memorandum places the foundation for developing strategies to close the gaps.

- **Short and Long Range Implementation Strategies** – This document identifies potential strategies to address key gaps that are impacting travel time reliability in Nevada. Current programming processes were reviewed for consistency with strategy development. Strategies include short-term, mid-term and long-term timeframes, and roles and responsibilities for implementing the strategy are to be defined as part of this document. Some strategies are changes to current processes; others identify new systems or programs.

- **Performance Measurement Plan** – This plan defines the measures that can be used to evaluate the transportation system operating conditions and to provide the mechanism for quantifying the level of congestion in the system. The plan outlines the data to be collected, the frequency of data collection required to support proper measurement, data collection locations, responsibilities, analysis techniques, and performance analysis requirements.

- **Implementation and Management Plan** – This plan identifies implementable processes, policies, or projects based on the previously developed strategies. This plan also defines the specific actions that lead agencies and partner agencies will need to complete in order to
implement the project, process, or policy. An evaluation process for “impact” and “effort” of each implementation project, process, or policy helped in defining appropriate timeframes for implementation within existing funding cycles and budget requirements. Estimates for potential costs and funding strategies for implementation processes, policies, and projects are described in this plan.

- **Executive Summary and Overview Presentation** – This document summarizes the NDOT ITRP project from initial evaluation of existing systems and processes through the development of specific implementation strategies that will impact transportation reliability in Nevada. The executive summary and overview presentation are intended be used to educate additional stakeholders to the process and outcomes of the project after the project completion.

### 2.3 ITRP Resources

NDOT developed a chart for the ITRP program that summarized the potential assets and impacts that affect the reliability of the transportation network. This chart served as a framework to begin the process of evaluating how systems and processes overlap to cause or mitigate congestion. The original diagram has been refined through this program’s development to reflect the resources that are necessary to support the reliability programs at each intersection of the diagram. Resources include:

- Agency Coordination;
- Staffing;
- Maintenance; and
- Training.

The information shown in **Figure 9** focuses on the interaction between planning and implementation and the potential level of resources required to implement a project. Individually, agency coordination, staffing, maintenance, and training might not make a significant impact on reliability, but when combined together, they can work towards a common goal. This chart summarizes the relationship that planning for congestion has to the monitoring capabilities and assets that are available for congestion management and reliability. The ITRP project identifies strategies to improve reliability based on the resources that are shown in **Figure 9**.
Figure 9 – ITRP Focus Area Intersection/Resource Diagram
3. **KEY OUTCOMES**

After evaluating the existing agency systems and coordination in Nevada for urban and rural environments, a Gap Analysis was conducted to determine system, function, or policy deficiencies that were impacting reliability in the state of Nevada. Strategies were identified to address the gaps in the ability of agencies to address transportation reliability. After the strategies were identified, the performance monitoring plan guidelines were established for evaluating the effectiveness of strategies as well as the existing Nevada systems and processes. The creation and implementation of a performance monitoring program will help to track progress reliability improvements in Nevada. Implementation strategies were then developed to address transportation reliability in Nevada and have been prioritized based on effort and impact, resulting in a recommended implementation schedule. The following sections outline some of the key outcomes of the ITRP program from each of the tasks that provided guidance for the Implementation Plan development.

### 3.1 Gap Analysis

A gap is a system, function, or policy deficiency that is impacting the ability of the state, regional, and local agencies to continue to improve the reliability of travel in Nevada. *Technical Memorandum #4 – Gap Analysis* utilizes the information gathered in the initial steps of the ITRP program development to identify and evaluate gaps in current Nevada processes and policies that are impacting the NDOT and partner agencies’ ability to proactively plan for and address reliability issues. Six gap analysis categories that were developed to consolidate the areas of concern that were evaluated and addressed include:

- **Capacity Improvements and Travel Demand Management** – Combines physical capacity deficiencies and travel demand management (TDM) efforts such as managed lanes, trip reduction strategies, and transit.
- **Traffic Incident Management** – Covers all aspects of traffic incident management, including incident related traveler information.
- **Work Zone Management** – Covers all aspects of work zone management, including construction related traveler information.
- **Traveler Information** – Focuses on broad traveler information services such as mobile access to real-time information and the availability of road weather information.
- **Planning and Policy** – Examines planning related processes and the policies that define them such as land use planning and access management.
- **Operations and Management** – Combines day to day operational procedures with ongoing management and maintenance responsibilities.

Specific regions within Nevada were identified in *Technical Memorandum No. 2 – Stakeholder Identification and Current Processes* as shown in **Figure 10** in order to categorize the gaps and future strategy development by their effective area of impact. Reliability gaps that occur in the rural areas of the state are not likely the same gaps that are experienced in the dense urban areas such as in the center of the Las Vegas Valley. These regions have been used throughout the development of this project to provide consistency with the goals and objectives of the different regions of the state and to ensure the most implementable processes, policies, and projects come out of this ITRP program that can be feasibly introduced into Nevada’s current processes and systems.
Each of the geographic regions in Nevada was evaluated to determine which of the six gap analysis categories were applicable. Table 3 summarizes the results of that evaluation.

Table 3 – Gap Analysis Category Identification by Geographic Area

<table>
<thead>
<tr>
<th>ITRP Regions</th>
<th>Capacity Improvements and TDM</th>
<th>Traffic Incident Mgmt</th>
<th>Work Zone Mgmt</th>
<th>Traveler Information</th>
<th>Planning and Policy</th>
<th>Operations and Mgmt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Statewide (including Rural Corridors)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Southern Nevada (Las Vegas Metro)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Northern Nevada (Reno/Sparks/Carson City/ Lake Tahoe)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>I-80 Corridor</td>
<td>*</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

* These categories were included in the statewide region because the potential strategies to address gaps in these regions may apply to the state as well. Some gaps were identified for these categories that are addressed as part of the statewide strategies.
3.2 Strategies

Gaps initially addressed key needs from transportation, public safety, planning, and other stakeholders in Nevada. Many of the gaps and deficiencies that were identified were combined because of their similarities and were linked to a strategy that would address those multiple gaps. When a gap or deficiency was identified for all regions in Nevada, many times a statewide strategy was developed that would address those local gaps. These were incorporated into a statewide strategy only where it could be logically implemented by NDOT and effective on a local basis.

Thirty-six strategies were developed to address the gaps defined in gap analysis phase of the ITRP program. Table 4 summarizes the results of the strategies developed for the ITRP regions.

<table>
<thead>
<tr>
<th>ITRP Regions</th>
<th>Strategy Category</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Incident Management</td>
</tr>
<tr>
<td>Statewide (including Rural Corridors)</td>
<td>✓</td>
</tr>
<tr>
<td>Southern Nevada (Las Vegas Metro)</td>
<td>✓</td>
</tr>
<tr>
<td>Northern Nevada (Reno/Sparks/ Carson City/ Lake Tahoe)</td>
<td>✓</td>
</tr>
<tr>
<td>I-80 Corridor</td>
<td>*</td>
</tr>
</tbody>
</table>

* These categories were included in the statewide region because the potential strategies to address gaps in these regions may apply to the state as well. Some gaps were identified for these categories that are addressed as part of the statewide strategies.

3.3 Performance Monitoring

Performance measurement is the collection, analysis, and reporting of data to track and assess resources used, work produced and whether specific goals are achieved. Performance measurement is using the science behind what agencies are deploying on the roadways, investing time and budget on, and coordinating with other agencies and states on to prove to the public that their tax dollars are being spent wisely. The outcome of effective performance measurement builds trust and a culture that agencies do work for the public’s best interest and well being. The use of performance measurement will help NDOT evolve to a results-based organization with specific measurable goals adopted.

Performance monitoring can benefit NDOT and its partners in the following ways:

- It shows the effects of construction projects and ITS improvements on travel time, speeds, and delays, thus quantifying the project benefits;
- It shows how strategies related to traffic incident management can reduce crashes;
- It provides data to prioritize projects in a number of ways, such as demonstrating which roadways have the highest level of delays (and thus the greatest needs), and which strategies are most effective in helping traffic congestion and improving safety;
It shows how strategies on traffic incident management and work zones can help to reduce non-recurring congestion; and
It shows how expanded communication strategies can help drivers to better plan their trips to avoid delays.

There are a few ways in which performance monitoring of the transportation system in Nevada is currently happening:

- NDOT conducts performance monitoring to conform to the requirements of Assembly Bill 595, which mandates specific performance monitoring requirements.
- Performance monitoring that is under development by the Freeway and Arterial System of Transportation (FAST), an operational division within the RTC of Southern Nevada. FAST is a unique operations entity in that it manages and controls both the freeway and arterial networks from the FAST Traffic Management Center (TMC).

A key objective of this project is to provide NDOT with a system of performance measures that provide a meaningful way to improve operations, better inform planning and programming, and track progress in providing a more reliable transportation system.

Two main categories of performance measures were identified, outcome–based performance measures and activity–based performance measures. They are described in more detail below:

- **Outcome–based performance measures** provide policy makers, elected officials, and the public with information regarding the reliability of roadways in Nevada. These measures tell us how the system is operating and describe the ‘state of the roadway system’. These reliability measures include average and 95th percentile travel times, crash rates and severity, incident clearance times, travel time delays on construction projects, and travel times before and after construction on selected corridors. Each of these performance measures are described in Figure 11.

- **Activity–based performance measures** are designed for use by NDOT staff responsible for operating and maintaining the state roadway system. These are measures of activities performed by NDOT transportation professionals that indirectly improve the reliability of the transportation system. These include number of dynamic message sign and traveler alerts, 511 system usage, ITS device uptime, crash data in work zones, and reduction in secondary incidents. These measures are described in Figure 11.
Figure 11 – Outcome and Activity-Based Performance Measures
4. **CALL TO ACTION**

The following sections describe how strategies were prioritized for implementation along with identification of how they are recommended to be implemented and how to modify the implementation schedule, if needed.

**4.1 Implementing Reliability-Focused Measures: What Will It Take?**

Effort-impact matrices are a tool that can be utilized to help identify how processes, policies, and projects could be prioritized, factoring in the effort needed to implement and the expected payoff. All implementation strategies were graphed on a matrix based on the effort required to complete the task and the impact the task has on transportation reliability. If funding becomes available, or a partner agency is able to champion some strategy to bring forward in the recommended timeline, this effort-impact matrix can help NDOT to determine the strategy that would most affect reliability and would match with the effort newly available.

On the effort-impact matrix, **effort** relates to the amount of resources required to complete the process, policy, or project. Effort includes resources such as: manpower (internal and external), construction costs, maintenance costs, agency coordination needed, etc. Effort is measured on a scale of one to four for the purpose of this program. On the effort-impact matrix, **impact** relates to the process, policy, or project’s ability to increase transportation reliability in Nevada. The increase in transportation reliability can be due to a reduction in non-recurring congestion or recurring congestion, reduced delay, improved travel times, reduced number of incidents, etc.

The anticipated effort required implementing, operating and maintaining the strategy and its impact on reliability has been identified and assigned to each process, policy, and project based on the scale descriptions shown in **Figure 12**.

![Figure 12 – Effort and Impact Scale Descriptions](image_url)

In general, the “P-I-C-K” rule of thumb should be considered when choosing projects to implement from the effort-impact matrix.

- **P – Proceed**: LOW EFFORT, HIGH IMPACT – this combination for a strategy means that it is relatively straight forward to implement, minimal effort, and will have great benefits to reliability.
- **I – Investigate**: HIGH EFFORT, HIGH IMPACT – this combination for a strategy means that it will take more effort to implement, but is worth the effort because of the payoff in improved reliability for the traveler.
- **C – Consider: LOW EFFORT, LOW IMPACT** – this combination for a strategy means that while the strategy may be straightforward to implement, the benefits from the strategy may not be large, so these strategies may need to be held to a later timeframe to save effort for larger impact strategies.

- **K – Keep as Reference: HIGH EFFORT, LOW IMPACT** – this combination for a strategy may not be a high priority considering the ratio of effort to impact, but would be good to consider at a later date if the effort is available and does not need to be utilized on another strategy or it can be combined with a future strategy to make more of an impact on reliability.

The **Figure 13** shows the effort-impact matrix created for the ITRP. This effort-impact matrix was used to determine which strategies are feasible to be implemented in which timeframe for each agency. This matrix was also used to create the schedule for use by agencies to determine priority of implementation for each strategy. Additional information on projects, such as lead agency, schedule and budget is located in **Table 5** through **Table 8** of this document.
Figure 13 – Effort-Impact Matrix
4.2 Implementation Plan and Schedule

Process, policies, and projects were developed to address the previously identified gaps in the transportation system. These implementation strategies provide an action plan for NDOT and its partner agencies to effect change to the reliability of the transportation network in Nevada. These processes, policies, and projects coincide with the previously defined strategies and many can be measured using the performance measures outlined in the performance measures document. The resulting implementation schedule provides NDOT and partner agencies with a guide map for how to improve transportation reliability throughout the state by implementing specific strategies to effect change for the traveler.

The implementation strategies are provided in detail in Technical Memorandum No. 7 – Implementation Plan. As part of each process, policy, or project, key information is provided to guide the lead agency in the development of the strategy. Each implementation strategy includes a project description which provides an overview of the project and its purpose and effects on reliability, tasks anticipated for the strategy development, agency roles and responsibilities as well as implementation timelines and estimated costs (if applicable). Effort and impact values are also provided for each implementation strategy for use in the effort/impact matrix for prioritization analysis.

Each implementation strategy has been assigned a strategy number which is based on the function that the strategy addresses, the numbered order of projects as they were developed, and the region in which they are recommended to be implemented.

Function: Region:
IM – Incident Management SW – Statewide
IF – Infrastructure SN – Southern Nevada
SR – Sharing Resources NN – Northern Nevada
TP – Transportation Policy I80 – I-80 Corridor
TI – Traveler Information
WZ – Work Zone Management

Implementation strategies have been categorized by 1-2 year, 3-5 year, and 6-10 year timeframes. This identifies the near-term, lower effort, higher impact strategies that would make a noticeable difference in travel reliability in Nevada.

**Near-term timeframe** – Strategies recommended in the next one to two years are those high impact and low effort strategies that can be implemented relatively quickly without significant effort or modifications to exiting systems/programs.

**Mid-term recommendations** – Strategies recommended for the three to five year timeframe are those that generally have some type of funding requirement that may require inclusion into a planning process. In some instances, larger effort strategies have been shown in the mid-term timeframe because of their high impact on transportation reliability.

**Long-term recommendations** – Strategies recommended for the six year and beyond timeframe are those that could make a significant impact on transportation reliability but have comparatively high funding or effort requirements in order to implement.

Table 5 through Table 8 show each strategy for every region and the sequence of implementation based on when the strategy is recommended to begin and how long it is anticipated to last through full deployment/implementation. The location of the strategy on the effort-impact matrix (shown in Figure 13) helped determine the priority of implementation used to create this table.
Information displayed in the table includes the region in which the strategy is recommended, the function of the strategy, the strategy title, the opinion of probable cost for the strategy, and a representation of the timeframe sorted in six month increments.

There are some strategies included in the implementation plan that are already underway. These strategies include:

- **Statewide Evacuation Traffic Plan (Washoe County Emergency Management)** – Evaluate existing transportation and emergency plans to determine evacuation routes and evacuation times for those routes throughout the state. This plan’s development began in 2009 and is anticipated to be completed in 2010.

- **Include Arterial Transportation and Public Safety Agencies in the Traffic Incident Management (TIM) Coalition (RTC of Southern Nevada)** – Enhance local participation in TIM Coalition from agencies that are responsible for the arterial network, including law enforcement as well as traffic engineering and traffic operations staff. This effort is already being initiated by Coalition members.

- **Northern Nevada Traffic Incident Management Plan (RTC of Washoe County)** – A coordinated interagency approach to incident management is expected to involve state and local government, emergency responders, law enforcement and towing contractors that would work together to meet common goals, objectives and performance measures for clearing incidents in both the rural and urban environment. The Northern Nevada TIM Coalition is currently in the RFP Process.

- **Southern Nevada Access Management Standards and Policy (RTC of Southern Nevada)** – Develop an access management policy and associated standards for use by partnering agencies and the Regional Transportation Commission of Southern Nevada in retrofitting existing roadway corridors or developing new roadway corridors in the Las Vegas Valley. This effort began in 2009 and is anticipated to be completed in 2010.

- **Build a Coalition for I-80 Western States (Nevada DOT)** – This project involves building an I-80 Winter States Coalition for integration and continuity of winter maintenance operations for NV, CA, UT, and WY. This Coalition is being formed to improve the quality of information provided to travelers, and improve the quality of real-time information shared among agencies for decision making. This Coalition began in late 2009 and will have its first multi-state meeting in January 2010.

It is important to note that costs that are shown as zero-dollar amounts are assumed internal agency efforts and build upon existing coordination. These costs may require minimal cost, but for the purposes of this implementation plan are deemed to be low-to-no-cost and are negligible when compared to the effort requirements of other strategies.
### Table 5 – Implementation Schedule (Statewide)

<table>
<thead>
<tr>
<th>Strategy ID</th>
<th>Strategy Title</th>
<th>Lead Agency</th>
<th>Cost ($1,000)</th>
<th>Short Term</th>
<th>Mid Term</th>
<th>Long Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>IM-1-SW</td>
<td>Statewide Evacuation Traffic Plan</td>
<td>Washoe County</td>
<td>$100 Already Underway</td>
<td>[]</td>
<td>[]</td>
<td>[]</td>
</tr>
<tr>
<td>IM-2-SW</td>
<td>Enhance NDOT Notification List</td>
<td>NDOT HQ</td>
<td>$0</td>
<td>[]</td>
<td>[]</td>
<td>[]</td>
</tr>
<tr>
<td>SR-1-SW</td>
<td>Develop Agreements with Counties</td>
<td>NDOT HQ</td>
<td>$50</td>
<td>[]</td>
<td>[]</td>
<td>[]</td>
</tr>
<tr>
<td>WZ-1-SW</td>
<td>Revise the Work Zone Safety &amp; Mobility Guide</td>
<td>NDOT HQ</td>
<td>$25</td>
<td>[]</td>
<td>[]</td>
<td>[]</td>
</tr>
<tr>
<td>TI-1-SW</td>
<td>Performance Measures Output Document</td>
<td>NDOT HQ</td>
<td>$50 per year</td>
<td>[]</td>
<td>[]</td>
<td>[]</td>
</tr>
<tr>
<td>IM-4-SW</td>
<td>Marketing Campaign for &quot;Move It&quot; Laws</td>
<td>NDOT HQ</td>
<td>$225</td>
<td>[]</td>
<td>[]</td>
<td>[]</td>
</tr>
<tr>
<td>SR-3-SW</td>
<td>Link NHP CAD and NDOT Reporting System</td>
<td>NDOT HQ</td>
<td>$50</td>
<td>[]</td>
<td>[]</td>
<td>[]</td>
</tr>
<tr>
<td>IM-5-SW</td>
<td>Citations for not adhering to &quot;Move It&quot; Laws</td>
<td>NHP</td>
<td>$0</td>
<td>[]</td>
<td>[]</td>
<td>[]</td>
</tr>
<tr>
<td>IM-3-SW</td>
<td>Develop Alternate Route Plan for Freeways and Highways</td>
<td>NDOT HQ</td>
<td>$150</td>
<td>[]</td>
<td>[]</td>
<td>[]</td>
</tr>
<tr>
<td>IM-6-SW</td>
<td>Develop Incident Clearance Policies (Rural and Urban)</td>
<td>NDOT HQ</td>
<td>$125</td>
<td>[]</td>
<td>[]</td>
<td>[]</td>
</tr>
<tr>
<td>TP-1-SW</td>
<td>Update Existing Access Management Standards</td>
<td>NDOT HQ</td>
<td>$75</td>
<td>[]</td>
<td>[]</td>
<td>[]</td>
</tr>
<tr>
<td>TI-2-SW</td>
<td>Traveler Information Business Plan</td>
<td>NDOT HQ</td>
<td>$200</td>
<td>[]</td>
<td>[]</td>
<td>[]</td>
</tr>
<tr>
<td>SR-2-SW</td>
<td>Centralized Database for Regional and Statewide Info</td>
<td>NDOT HQ</td>
<td>$500</td>
<td>[]</td>
<td>[]</td>
<td>[]</td>
</tr>
<tr>
<td>TI-3-SW</td>
<td>Expand Traveler Information at Welcome Centers</td>
<td>NDOT HQ</td>
<td>$100</td>
<td>[]</td>
<td>[]</td>
<td>[]</td>
</tr>
<tr>
<td>IM-8-SW</td>
<td>Towing Incentive Program Feasibility Study</td>
<td>NDOT HQ</td>
<td>$200</td>
<td>[]</td>
<td>[]</td>
<td>[]</td>
</tr>
<tr>
<td>IM-7-SW</td>
<td>Rural Transportation Incident Management Manual</td>
<td>NDOT HQ</td>
<td>$75</td>
<td>[]</td>
<td>[]</td>
<td>[]</td>
</tr>
<tr>
<td>TI-4-SW</td>
<td>Expand Traveler Information at I-80 Rest Areas</td>
<td>NDOT HQ</td>
<td>$100</td>
<td>[]</td>
<td>[]</td>
<td>[]</td>
</tr>
<tr>
<td>IM-9-SW</td>
<td>Towing Incentive Program</td>
<td>NDOT HQ</td>
<td>$500 in first year</td>
<td>[]</td>
<td>[]</td>
<td>[]</td>
</tr>
<tr>
<td>TI-5-SW</td>
<td>Public Private Partnerships for Traveler Information Services</td>
<td>NDOT HQ</td>
<td>$100 per year</td>
<td>[]</td>
<td>[]</td>
<td>[]</td>
</tr>
<tr>
<td>Strategy ID</td>
<td>Strategy Title</td>
<td>Lead Agency</td>
<td>Cost ($1,000)</td>
<td>Short Term</td>
<td>Mid Term</td>
<td>Long Term</td>
</tr>
<tr>
<td>-------------</td>
<td>----------------</td>
<td>-------------</td>
<td>---------------</td>
<td>------------</td>
<td>----------</td>
<td>-----------</td>
</tr>
<tr>
<td>TP-2-SN</td>
<td>Develop Access Management Standards and Policy</td>
<td>RTC of So. NV</td>
<td>$175</td>
<td></td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>IM-10-SN</td>
<td>Include Additional Agencies in TIM Coalition</td>
<td>NDOT HQ</td>
<td>$0</td>
<td></td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>TI-6-SN</td>
<td>Evaluate the Use of Private Data for Travel Time Program</td>
<td>NDOT FAST</td>
<td>$50</td>
<td></td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>SR-4-SN</td>
<td>Reinstate the RTC TCIP</td>
<td>RTC of So. NV</td>
<td>$3,000</td>
<td></td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>TP-3-SN</td>
<td>Develop Land Use Planning Policy</td>
<td>RTC of So. NV</td>
<td>$150</td>
<td></td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>SR-5-SN</td>
<td>Develop Agreements in Urbanized Areas</td>
<td>NDOT HQ</td>
<td>$50</td>
<td></td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>TI-7-SN</td>
<td>Enhance FAST ADUS Software</td>
<td>NDOT FAST</td>
<td>$400</td>
<td></td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>TI-8-SN</td>
<td>Partnership Agreement for Use of Private Sector Data</td>
<td>NDOT FAST</td>
<td>$50 + Fees</td>
<td></td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>IM-11-SN</td>
<td>Develop Alternate Route Plan for Freeways and Highways</td>
<td>NDOT HQ</td>
<td>$200</td>
<td></td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>IM-12-SN</td>
<td>Develop CSMP Guidelines</td>
<td>RTC of So. NV</td>
<td>$50</td>
<td></td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>WZ-2-SN</td>
<td>Develop Arterial Work Zone Policies/Programs</td>
<td>RTC of So. NV</td>
<td>$200</td>
<td></td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>IM-14-SN</td>
<td>Arterial Incident Response Team Pilot Program</td>
<td>RTC of So. NV</td>
<td>$500</td>
<td></td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>IM-13-SN</td>
<td>Prepare CSMP on Corridor #1</td>
<td>RTC of So. NV</td>
<td>$200</td>
<td></td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>IF-2-SN</td>
<td>Continue Testing ATSC</td>
<td>FAST</td>
<td>$300</td>
<td></td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>IF-1-SN</td>
<td>Detailed Inventory of Traffic/ITS Equipment</td>
<td>FAST</td>
<td>$1,000</td>
<td></td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>TP-4-SN</td>
<td>Regional Road Impact Fee Feasibility Study</td>
<td>RTC of So. NV</td>
<td>$100</td>
<td></td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>TP-5-SN</td>
<td>Develop Regional Road Impact Fee Program</td>
<td>RTC of So. NV</td>
<td>$300</td>
<td></td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>TI-9-SN</td>
<td>Expand Travel Time Program to Arterials - Pilot Program</td>
<td>NDOT FAST</td>
<td>$1,000</td>
<td></td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>TI-10-SN</td>
<td>Expand Travel Time Program to Limited Access Roads</td>
<td>NDOT FAST</td>
<td>TBD</td>
<td></td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>
Table 7 – Implementation Schedule (Northern Nevada)

<table>
<thead>
<tr>
<th>Strategy ID</th>
<th>Strategy Title</th>
<th>Lead Agency</th>
<th>Cost ($1,000)</th>
<th>Short Term</th>
<th>Mid Term</th>
<th>Long Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>TP-6-NN</td>
<td>Develop Land Use Planning Policy</td>
<td>Washoe RTC</td>
<td>$100</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IM-15-NN</td>
<td>Create TIM Coalition</td>
<td>NDOT HQ</td>
<td>$250</td>
<td>Already Underway</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SR-6-NN</td>
<td>Develop Agreements in Urbanized Areas</td>
<td>NDOT HQ</td>
<td>$50</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IM-17-NN</td>
<td>Develop CSMP Guidelines</td>
<td>Washoe RTC</td>
<td>$50</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IF-3-NN</td>
<td>Detailed Inventory of Traffic/ITS Infrastructure</td>
<td>Washoe RTC</td>
<td>$400</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IM-18-NN</td>
<td>Prepare CSMP on Corridor #1</td>
<td>Washoe RTC</td>
<td>$200</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WZ-3-NN</td>
<td>Develop Arterial Work Zone Policies/Programs</td>
<td>Washoe RTC</td>
<td>$200</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IM-16-NN</td>
<td>Develop Alternate Route Plan for Freeways and Highways</td>
<td>NDOT HQ</td>
<td>$200</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>IF-4-NN</td>
<td>ATSC Pilot Study</td>
<td>Washoe RTC</td>
<td>$300</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TI-11-NN</td>
<td>Integrate CCTV Images to Traveler Information Services</td>
<td>NDOT HQ</td>
<td>$50</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 8 – Implementation Schedule (I-80)

<table>
<thead>
<tr>
<th>Strategy ID</th>
<th>Strategy Title</th>
<th>Lead Agency</th>
<th>Cost ($1,000)</th>
<th>Short Term</th>
<th>Mid Term</th>
<th>Long Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>TI-12-I80</td>
<td>Build a Coalition for I-80 Western States</td>
<td>NDOT HQ</td>
<td>$200</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TI-13-I80</td>
<td>Prepare a Freight Traveler Information Support Plan</td>
<td>NDOT HQ</td>
<td>$150</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TI-14-I80</td>
<td>Freight Traveler Information Infrastructure Project</td>
<td>NDOT HQ</td>
<td>$200</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
4.3 Moving ITRP Forward

The Implementation Schedules provided in Table 5 through Table 8 are provided as a guide to each regional area and statewide on when to implement projects based on the required effort to implement, the anticipated impact on reliability, cost to implement, and funding available to support implementation. The Implementation Schedules are intended to be a guideline and as such, implementation strategies can be shifted as needed based on the types of activities and resources required to complete each strategy.

When evaluating which implementation strategy to initiate if, for example, funding becomes available, agencies should consider strategies that have the greatest impact to reliability such as incident management strategies and those strategies that are the fastest to implement due to funding availability and/or stakeholder buy-off.

Almost all of the strategies identified as part of the ITRP project require internal and external agency coordination to determine how best to proceed with the recommended strategies. Getting this coordination going early on not only benefits and jump starts the near-term strategies, but lays a solid foundation and ownership for strategies planned to be implemented in the mid- or long-term timeframes. A solid foundation and commitment towards transportation reliability could also lay the framework to fast track some strategies from the later timeframes into the near-term depending on agency buy-in and ownership for funding requirements of the strategy or other needs of the strategy.

Table 9 outlines the recommended projects, policies, and processes as a result of the ITRP project. It is important to note that these projects, policies, and processes can be moved into different timeframes based on information obtained from utilizing Table 10.

Table 10 outlines the definition, enablers, steps and strategies for projects, policies, and processes that were identified as part of the ITRP program. This table is intended to be a focused roadmap of what needs to be completed, who generally needs to be involved, and key priorities for the next couple of years. This table should be used to help pave the way for agencies to choose and implement strategies to improve transportation reliability in Nevada. Figure 14 displays the roadmap toward implementation and similarities between the steps.
Table 9 – Project, Policy, and Process Timeframe

<table>
<thead>
<tr>
<th>Timeframe</th>
<th>Project</th>
<th>Policy</th>
<th>Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short Term</td>
<td>▪ Statewide Evacuation Plan</td>
<td>▪ Develop Agreements with Counties</td>
<td>▪ Performance Measures Output Document</td>
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<tr>
<td></td>
<td>▪ Marketing Campaign for “Move It” Laws</td>
<td></td>
<td>▪ Enhance NDOT Notification List</td>
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<td></td>
<td>▪ Link NHP and NDOT Reporting System</td>
<td></td>
<td>▪ Revise Work Zone Safety &amp; Mobility Guide</td>
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<td></td>
<td>▪ Develop Access Management Standards and Policy</td>
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<td></td>
<td>▪ Evaluate the use of Private Data for Travel Time Program</td>
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<td></td>
<td>▪ Develop Alternate Route Plan for Freeways and Highways</td>
<td>▪ Reinstall the RTC TCIP</td>
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<tr>
<td></td>
<td>▪ Traveler Information Business Plan</td>
<td>▪ Develop Land Use Planning Policy</td>
<td>▪ Include Additional Agencies in TIM Coalition</td>
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<tr>
<td></td>
<td>▪ Centralized Database for Regional and Statewide Information</td>
<td>▪ Develop Agreements in Urbanized Areas</td>
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<tr>
<td></td>
<td>▪ Expand Traveler Information at Welcome Centers</td>
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<tr>
<td></td>
<td>▪ Towing Incentive Program Feasibility Study</td>
<td></td>
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<tr>
<td>Mid Term</td>
<td>▪ Enhance FAST ADUS Software</td>
<td>▪ Partnership Agreement for use of Private Sector Data</td>
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<tr>
<td></td>
<td>▪ Develop Alternate Route Plan for Freeways and Highways</td>
<td>▪ Develop Arterial Work Zone Policies/Programs</td>
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<td></td>
<td>▪ Arterial Incident Response Team Pilot Program</td>
<td>▪ Develop CSMP Guidelines</td>
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<td></td>
<td>▪ Prepare CSMP on Corridor #1</td>
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<tr>
<td></td>
<td>▪ Continue Testing ATSC</td>
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<td></td>
<td>▪ Detailed Inventory of Traffic/ITS Infrastructure</td>
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<tr>
<td></td>
<td>▪ Regional Road Impact Fee Feasibility Study</td>
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<tr>
<td></td>
<td>▪ Detailed Inventory of Traffic/ITS Infrastructure</td>
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<tr>
<td></td>
<td>▪ Prepare CSMP on Corridor #1</td>
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<tr>
<td></td>
<td>▪ ATSC Pilot Study</td>
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<td></td>
<td>▪ Integrate CCTV Images to Traveler Information Services</td>
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<td></td>
<td>▪ Prepare a Freight Traveler Information Business Plan</td>
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<tr>
<td></td>
<td>▪ Freight Traveler Information Infrastructure Project</td>
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<tr>
<td>Long Term</td>
<td>▪ Towing Incentive Program</td>
<td>▪ Public Private Partnerships for Traveler Information Services</td>
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<td></td>
<td>▪ Expand Travel Time Program to Arterials – Pilot Program</td>
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<td></td>
<td>▪ Expand Travel Time Program to Limited Access Roads</td>
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<tr>
<td></td>
<td>▪ Develop Regional Road Impact Fee Program</td>
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</table>
Table 10 – Implementation Steps Checklist

<table>
<thead>
<tr>
<th>Decision Tools and Actions</th>
<th>Process</th>
<th>Policy</th>
<th>Project</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Definition</strong> (Characteristics that a project, policy, or process would have to determine what enablers and steps associate with the strategy.)</td>
<td>Typically internal effort</td>
<td>Could be implemented internally or with consultant</td>
<td>Could be implemented using a consultant contract</td>
</tr>
<tr>
<td></td>
<td>Meetings and minor modifications to existing systems</td>
<td>Coordination between agencies or departments within a signal agency</td>
<td>Cost typically exceeds $25,000</td>
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<td></td>
<td>Multiple levels of management involvement and approval</td>
<td>Could include multiple levels of management involvement and approval</td>
<td>Purchase of equipment or installation/ modification of some physical infrastructure</td>
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<td></td>
<td>Typically does not involve a final deliverable – these strategies are incorporated into day-to-day or event-specific strategies</td>
<td>Could include signature requirements for adoption/approval</td>
<td>Could require significant effort in coordination between multiple agencies</td>
</tr>
<tr>
<td><strong>Enablers</strong> (Factors and considerations that are in place or can be put in place relatively quickly to enable the strategy to be executed – typically a determining factor in pursuing a strategy.)</td>
<td>Existing agency coordination and buy-off or means to obtain agency coordination and buy-off</td>
<td>Existing legislative approval to support ultimate policy descriptions</td>
<td>Funding already available or can be shifted between sources to provide funding to project</td>
</tr>
<tr>
<td></td>
<td>If strategy involves integration of systems, agency technical support is able to provide help with implementing strategy</td>
<td>Existing public/private sector/media approval as warranted by policy development or could obtain approval relatively quickly through established process</td>
<td>Strategy is already included in TIP and/or STIP or can be reasonably added to TIP and/or STIP as needed</td>
</tr>
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<td></td>
<td>The process to modify an existing process is established or can be reasonably implemented when the strategy is underway</td>
<td>Existing policy is in place and modifications to policy would not require substantial approval processes</td>
<td>Existing on-call contracts with consultants for support on project types</td>
</tr>
<tr>
<td><strong>Steps</strong> (Potential steps or tasks typically associated with each type of strategy in order to gain approval, input, and buyoff as well as implement each strategy.)</td>
<td>Conduct meetings with other entities (professional organizations, national transportation associations, FHWA, others) to build partnerships in anticipation of integration of process and to evaluate existing or needed process</td>
<td>Legislative approvals need education and lobbying to build support and funding for action – sometimes many years in advance of policy strategy being initiated depending on funding or approval timelines</td>
<td>Work with partners (RTC’s, NDOT planning office) to include project in TIP and STIP programming and/or determine which internal agency funding/budgets can be shifted to accommodate project in which fiscal year – this planning typically has to occur a number of years prior to actual project initiation</td>
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<td></td>
<td>Coordinate external stakeholder/agency meetings – define what process other agencies have to take the process through to implementation. Coordinate internal stakeholder meetings to get departments within individual agencies to begin to move forward on their action items or determine cost sharing potential for implementing near-term strategies (involve planning department, financial departments, PIOs, operations departments, specific people, or specific committees in process development)</td>
<td>Conduct City, County, and MPO board/committee presentations to educate on policy and gain approval for proceeding with development/modification of policy</td>
<td>Establish project management structure between agencies and consultant support if chose/required</td>
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<tr>
<td></td>
<td>Identify funding for development, if needed</td>
<td>Develop and implement marketing strategies to agencies to gain support</td>
<td>Initiate RFP development and process if consultant support is chosen/required</td>
</tr>
<tr>
<td></td>
<td>Modify/implement process and consider standards usage when developing process</td>
<td>Identify funding for development, if needed</td>
<td>Conduct City, County, and MPO board/committee presentations as needed to educate on project and gain/maintain approval of funding usage</td>
</tr>
<tr>
<td></td>
<td>Coordinate with other agencies on evaluation of new/modified process</td>
<td>Develop policy with input from appropriate stakeholder agencies</td>
<td>Involvement from stakeholder agencies that could be affected by outcomes of project – include important perspectives for final deliverable</td>
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<td></td>
<td>Meet with legislature to make them aware of near-term initiatives that could lead to future legislative action needed for expansion or follow-on strategies</td>
<td>Establish a review procedure for deliverables consistent with requiring final agency approval of key stakeholder agencies</td>
</tr>
</tbody>
</table>
| | | Education on policy contents/modifications to appropriate stakeholder agencies when completed for adoption | Produce end product of project – document, plans, software, etc.
Needs and issues in transportation reliability

**PROCESS**
- Evaluate process
- Internal/external coordination
- Identify funding if needed
- Modify/implement process
- Coordinate on evaluation of process

**POLICY**
- Buy-off on need
- Coordination for action
- Write policy
- Approval
- Education process

**PROJECT**
- Internal/external coordination
- Establish management structure
- Identify funding/programming
- Stakeholder involvement as needed
- Produce end product

Figure 14 – Implementation Steps Diagram