



MEMORANDUM

DATE: Wednesday, March 18, 2020
TO: The Transportation Commission
FROM: John Lorme, Director, Maintenance and Operations
Sophie Shulman, Director, Innovative Mobility
SUBJECT: Advance Traffic Management System Upgrade

Purpose

The purpose of this memorandum is to summarize and inform the Transportation Commission about the Operation Centers Advance Traffic Management System (ATMS), and to request a decision regarding options to move forward.

Action Requested

The staff seeks support from the TC to upgrade the ATMS through a competitive Request for Proposal (RFP) process. The RFP is in process and needs to move forward, with expected funding from FY 20 Roll Forward funds (remaining balances in programs after year-end, available for reallocation), FY 21 Innovative Mobility Program funds, and savings from the final close out of remaining RoadX projects.

Background

An Advanced Traffic Management system is the backbone system for the Operation Centers. It controls and integrates the public message functions (e.g. CoTrip, 511, Text/Email Notifications), and operates the roadside devices (e.g. Cameras, Variable Message Boards, Managed Lane and Corridor Management Devices).

The current system, Colorado Traffic Management System (CTMS), is over 17 years old. The functionality and business model are outdated. Comprehensive Situational Awareness, Computer Aided Dispatch, and Innovative Mobility integration are not included. When the Panasonic contract was awarded and considered the future, all investments into CTMS were stopped, so there is a significant current maintenance and enhancement backlog. The contract to support CTMS expires in September, 2021.

Market Research

A formal Request for Information (RFI) for ATMS systems was completed, which engaged private industry and provided the department with a foundational market understanding. There is a strong competitive market, able to provide current and future functionality/operational improvements, with an anticipated lower cost and shared development/enhancement business environment.

Options

Option 1 - Do Nothing

- Public Messaging and Operations Functionality will be lost when Systems fail in one to three years. The problem will be amplified, and emergency and significant resources would be needed to correct.

Option 2 - Sole Source to Current Vendor

- Continues outdated System with current functionality (operations and resiliency). Anticipated maintenance and enhancement costs at over \$1.55M/year in FY21 and beyond.

Option 3 (Recommended) - Upgrade through Competitive RFP

- Increased Operational Efficiencies, Integrated Future/Emerging Technology, and shared development/enhancement costs.
- Funding Request of \$3M, with expected funding from FY 20 Roll Forward funds (remaining balances in programs after year-end, available for reallocation), FY 21 Innovative Mobility Program funds, and savings from the final close out of remaining RoadX projects.
- Anticipated lower maintenance costs, so system will pay for itself over time.

Attachments

Real-time Operations ATMS Presentation





COLORADO
Department of Transportation
Division of Maintenance & Operations



Real-time Operations – Advanced Traffic Management System



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PRESENTATION SUMMARY

Agenda:

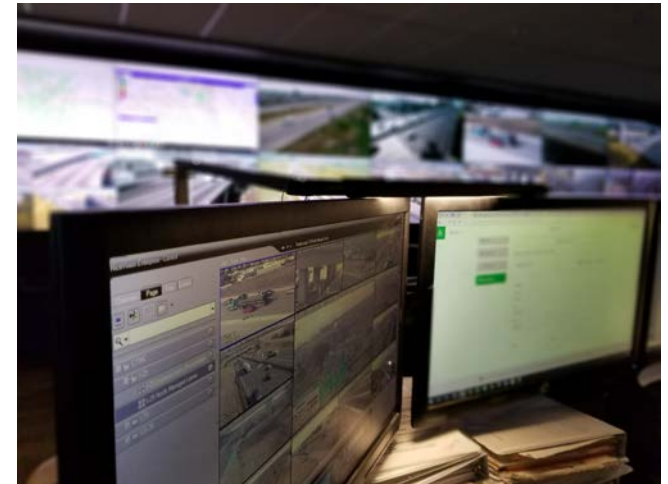
- What is it?
- ITS Importance
- Innovative Mobility Connection
- Existing System Background
- Market Research/Analysis
- Alternatives
- Recommendation/Discussion





Advanced Traffic Management System

- What is it?
 - The Advanced Traffic Management System (ATMS) field is a primary subfield within the Intelligent Transportation System (ITS) domain.
 - The ATMS view is a top-down management perspective that integrates technology primarily to **improve the flow of vehicle traffic and improve safety.**
 - Real-time traffic data from cameras, speed sensors, etc. flows into a Transportation Management Center (TMC) where it is integrated and processed (e.g. for incident detection), and may result in **actions taken** (e.g. traffic routing, DMS messages) with the goal of **improving traffic flow.**





Advanced Traffic Management System

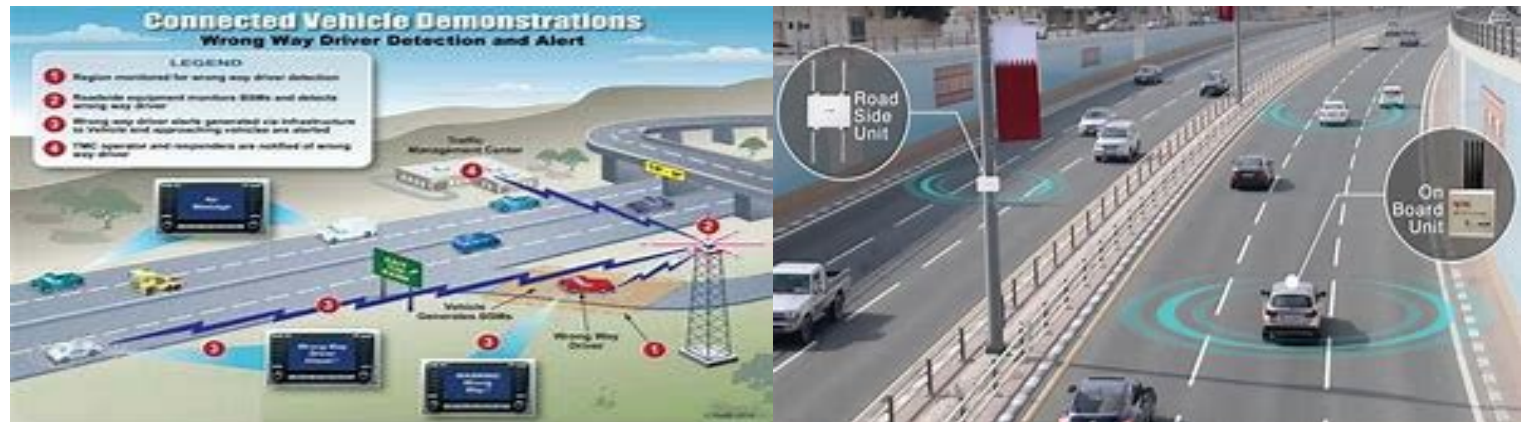
- Intelligent Transportation Systems (ITS) - ITS as a system, is the *information and communication* technologies that are applied in the transportation infrastructure and highway system.
 - A new ATMS will enable future automation, edge computing and machine learning.
 - In return, we will respond to situation in an efficient and expeditious manner, minimizing the reliance on humans to make every tactical decision and action.
 - EX: Fog detected, automatically posting onto Variable Message Boards - “Fog may exist ahead”





Advanced Traffic Management System

- **Innovative Mobility Connection**
 - ATMS is the backbone system for Communicating with the Public with technologies such as:
 - Connected vehicle technologies - a modern ATMS system offers greater flexibility to integrate connected vehicle technologies and connected infrastructure. Use cases may include: spot weather, queue, smart work zone and many others
 - Greater ability to operationalize our current and future mobility data
 - Machine Learning and Artificial Intelligence
 - ATMS will be the operational user interface





Advanced Traffic Management System

- **Background:**

- 17+ year old system.
- Backbone System of the Centers
 - CoTrip, VMS, Public Messaging,
 - Cameras, Managed Lanes,
 - and Corridor Management Devices.



- **Primary Concerns:**

- **Functionality is out dated:**
 - No Comprehensive Situational Awareness
 - No Computer Aided Dispatch (Center to Field, Center to Center)
 - No Connected vehicle/infrastructure technology capability
- The Contract to support the System expires September, 2021.
- Cost to maintain the current system is \$\$\$ and these systems do not allow flexibility for integration of newer devices/software architecture.



- **Market Research: Formal RFI Completed**
 - Operational Efficiencies Future/Emerging Functionality
 - Lower and Shared Costs
 - High Cost/Benefit Ratio: Between 10:1 to 26:1
- **Analysis:**
 - Option 1 - Do Nothing
 - Functionality Lost in Couple Years; Problem Amplifies
 - Option 2 - Sole Source Current Vendor.
 - Outdated and Cumbersome
 - \$1.55M Additional FY21 and Beyond
 - Option 3 - Upgrade through Competitive RFP
 - \$3M Cost for Implementation and Enhancements



Advanced Traffic Management System

- Recommendation:
 - Option 3 - Hire New Company through Competitive RFP
 - \$3M for Implementation and Enhancements
 - Anticipated Lower Maintenance Costs, so System will Pay for itself over time.
- Funding Proposal:
 - Innovative Mobility \$1.5M FY21
 - Maintenance Roll Forward -
 - #1 request - \$1.5M

