

## NEVADA'S TSMO INVESTMENT PRIORITIZATION TOOL

By: Nevada Department of Transportation

### IN THIS CASE STUDY YOU WILL LEARN:

1. How Nevada developed and incorporated an investment prioritization tool (IPT) into their TSMO Plan.
2. How the IPT integrated operations and management into all aspects of project delivery.
3. How the IPT specific criteria is designed based on specific criteria to address TSMO strategic goals, funding, risks, and strategic value.

### BACKGROUND

The Nevada Department of Transportation (NDOT) Statewide TSMO Program Plan describes the need and rationale for a statewide TSMO Program, and delineates the strategic approach to improve



management and operations of transportation systems across all modes of transportation. The plan also defines a programmatic

approach to establish necessary actionable items and a timeframe to successfully implement the TSMO Program. Recognizing that at the core of a TSMO program is the integration of operations and management into all aspects of the project delivery process, one of the tools developed as part of the TSMO Programmatic Elements is the Investment Prioritization Tool (IPT). This tool is designed to help identify the state's transportation priorities and achieve the established TSMO goals and objectives in the most sustainable and efficient way. The tool helps to establish a formal process to institutionalize TSMO goals and objectives during the needs assessment and project selection for efficient resource allocation.




### TSMO PLANNING, STRATEGIES, AND DEPLOYMENT

Historically, NDOT's project selection process has been established by having each division set its own priorities. This approach could be improved by prioritizing projects based on their alignment with NDOT's TSMO goals, objectives, and projected performance-

based benefits. NDOT recognizes the importance of introducing a new system which will prioritize projects efficiently, strategically allocate resources, and ensure alignment with TSMO best use case efforts. This tool will also simplify the decision-making process and help build the mindset and culture of TSMO integration.

The TSMO IPT is designed based on specific criteria to address the TSMO strategic goals, funding, risks, and strategic value, including but not limited to the following:

- **Alignment with TSMO Strategic goals and objectives** – ensure the project/activities/services help achieve the goals and objectives of the TSMO Program. The goals and objectives are aligned with those of the department, specifically the One Nevada plan, making the higher ranked projects more viable solutions in the department-wide project selection process. Below are the items for consideration under this criterion:
  - **Enhance Safety** - Reduce incidents, injuries, and fatalities.
  - **Preserve Infrastructure** - Maintain transportation assets to preserve investments.
  - **Optimize Mobility** - Maximize system efficiency by reducing congestion and/or promoting multimodal transportation.
  - **Foster Sustainability** - Develop a sustainable transportation system through sustainable and balanced design, operations, and maintenance.
  - **Enhance Reliability** - Improve economic competitiveness and enhance quality of life through reliable travel times.
  - **Optimize Customer Service** - Provide timely and accurate travel information to internal and external customers to enable informed decision-making.

Strategic Goals	Strategic Objectives
 <b>Enhance Safety</b>	Reduce incidents, injuries, and fatalities.
 <b>Preserve Infrastructure</b>	Maintain transportation assets to preserve investments.
 <b>Optimize Mobility</b>	Maximize system efficiency by reducing congestion and/or promoting multi-modal transportation.
 <b>Foster Sustainability</b>	Develop a sustainable transportation system through sustainable and balanced design, operations, and maintenance.
 <b>Enhance Reliability</b>	Improve economic competitiveness and enhance quality of life through reliable travel times.
 <b>Optimize Customer Service</b>	Provide timely and accurate travel information to internal and external customers to enable informed decision-making.
 <b>Enhance Collaboration</b>	Maximize coordination and cooperation between NDOT divisions and partnering agencies to proactively manage and operate an integrated transportation system.

*Investment Prioritization Tool (IPT)*

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- **Enhance Collaboration** - Maximize coordination and cooperation between NDOT divisions and partnering agencies to proactively manage and operate an integrated transportation system.

- **Cost:** Listed in 5 categories as follows:
  - \$0 - \$499,999
  - \$500,000 - \$999,999
  - \$1 M - \$2.99 M
  - \$3 M - \$5 M
  - Greater than \$5 M
- **Implementation Timeframe:** Aligned with the NDOT ITS Strategic Deployment Plan (SDP):
  - **Short-Term** (within 5 years)
  - **Intermediate** (within 5 to 10 years)
  - **Long-Term** (more than 10 years)

The criteria of cost and implementation timeframe result in a higher score for projects with a low cost and short-term implementation. When combined with the strategic goals and objectives, this criterion allows for low cost, easily implemented projects aligned with the goals of TSMO and the department to naturally rise to the top of the list for consideration.

- **Dependencies, Business Risk, and Limitations:** Qualitative measures on the level of risks and degree of impact of a specific project / technology:
  - **Examples:** Staffing, legal compliance, operational, stakeholders/public involvement, timing, data sources, technology, etc.
- **Benefit/Cost Ratio:** Listed in 3 categories of Low (0- 4), Mid (5- 8), High (9- 12), depending on the proven
- **Strategic Value:** To assess if there is a high demand or need for the implementation of the project.

**Table 1:** Goals and Objectives to be Considered for Project Prioritization Process

Strategic Goals	Strategic Objectives
Enhance Safety	Reduce incidents, injuries, and fatalities.
Preserve Infrastructure	Maintain transportation assets to preserve investments.
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Establishing an investment portfolio for the TSMO Program is an ongoing process. NDOT will update this tool annually to ensure the criteria, scoring, and priorities are up-to-date and in alignment with statewide transportation goals and objectives.

## COMMUNICATIONS PLANNING AND EXECUTION

NDOT ensured that the criteria established for the IPT and definitions are aligned with the One Nevada Transportation Plan. Other long-range plans and documents were also reviewed to ensure a unified strategic direction in development and utilization of this tool. Once the tool was established, NDOT held workshops with its districts to discuss the incorporation of this tool into everyday business. Following these workshops, NDOT began integration of the IPT into the Traffic Operations Division business processes in early 2019. The tool is now incorporated into the development and selection of projects within NDOT's ITS Strategic Deployment Plan.

The ITS SDP helps identify and plan for required projects, services and activities within short (5 years), mid (5 to 10 years), and long-term (more than 10 years) timeframes. After identifying the needs, the plan uses the traditional approach of discussions with the districts to prioritize projects for budget allocation and implementation. Using the IPT, once the list of projects is updated, the projects are inserted into the IPT and prioritized based on the identified scoring criteria. It is important to understand that the IPT is a tool that has been developed to rank the projects based on established TSMO priorities to help aid in the decision-making process. This means that a project should not be selected solely on its ranking using the IPT, but at the very least considered given its alignment with the established criteria.

## OUTCOMES, BENEFITS, AND LEARNINGS

Using the IPT, the Traffic Operations Division will continue to prioritize projects and share the results with the districts. After further discussions with the districts, the Traffic Operations Division will then prioritize projects and allocate resources based on a systematic needs' assessment. This new process helps NDOT have a better understanding of how the deployment of new projects will serve the needs of the public, improve safety and mobility of travelers and provide improved insight on infrastructure gaps and needs. In addition, utilization of this tool has facilitated discussions regarding the development of additional IPT's for other NDOT divisions.

**Table 2 - Benefit/Cost ratio for ITS technologies**

Technology	Benefit/Cost ratio
Dynamic message signs	3.81
Closed-circuit television	3.95
Microwave vehicle detection systems	1.02
Freeway courtesy patrol	3.82
Tolling/Express Lanes	2.50*
Ramp Metering	9.00*
Adaptive Traffic Signal Control	12.25*
RWS	6.00*
Animal Crossing	1.50
DMS & CCTV	3.88
DMS & CCTV & RWS	4.59
CCTV & RWS	4.98

\*Averaged value

## FURTHER INFORMATION

Nevada TSMO Program Plan

Why TSMO? Marketing Flyer

NOCoE Knowledge Center: <https://transportationops.org/knowledge-center>