ALASKA IWAYS ARCHITECTURE UPDATE

December 2016
Version 1.4

Revision History

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V 1.4	December 28, 2016	D. Nguyen	L. Jacobson	Incorporate final comments & changes

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AASHTO	American Association of State Highway and Transportation Officials
ADA	Americans with Disabilities Act
ADOT&PF	Alaska Department of Transportation & Public Facilities
AFD	Anchorage Fire Department
AIAS	Alaska International Airport System
AKIA	Alaska Iways Architecture
AMATS	Anchorage Metropolitan Area Transportation Solutions
AMHS	Alaska Marine Highway System
ANSI	American National Standards Institute
APD	Anchorage Police Department
APTA	American Public Transportation Association
ARIA	Anchorage Regional ITS Architecture
ARRC	Alaska Railroad Corporation
ASC	Alaska Science Center
AST	Alaska State Troopers
ASTM	American Society for Testing and Materials
ATIS	Advanced Traveler Information Systems
AVL	Automated Vehicle Location
C2C	Center-to-Center
C2F	Center-to-Field
CAPRI	Compliance Analysis and Performance Review Information
CBERRRSA	Chugiak/Birchwood/Eagle River Rural Road Service Area
CCTV	Closed Circuit Television
CDL	Commercial Driver's License
CDLIS	Commercial Driver's License Information System
CIP	Capital Improvement Projects
CMP	Congestion Management Plan
CMU	Conflict Monitor Units
CPRM	Certified Public Road Miles
CV	Commercial Vehicle
DHSEM	Division of Homeland Security and Emergency Management
DMS	Dynamic Message Signs
DMV	Division of Motor Vehicles
DOT&PF	Department of Transportation & Public Facilities
DPS	Department of Public Safety
DSRC	Dedicated Short-Range Communications
EAS	Emergency Alert System

EMS	Emergency Medical Services
EOC	Emergency Operations center
EOP	Education and Outreach Plan
ESS	Environmental Sensor Stations
ETMCC	External TMC Communications
FHWA	Federal Highway Administration
FMCSA	Federal Motor Carrier Safety Administration
FMS	Field Management Stations
FTA	Federal Transit Administration
GFI	General Farebox Inc.
GIS	Geographic Information System
GPS	Global Positioning System
GTFS	Google Transit Feed Specification
H&SS	Health & Social Services
HAR	Highway Advisory Radio
HSIP	Highway Safety Improvement Program
IEEE	Institute of Electrical and Electronics Engineers
IM	Incident Management
IMT	Incident Management Team
IPEMS	Injury Prevention and EMS
ISO	International Organization for Standardization
ISP	Information Service Provider
ISSD	Information Systems and Services Division
ITE	Institute of Transportation Engineers
ITS	Intelligent Transportation Systems
IVR	Interactive Voice Response
JBER	Joint Base Elmendorf-Richardson
M&O	Maintenance & Operations
MCM	Maintenance and Construction Management
MCV	Maintenance and Construction Vehicle
MDC	Mobile Data Computers
MMS	Maintenance Management System
MOA	Municipality of Anchorage
MPO	Metropolitan Planning Organization
MS	Message Sets
MSCVE	Measurement Standards and Commercial Vehicle Enforcement
MTP	Metropolitan Transportation Plan
NEMA	National Electrical Manufacturers Association
NOAA	National Oceanic and Atmospheric Administration

NTCIP	National Transportation Communications for ITS Protocol
NWS	National Weather Service
OEM	Office of Emergency Management
PMB	Portable Dynamic Message Signs
PTD	Public Transportation Department
RAWS	Remote Automated Weather Stations
RWIS	Road Weather Information Systems
SAE	Society of Automotive Engineers
SAFER	Safety and Fitness Electronic Records
SCP	Signal Control and Prioritization
SDO	Standards Development Organization
SEOC	State Emergency Operations Center
SPP	Stakeholder Participation Plan
STIP	Statewide Transportation Improvement Program
STIP	Statewide Transportation Improvement Program
TCIP	Transit Communications Interface Profiles
TDP	Transportation Data Programs
TMC	Traffic Management Center
TMCC	TMC Communications
TMDD	Traffic Management Data Dictionary
TOC	Transportation Operations Center
TSS	Transportation Sensor Systems
UPWP	Unified Planning Work Program
USDOT	United States Department of Transportation
USGS	U.S. Geological Survey
WIMS	Weigh-In-Motion Systems

1 Introduction

This report documents the update to the Alaska Iways Architecture (AKIA) for the Alaska Department of Transportation and Public Facilities (ADOT&PF). The AKIA is a statewide ITS (Intelligent Transportation System) Architecture that was initially developed in 2003. ADOT&PF developed the label of Iways to represent the state's ITS. Iways stands for, intelligence, integration, internet, and information (the "I") for air, sea, and roadways (the "ways"). The last update to the AKIA was initiated in 2008 and adopted in 2009. This update reflects changes since that time including:

- Updates to the National ITS Architecture.
- Technologies currently in place and planned to be deployed.
- The stakeholder's understanding and assessment of the needs that can be met using ITS.
- Agency and stakeholder changes.

A second document, the Use and Maintenance guide for the AKIA, is a companion to this report. While this report describes the Iways Architecture itself, the Use and Maintenance document provides guidance to support the use of the architecture and guides the maintainer(s) on how to keep the architecture up-to-date.

1.1 What is ITS?

Intelligent Transportation Systems (ITS) involves the application of advanced sensor, computer, electronic, and communication technologies integrated with the built transportation infrastructure. ITS technologies are deployed to improve the transportation system operations, which includes relieving congestion, enhancing safety, providing traveler information, and many others. Some examples of ITS already in place within the state of Alaska include:

- Public information websites such as the ADOT&PF's 511 website and interactive map depicting roadway driving conditions;
- Weather and pavement detectors that provide real-time information to support winter maintenance operations;
- Computerized traffic detectors, including those that can be managed from a central computer platform; and
- Marine vessel tracking and dispatch systems.

ITS technologies continue to support traffic operations in the state of Alaska today and plans are in place to deploy new technologies and expand applications in the future.

1.2 What is an ITS Architecture?

The term 'architecture' in reference to transportation related computerized systems and technologies, is a framework that describes these inherently complex systems. For ITS, architectures are focused on data flows between elements or systems that may be owned and operated by different agencies or departments and are integrated into an overarching system that aims to improve transportation operations. It takes into account the state's existing resources to effectively meet current transportation needs as well as potential future improvements to the system. ITS architectures include:

- The requirements for defining the connections;

- Documenting the connections; and
- Documenting any supporting resources, such as interagency agreements, that will enable the architecture to be implemented as planned

By creating an ITS architecture, existing resources can easily be identified and future needs and expectations can be planned for.

1.3 FHWA Rule 940 on ITS Architecture Compliance

When ITS was first broadly funded by the Federal Highway Administration (FHWA) in the 1990s, many of the systems that were implemented were not designed to enable access to the data that was used within them. When agencies wanted to use the source or processed data for other purposes, they were not able to do so without either replacing the system, or making a large investment to modify their existing system.

For example, many agencies wanted to extract traffic data from freeway management and traffic signal control computer systems so that the data could be used for other functions such as performance monitoring or planning. However, when the systems were specified, the project requirements only identified the organization's management/operations functions. The systems were thus designed to pull traffic data from detectors *into* the system. Data could not be easily exported from the system. In addition, not all the coordination and integration needs with other systems, such as sharing camera images or dynamic message sign control, were identified or known. Computerized systems and software were new ground for many agencies, and the project development processes in place were not designed to support planning for technologies that might be called upon in the future to provide functions not needed in the original core system.

FHWA responded to this issue by recommending that systems engineering processes, developed for computerized technologies, be applied to plan for potential future integration and data connections. Systems engineering processes include the development of systems architectures.

Because these processes provide such long-term added value, the USDOT further instituted the National ITS Architecture conformity rule (23 CRF Part 940) (and the FTA National ITS Architecture Policy on Transit Projects) requiring that ITS Architectures be completed for certain 'regionally significant' ITS projects if the projects are to be eligible for Federal transportation funding. Today, developing, documenting, and using an ITS Architecture is considered a best practice in the transportation/ITS industry.

1.4 Document Overview

This report is organized to address the key requirements of the FHWA Rule 940, relating to ITS Architectures, and includes:

- Chapter 2 Background
  - This chapter provides an overview of ADOT&PF's ITS program.
- Chapter 3 Processes and Outcomes
  - This chapter focuses on stakeholder activities conducted as a part of the ITS Architecture update project.
- Chapter 4 Operational Concept

    - This chapter describes the ADOT&PF Iways Architecture with service area descriptions and data flow diagrams. It includes information on which agencies will fund, own, operate, and maintain the ITS systems as described in the service areas.
- Chapter 5 Interfaces and Information Exchanges
    - This chapter provides an overview of the data flows within the Architecture.
- Chapter 6 Standards
    - This chapter discusses the standards that may be applicable to the data flows identified in the ITS Architecture.
- Chapter 7 Agreements
    - This chapter identifies existing and future agreements that will be required to implement the service areas described in the ITS Architecture.

1.5 Scope of the ITS Architecture

The following defines the scope of the ITS Architecture in terms of geography, timeframe, and purpose & objectives.

1.5.1 Description of the Region

The ITS Architecture documented in this report is a statewide architecture for Alaska and is not focused on a specific region within the state. Figure 1 below displays a map of the state of Alaska as well as major transportation travel ways.

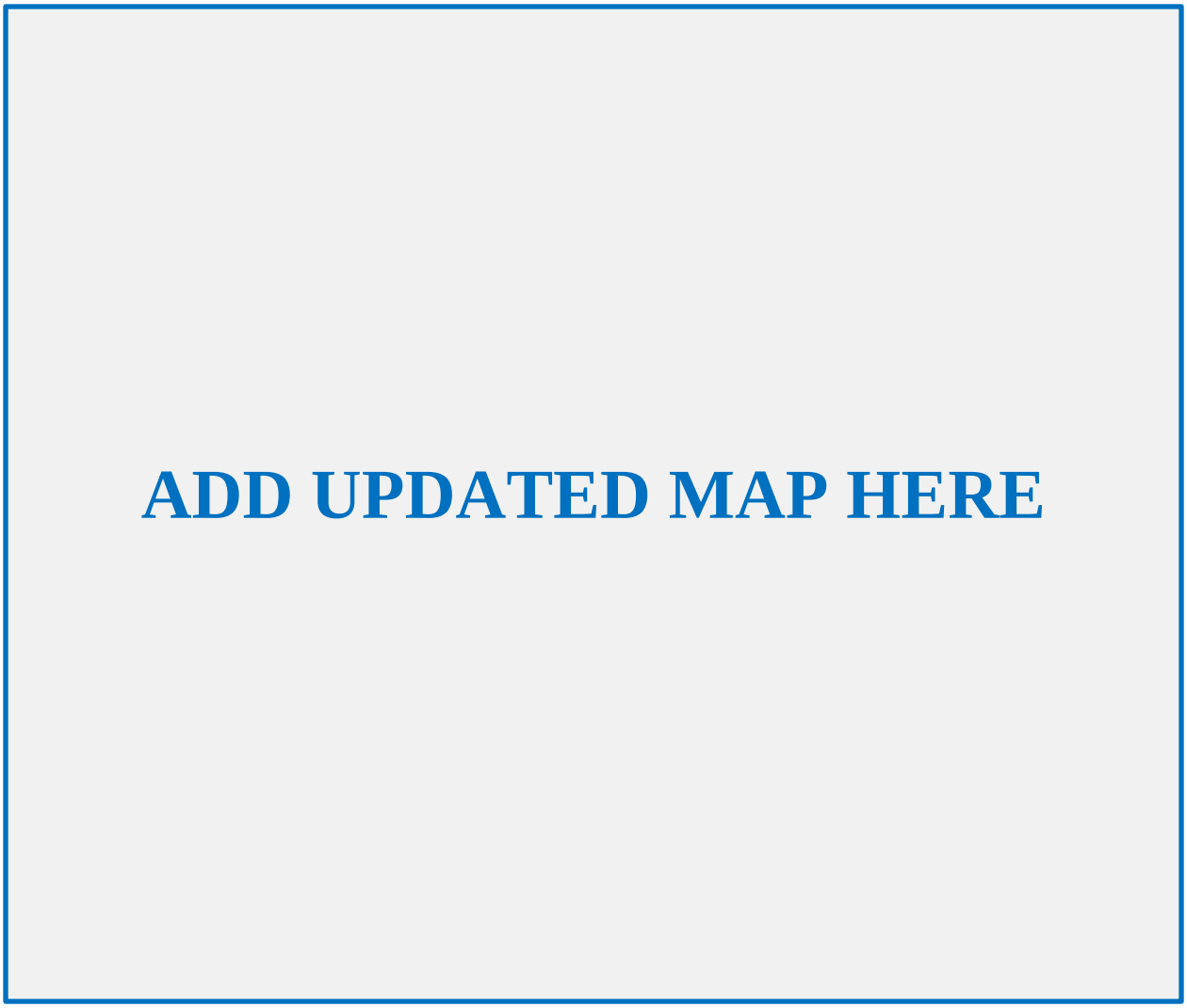


Figure 1. State of Alaska and Major Travel Ways Map

The state of Alaska boundaries encompasses approximately 586,000 square miles of land and is the largest state in the United States. As of 2012 estimates, Alaska has a population of 731,449 where nearly half of those residents live in the Anchorage region.

Alaska is the home to many transportation options including:

- Alaska Railroad Corporation, which services both passenger and freight
- Alaska Marine Highway System, which carries both passengers and automobiles to many of Alaska's coastal communities
- The Alaska International Airport System (AIAS) – comprised of Ted Stevens Anchorage and Fairbanks International Airports

Although Alaska has many unique transportation options for travelers, the state is also a hub to a robust surface transportation system. The surface transportation system includes:

- 16,130 miles of public roads in centerline miles according to ADOT&PF's 2015 Certified Public Road Miles (CPRM) report. ADOT&PF maintains approximately 5,600 miles of those roads.

- Major highways such as the Alaska, Dalton, Denali, Elliot, Glacier, Glenn, Haines, Klondike, Mitkof, Parks, Richardson, Seward, Steese, Sterling, Taylor, Tok Cutoff, Tongass, and Top of the World Highways.
- Signalized intersections on state-owned facilities.
- Remote highways with Portable Dynamic Message Signs (PDMS's) to warn drivers of hazardous driving conditions.

Winter maintenance is a problem unique to Alaska's surface transportation system. Many of Alaska's surface infrastructure are equipped with road weather sensors and anti-icing technology to respond to unsafe conditions. Snow and ice removal on Alaskan roadways is core to maintaining the transportation network.

1.5.2 Timeframe

The update to the Alaska Statewide Iways Architecture will span for 10 years from 2016 – 2026. This timeframe takes into account the state's needs and potential implementation funding availability. As a result of the rapid rate of technology advancements, the ability to plan for technology in the long term (10+ years) becomes limited.

1.5.3 Purpose and Objectives of the Update

The 2009 AKIA report consisted of six main documents that detailed ITS goals, ITS functions, and connections between systems that could support those functions. Stakeholder groups, their needs, and vision were also captured in the documents for a comprehensive report of the statewide ITS Architecture. Although the previous documents were extensive and all-inclusive, it was also difficult to understand. This is largely due to its scale, scope, and complexity. In this update, the focus is to:

- Condense the architecture so that it is easy to access and understand.
- Revise the previous AKIA to reflect updates to existing systems, new systems already deployed since the update, planned systems, and stakeholder visions and goals for ITS in the timeframe of this update.
- Simplify how service areas and the architecture as a whole are accessed in the Turbo Architecture file.

Although there are many changes being implemented in this update, the procedures still follow those from the Statewide Alaska Iways Architecture Maintenance Plan developed in 2008. The architecture also meets Federal Rule 940 requirements, and is consistent with both the National ITS Architecture and the Anchorage Regional ITS Architecture (ARIA).

The primary purpose of the AKIA is to pinpoint and document potential connections between technological systems and elements of agencies/departments that will enhance transportation operations in terms of efficiency and safety. By identifying these connections, future systems can be implemented with these connections in mind and compatibility concerns can be limited.

Additional objectives for the AKIA update include integrating with and supporting statewide planning, programming, and design processes. Alaska's Statewide Transportation Improvement Program (STIP) provides a set of transportation projects to be implemented within the next several years. These sets of projects contain ITS elements to be deployed which should be consistent to a practical extent with what is shown in the AKIA. The AKIA is also a great source for supporting the programming process of ITS

projects by providing information regarding the current status of ITS in the state and identifying planned interfaces with other ITS elements. In project design processes, the AKIA can be of use by identifying stakeholders with whom to coordinate, providing requirements that may be needed for the project, and identifying standards that may be needed for implementation.

Stakeholder involvement is another key objective for this project. Coordination of stakeholders during the update process insured that the architecture provides relevant information that is important to the users. Additionally, the exchange of ideas provided stakeholders a better understanding of the needs of each party and potential future interactions.

2 Background

In 2000, Alaska DOT&PF initiated the development of a statewide ITS architecture. As the architecture development process progressed, the benefits attainable from ITS initiatives for the state were made clear. As a result, a regionally specific ITS architecture was created for Anchorage, AK. By developing an architecture that was regionally specific, the needs and requirements of travelers and stakeholders in Anchorage can be better represented compared to a statewide architecture. The two architectures serve as extensions to one another and can be used to compare differences and similarities between statewide and regional needs and requirements.

The initial AKIA was developed based on Version 3.1 of the National ITS Architecture. The update to the AKIA was then made based on Version 5.0. With changes to the National ITS Architecture over time, updates to the AKIA have to be made to keep the information presented relevant. In the 2009 update to the AKIA, user needs were identified based on stakeholder input from various agencies pertinent to statewide transportation operations. ITS solutions were identified that could satisfy the user needs. The ITS solutions were grouped into user services, which are documented in the National ITS Architecture. The user services describe what ITS solutions should achieve with the completion of the architecture to solve the user needs identified. The user services document from the previous AKIA provided the groundwork for the development of the ITS Long Range Vision and Operational Concept. Within the ITS Long Range Vision and Operational Concept documents from the previous AKIA, a total of seven program areas were established as applicable to the stakeholder goals and requirements. The program areas included Snow and Ice Control, Multi-Modal Information Connections, Traveler Information and Communication, Internal Operations, Commercial Vehicle Operations, Traveler Safety and Infrastructure Security, and Transit Operations. These program areas consist of ITS elements and user services that help satisfy the identified user needs. One of the principle steps in developing the AKIA was to connect the program areas, user needs, user services, and services packages from the National ITS Architecture into one cohesive package.

The development of the 2009 Statewide Alaska Iways Architecture accounted for the needs and requirements of the state. However, as time progressed and technology changed, the architecture had to be adjusted accordingly. This update to the AKIA aims to accommodate for the changes in needs and requirements since the previous update. Since the 2009 update, the National ITS Architecture has been updated with new services, elements, and flows to account for technological innovations over time. The previous update was made up of several lengthy documents, which made it difficult to navigate and comprehend. The AKIA update condenses all of the required ITS architecture components into one concise and easy-to-understand report. By cutting down on excess text, the updated AKIA becomes more coherent and will result in a more manageable maintenance process. The update follows the Iways Maintenance Plan adopted in 2008, but with these major changes to the AKIA, the Maintenance Plan was also updated to what is now referred to as the Use & Maintenance Guide.

3 Processes and Outcomes

The AKIA update relies heavily on stakeholder input and coordination to ensure that the architecture reflects their needs. To identify the needs of Alaska's key stakeholders, interviews and workshop webinars were conducted throughout the update process. The telephone interview was the medium used to gather information on stakeholders and their existing systems and plans. Based on these interviews, a proposed architecture was developed. Workshop webinars were then organized based on the service areas that make up the architecture. Key stakeholders relevant to each service area were invited to review the proposed architecture diagrams. In addition, the workshops were used to further discuss operations, exchange ideas, review implementation plans, and solidify the structure of the architecture. The webinars were implemented based on service areas to provide the relevant information to the correct stakeholder groups. For example, the webinar focused on public transportation may not be completely pertinent to the Measurement Standards and Commercial Vehicle Enforcement (MSCVE) group. By organizing webinars in this manner, the use of the stakeholders' time was used more effectively. In addition to the webinars, periodic status updates and communication were completed throughout the process.

Figure 2 displays the AKIA update process with an emphasis on stakeholder involvement. The interviews were first conducted to gather the information required to draft a concept of operations and the groundwork for the architecture. After the interviews and the initial draft of the architecture was developed, the webinars took place. Each of the three webinars were focused on a set of service areas and a targeted group of stakeholders. This way, the detailed components of the architectures can be reviewed in more detail with the relevant stakeholders rather than a webinar that provides a higher level overview with a general group of stakeholders that would not be as effective. After the webinars, the architecture structure and stakeholder needs were confirmed. The described stakeholder involvement process was part of the stakeholder Education and Outreach Plan (EOP) created for this project. More information on the EOP can be found in Section 3.2 Stakeholder Outreach.

Figure 2. AKIA Update Process

3.1 Turbo Architecture™

Turbo Architecture™ is a software application that aids in the development of regional and project ITS architectures based on the National ITS Architecture. This program is widely used throughout the U.S. in the development and maintenance of ITS architectures, and supports better usability and accessibility to the ITS Architecture. The update to the Alaska Iways Architecture was implemented in Turbo Architecture™ (version 7.1). The software is free and available for download at

http://www.iteris.com/itsarch/html/turbo/turbomain.htm

Turbo Architecture™ supports the FHWA Rule 940 and the FTA National ITS Architecture Policy on Transit Projects; specifically, it provides:

- Support for defining and documenting Functional Requirements
- Support for documenting Operational Concepts (i.e. Roles and Responsibilities)
- Additional fields in Regional Description to fully define an architecture's scope
- Support for documenting any required or existing Agreements
- Support for identifying any ITS Standards available to support the implementation of the architecture

3.2 Stakeholder Outreach

The AKIA update supports planning, programming, and design processes of ITS projects within the state of Alaska. Stakeholder involvement is a critical constituent of the update process. The AKIA Update Stakeholder Education and Outreach Plan (EOP) was created to involve stakeholders more closely in the project and simultaneously educate them on the process. The EOP also created an opportunity for stakeholders to gather together, exchange ideas, and strengthen relationships where ITS operations are involved.

The first primary tool used in the EOP is the stakeholder interview. Multiple interviews took place in the update process, some with individuals, and some with groups. The purpose of these stakeholder interviews was to introduce concepts, exchange ideas, ask questions, and determine educational strategies and opportunities. The interviews included phone calls and teleconferences.

Another tool in the EOP is the webinar. The webinars are central to the EOP and was used to educate stakeholders on the AKIA update process, solidify concepts, and discuss implementation strategies. These three webinars were held with targeted stakeholder groups relevant to the AKIA service areas discussed in each webinar as shown in Figure 2.

An additional tool used in the EOP is the Iways website. The website serves as an educational tool for stakeholders and the general public. Information relating to the AKIA is shown in plain English with easy-to-follow diagrams that support the understanding of the processes completed in the update.

Furthermore, project coordination was key to the process and to stakeholder outreach. The AKIA consultant team consists of personnel that overlap with those from the ARIA consultant team. By creating a team that is comprised of knowledgeable personnel, project coordination is made more seamless.

3.2.1 Alaska DOT&PF

The Alaska Department of Transportation and Public Facilities (ADOT&PF) has an overall mission to "Keep Alaska Moving through service and infrastructure." ADOT&PF is organized into Statewide and three regional offices in Juneau (Southcoast Region), Fairbanks (Northern Region), and Anchorage (Central Region). Each regional office has planning, engineering, traffic data, and maintenance & operations staff that work to achieve the goals and objectives of the region. Statewide also consists of similar staff.

ADOT&PF is made up of many divisions/sections that specialize in different aspects of Alaska's transportation system. As mentioned, there are regional offices and statewide offices. Statewide functions include commercial vehicle operations and enforcement (Measurement Standards and Commercial Vehicle Enforcement) and Alaska Marine Highways staff to support the Regional Offices in meeting the overall mission statement. Each key division within ADOT&PF is treated as a separate stakeholder in this architecture to highlight the interactions and flow of data amongst these divisions along with external flows.

3.2.2 DOT&PF Alaska Marine Highway System

The Alaska Marine Highway System (AMHS) is a division of ADOT&PF responsible for transporting people and vehicles via vessels. AMHS is an integral part of Alaska's State highway system because many coastal communities cannot be accessed by a land-based road system. The Alaska Marine Highway System is divided into Southeast Alaska, South Central Alaska, and Southwest Alaska regions.

AMHS currently maintains and operates 11 vessels in their fleet, with additional ferries being planned. Additionally, all 11 vessels are a part of AMHS's Vessel Tracking system. Users can visit the AMHS's Vessel Tracking website to view the last updated location of each vessel, its destination, and other important information. The information is displayed on an interactive map and is updated frequently. The map also displays all of the communities that these vessels serve. The map can be accessed by visiting the following website:

http://www.dot.state.ak.us/amhs/map.shtml

3.2.3 DOT&PF Alaska Railroad Corporation

The Alaska Railroad Corporation (ARRC) is owned by Alaska DOT&PF since 1985, but functions like a private business. The ARRC does not operate on funds coming from the state and employees are not state employees. Rather, ARRC generates revenue through its freight, passenger, and real estate services.

The ARRC has been in operation since 1923 and operates freight and passenger railroad that ranges from Seward to Fairbanks-North Pole. The passenger railroad service operates year-round and serves more than 500,000 users every year. Although ARRC is primarily a public transportation service provider, freight is a large part of their operations as they link ports to major metropolitan areas such as Anchorage.

3.2.4 DOT&PF Aviation and Airports

ADOT&PF's Aviation division and airports are an important part of the state's transportation system. ADOT&PF owns 247 rural airports not including Ted Stevens Anchorage International Airport and

Fairbanks International Airport. As part of the stakeholder outreach process, ADOT&PF Aviation, Ted Stevens Anchorage International Airport, Bethel Airport, and Juneau International Airport were included in stakeholder interview groups to gather valuable input. Ted Stevens Anchorage International Airport is the second largest airport in the United States in terms of landed weight of cargo aircraft.

3.2.5 DOT&PF Bridge Design Section

Statewide Design and Engineering Services is one of ADOT&PF's many divisions. The Bridge Design Section is a subdivision of the Statewide Design and Engineering Services division with responsibilities of providing design services and consultant management for bridge construction projects and providing a wide range of services with the existing public highway bridges in the state. The Bridge Design Section also works with the Maintenance & Operations (M&O) staff on bridge repairs.

3.2.6 DOT&PF Transportation Data Programs & Regional Highway Data sections

The Transportation Data Programs (TDP) section is responsible for maintaining transportation information systems. These systems have the purposes of aiding in highway design, operations, and maintenance. Additionally, the management systems support transportation planning by providing crash and traffic data to Department personnel and other government agencies.

In regards to data collection, the Regional Highway Data sections (Northern, Central and Southcoast) collect traffic data where it's uploaded to central information system called Traffic Server. They provide Regional traffic data reports and help generate reports for the annual Highway Performance Monitoring System annual submittal. The TDP manages Traffic Server and administers Federal and State reporting needs. TDP also upload weigh-in-motion (WIM) data into Traffic Server used to support class and volume counts.

Traffic data includes traffic volumes and counts, which is used for populating traffic maps and producing reports and data files. The TDP collects and manages the crash data collection and reporting statewide. Crash data is used in annual publications and is also provided to Traffic & Safety Engineers, the Alaska Highway Safety Office and other agencies as requested. All of the data collected from the section is stored in Oracle Tables and integrated with the Department's GIS linear reference system.

3.2.7 DOT&PF Information Systems and Services Division

Another division within ADOT&PF is the Information Systems and Services Division (ISSD). ISSD works to optimize existing technology and implement new technology to improve the productivity, manage costs, and meet the business needs of ADOT&PF. Specifically, ISSD is responsible for delivering geographic information systems, ITS, software engineering, data center operations, and many others services that are crucial to ADOT&PF operations.

ISSD is responsible for managing two statewide ITS systems, Road Weather Information Systems (RWIS) and 511. Their 511 internal reporting system is called RIDE (roadway information description entry). This is essentially an internal 511 for ADOT&PF providing the coordinated exchange of traveler information.

The ISSD Transportation Geographic Information Section (TGIS) maintains the enterprise geospatial database which houses the public roads network in a linear reference system (LRS). TGIS publish the

road network for Department personnel and other agencies. The road network data consists of state and other agency routes along with various attributes such as number of lanes, intersections, mileposts, functional classifications and more. TGIS also maintains a library of route logs and photo logs (via Digital Roadway Viewer) on state routes accessible to Department personnel only.

3.2.8 DOT&PF Maintenance and Operations Division

The state Maintenance and Operations Division is in charge of the daily maintenance and operations of over 5,600 miles of state owned roadways and many other transportation infrastructures. ADOT&PF manages 80 maintenance facilities across the state which are involved in anti-icing, deicing, snowplowing, snow hauling, avalanche control, sign repair, drainage structures, and many other maintenance related responsibilities.

ADOT&PF utilizes ITS in their everyday operations. One example is the usage of Road Weather Information stations (RWIS) to improve efficiency of maintenance processes. RWIS are sensors installed within roadway pavement to collect weather information and conditions. This can be useful for deicing purposes when the pavement reaches certain temperatures. Knowing this, ADOT&PF can take the appropriate actions to combat icy conditions. In some cases, more advanced systems can be utilized. For example, an automatic deicing system on the Glenn Highway Bridge over the Knik River is used to address known icing problems. The department also implements a High Accuracy Differential Global Positioning System (GPS) on many snowplows and snow blowers. This helps with maintenance and operations by providing operators and dispatch real-time information on vehicle location and status so efficiency can be achieved and traveler information can be publicized.

3.2.9 DOT&PF Measurement Standards and Commercial Vehicle Enforcement

ADOT&PF's Measurement Standards and Commercial Vehicle Enforcement (MSCVE) Division's purpose is to ensure accurate trade measurements and to enforce commercial vehicle regulations. The division can be broken down into a Measurements Standards subdivision and a Commercial Vehicle Enforcement subdivision.

The Measurements Standards subdivision is responsible for certifying the accuracy of weighing and measuring devices used in commercial trade. This ensures that there is a level playing field for businesses operating in the state. An example of this is the usage of high capacity vehicle scales, which have specific requirements for design, installation, and calibration for commercial use. Installation of these scales can fall into permanent, temporary, on-road, or off-road categories for different situations. An example of ADOT&PF scales used to measure weights of commercial vehicles is the Weigh-in-Motion System (WIMS). WIMSs allow for vehicle weights to be captured without vehicles having to stop, which allows for more efficient operations.

The Commercial Vehicle Enforcement subdivision enforces federal and state commercial vehicle regulations. The ultimate goal is to improve safety by reducing the number of crashes in fatalities relating to commercial vehicles in the state. Enforcement of commercial vehicle regulations could involve inspection at weigh stations, terminal locations, or other applicable sites for size and weight compliancy.

3.2.10 DOT&PF Design & Engineering Services, Traffic & Safety Engineers

Traffic and Safety personnel focus on improving highway safety and operation. Staff is grouped into statewide and regional offices.

The Statewide Traffic and Safety Engineers manage the Highway Safety Improvement Program (HSIP) and develops and implements policy on traffic safety, operation, and traffic control devices.

They produce and maintain the Alaska Traffic Manual, Alaska Sign Design Specifications Manual, traffic-related standard drawings, and the Alaska Highway Safety Improvement Program Handbook. They provide traffic engineering support to regional staff and complete special projects for headquarters management.

The regional Traffic and Safety Engineers manage regional components of the HSIP and provide traffic engineering support to Planning, Preliminary Design, Design, Construction, and Maintenance staff. They see that regional plans and activities comply with applicable traffic control device standards, and provide expertise on safety countermeasures, traffic signals, street lighting, signs, striping, crashworthy hardware, work zone traffic control, capacity analysis, and railroad crossings.

3.2.11 Alaska Division of Public Health

The state of Alaska has a department called the Department of Health and Social Services (H&SS). This state agency is headquartered in Juneau and includes Emergency Medical Services (EMS) and Injury Prevention services. Within this department is the Division of Public Health. The Division of Public Health provides services such as chronic disease prevention, emergency programs, health planning, and many others.

The EMS and Emergency programs provided by this department includes ensuring the availability of EMS personnel, medical care, emergency planning, and emergency transport. The department responds to crashes via radio communications with hospitals and dispatch. This includes interactions with police and fire agencies. The crash data collected is linked to their population-based trauma registry. The data is used to provide information on crash outcomes and circumstances.

The Department of H&SS Injury Prevention and EMS (IPEMS) is also the entity that funded the smart call boxes maintained by the Regional Maintenance and Operation Departments. The smart call boxes allows for travelers to report emergencies to 911 dispatchers at locations where communication mediums are lacking.

3.2.12 Alaska State Emergency Operations Center, Alaska Division of Military & Veteran's Affairs

The Alaska State Emergency Operations Center (SEOC) belongs to Alaska’s Division of Homeland Security and Emergency Management (DHSEM). The DHSEM is a division with the Alaska Department of Military and Veteran Affairs. The SEOC has a mission to gather, process, and report emergency information to aid in the support of local communicates in emergency response operations. The SEOC is responsible for responding to requests for support from local Incident Management Teams (IMT’s) and also conducts situation assessment and provides reports to a wide variety of agencies and organizations. The center is located on the base at Fort Richardson.

One of the ways the DHSEM and SEOC works toward their mission is to inform the public of emergencies via the Alaska AMBER / Silver Alert system. The Alaska AMBER / Silver Alert system is a

partnership between law enforcement agencies, the media, and the public and is an effective way to provide urgent information to the masses. The Emergency Alert System (EAS) is a television and radio broadcast system and is another method used to quickly disseminate alerts. The public can gain more information regarding the alert systems by visiting the state of Alaska website:

http://amberalert.alaska.gov/

3.2.13 Alaska State Troopers

The Alaska State Troopers (AST) is a department within the Alaska Department of Public Safety (DPS). AST's mission is to preserve the peace, enforce the law, prevent and detect crime, and protect life and property. Major components of the Division of AST include the Alaska Bureau of Investigation, Judicial Services, and the Alaska Bureau of Highway Patrol. The Alaska Bureau of investigation is responsible for major crimes and enforcing illegal drug distribution in the state. The Judicial Services component is responsible for prisoner transport. The Alaska Bureau of Highway Patrol keeps Alaska's highways safe by actively monitoring and traversing the highways.

Alaska State Troopers shares data with Emergency Medical Services, ADOT&PF, and other law enforcement agencies. By coordinating with EMS, AST plays a critical role in Alaska's incident and emergency management activities. Examples of data shared with ADOT&PF includes road conditions, crash reports, and traffic incident advisories. AST also inputs this data into ADOT&PF's RIDE system, which is then transmitted into the State's 511 system as a way to disseminate information to the public.

3.2.14 Military Bases

Military presence is primarily in Fairbanks and Anchorage. Near Fairbanks is the Eielson Air Force Base and the Fort Wainwright Army Post. In Anchorage is the Joint Base Elmendorf-Richardson (JBER). Military bases can play a role in Alaska's transportation in more ways than expected. For example, JBER is responsible for the collection of weather data that can be shared with transportation operations centers to improve decision making. They use their RWIS-obtained weather data to provide road condition statuses such as snowy and icy conditions.

3.2.15 Municipality of Anchorage

The Municipality of Anchorage (MOA) comprises 1,961 square miles and is home to nearly half of the State's population. The MOA region has 1,281 miles of Municipal roads with a robust transportation system that warrants its own regional ITS architecture referred to as the Anchorage Regional ITS Architecture (ARIA). The Anchorage region is home to many ITS including Dynamic Message Signs, signalized intersections, GIS, preemption and priority systems, and many others. MOA consists of many departments, divisions, and offices. The municipality departments include the Emergency Management office, Traffic Department, Fire Department, Police Department, the Port of Anchorage, and the Public Transportation Department. Many of Anchorage's departments play a vital role in the statewide transportation scheme. Within the Anchorage region is a federally organized Metropolitan Planning Organization (MPO) called Anchorage Metropolitan Area Transportation Solutions (AMATS), who are responsible for funding Anchorage's transportation system.

3.2.16 MOA Anchorage Police Department

The municipality's law enforcement division is called the Anchorage Police Department (APD). This is the largest law enforcement department in the state. Their mission is to protect and serve the region in a professional and compassionate manner. APD interacts with other agencies outside of the municipality including AST and ADOT&PF divisions to provide crash data and criminal reports. Anchorage produces over 60% of crashes within the state of Alaska. That's about 7,000-8,000 crashes annual. 911 callers within the Anchorage region will be directed to the 911 center operated by APD. APD also plays a role in databases including GIS and mapping capabilities. APD is also responsible for posting messages to Anchorages' two permanent message boards: one located on the Glenn Highway heading north out of Anchorage, and the other on the Seward Highway south of Anchorage. These message boards are displayed on the 511 website. APD Nixle alerts are also automatically sent to the 511 system for the Glenn and Seward highways.

3.2.17 Local Signal Operations Groups

One signal operations group is the Municipality of Anchorage Signal Section which is a part of the MOA Traffic Department. The Signal Section manages 277 signalized intersections, including many ADOT&PF owned signals. MOA's signal section is responsible for the implementation, operation, and maintenance of traffic signals within the Municipality's boundaries. The signal section also provides technical support to ADOT&PF regarding signals. MOA controls their signals centrally, enabling operators at the traffic department office to remotely adjust signal timings and perform other operations.

Another signal group is the Fairbanks Signal Section. The City of Fairbanks owns and maintains 95% of their signals. When a new signalized intersection is constructed, the city enters an agreement with the State to maintain the controllers.

3.2.18 City of Fairbanks

The City of Fairbanks is a municipal government and a home rule city. It is home to approximately 32,070 people per the 2013 US Census. The city is also home to the Fairbanks Emergency Communications Center, Fairbanks Police Department, and the Fairbanks Fire Department. The Emergency Communications Center is staffed 24 hours a day, seven days a week with dispatchers to answer calls relating to emergencies.

Located within the city of Fairbanks is the Fairbanks Metropolitan Area Transportation System (FMATS). FMATS is the Metropolitan Planning Organization (MPO) for the urbanized portion of the Fairbanks North Star Borough, which includes the City of Fairbanks and the City of North Pole. FMATS is responsible for defining a metropolitan planning area (MPA) based on the US Census urban area and that area which is likely to be urbanized within 20 years. The MPA population is approximately 71,824 in an area of about 113 square miles. FMATS is responsible for investing in local multi-modal transportation improvements that work for the betterment of the community. Although FMATS is housed within the City of Fairbanks, it is not considered a department of the city.

3.2.19 National Weather Service (NWS) Alaska Region

The National Weather Service (NWS) is an agency belonging to the National Oceanic and Atmospheric Administration (NOAA). The purpose of the NWS is to provide weather, water, and climate data. This

includes forecasts and warnings to protect life and property while enhancing the economy. One way the Alaska Region NWS headquarters achieves this is by presenting the information on their website:

http://www.arh.noaa.gov/

From there, users can examine a hazards map, satellite map, radar map, and surface analysis map. On top of that, users can explore forecasts, climate information, weather data, and etc. ADOT&PF's RWIS data is also automatically sent to and processed by the NOAA Meteorological Assimilation Data Ingest System (MADIS). This website can be found at https://madis.noaa.gov/.

4 Operational Concept

An operational concept describes the characteristics of a system. In regards to the AKIA, an operational concept specifically describes how the systems, personnel, and data interact to provide transportation services. FHWA Rule 940 and the FTA policy requires that stakeholder roles and responsibilities be identified in the ITS Architecture. These roles and responsibilities are found within the operational concepts.

The AKIA update uses a combination of the previous Alaska Iways Architecture, the Anchorage Regional ITS Architecture, and the National ITS Architecture as a foundation to describe the current ITS architecture.

4.1 Service Areas of the AKIA Update

The National ITS Architecture defines the term “service package” as a collection of processes/subsystem packages, architecture flows, people, and external systems that work in conjunction to deliver a particular ITS service. This AKIA update uses a combination of the previous AKIA, the ARIA, and the National ITS Architecture as the framework to describe the current AKIA. The information was tailored and customized in a way that incorporates aspects from many different National ITS service packages so that it more closely fits the unique Alaskan context. These tailored and customized groupings of service packages are defined as “service areas” within the AKIA to reflect that they are distinct from the National ITS Architecture service pages. The AKIA is described using the following service areas:

4.1.1 Traffic Management

This service area is focused on the data exchanged between traffic management centers and their respective roadway field devices. The information transferred between these centers and roadway systems support Alaska’s surface street operations. Some of the systems involved in this service area include Closed Circuit Television (CCTV) Cameras, Dynamic Message Signs (DMS), traffic data recorders, and others.

4.1.2 Winter Maintenance

The Winter Maintenance service area is especially important to the state of Alaska. Due to the abundant amount of snowfall and microclimates in the state, environmental sensors, anti-icing, maintenance vehicle on-board systems, avalanche monitoring, and weather related centers make up the core of this service area. Data exchanged amongst the systems include environmental and pavement data, maintenance and construction work plans, and weather information.

4.1.3 CVO and Freight

This service area outlines some of the key data flows pertaining to Alaska’s commercial vehicle and freight operations. ADOT&PF’s MSCVE division plays a large role in this service area. Their centers and roadway systems exchange daily site activity data, border clearance event information, violations, and credential information. MSCVE and Program Development share maintenance of WIM, infrared, and other roadway devices that inspect commercial vehicles in the field and communicate with the appropriate

centers. The Federal Motor Carrier Administration and commercial vehicle operators are also included in this service area

4.1.4 Public Transportation

The state of Alaska's public transportation operations include all of the regionally specific public transit systems such as MOA's People Mover, Juneau's Capital Transit, Fairbanks North Star Borough MACS Transit, Matsu MASCOT Transit, and others. Additionally, AMHS is also included this service area where the focus is to highlight the communication amongst public transit centers, public transit websites, and vehicle/vessel on-board systems.

4.1.5 Incident and Emergency Management

The core of this service area is focused on incident and emergency management centers such as the State Emergency Operations Center (SEOC), law enforcement, and EMS dispatch. During an emergency, these centers are actively communicating and exchanging data with other subsystems. Data relevant to the incident and emergency can be exchanged with emergency vehicle on-board systems, traffic management centers, and traveler information services.

4.1.6 Traveler Information

Traveler Information is a service area that largely depends on subsystems from other service areas. Core traveler information systems such as Alaska's 511 phone and web interface require information from a variety of sources to be able to distribute that information to the public. For example, AMHS can provide ferry schedule information (on phone system only) while AST or other law enforcement can send incident information to the 511 system.

4.1.7 Data Archive

The final service area in the AKIA is fixated on coordination amongst the large range of different archives into a more centralized system that can be accessed by authorized agency users. This promotes easier access to information from multiple archives and improving the efficiency in data gathering. Archives that could be involved include the law enforcement crash databases, ADOT&PF's internal 511 system, road weather data, and public transit archives.

4.2 Data Flows and Service Areas

Data flows and service areas were customized to meet the specific needs and requirements of Alaska stakeholders. Each of the service areas outlined in this chapter is presented with the following:

- Narrative
  - A description of the operations concept for the service area;
- Data Flow Diagram
  - A graphical illustration of how data flows amongst computer systems, roadway devices, equipment, and people;
- Roles and Responsibilities Table

- Summarizes and identifies the roles of each stakeholder involved in the service area in terms of design, implementation, operation, and maintenance;

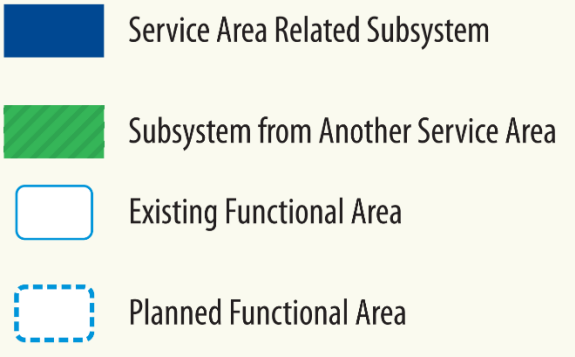
The operational concepts are also described in the Functional Requirements tables. These tables identify the requirements of each system and element within a service area as well as the status of each requirement within the architecture. Although they are called Functional Requirements by the National ITS Architecture, they are more like a list of options users can select from when developing their ITS projects. These tables are found in Appendix B: Functional Requirements.

Together, these service areas will contribute to the improvement of traffic operations and safety for the state of Alaska in the present and the future.

4.3 Definitions

The National ITS Architecture provides a common language and framework for all ITS. The following provides key definitions to aid in the comprehension of the diagrams presented in this document. Specifically, subsystems and functional areas, architecture (data) flows, and terminators are defined in the list that follows. A more complete list of definitions from the National ITS Architecture can be found in Appendix A: Glossary of Terms.

- Subsystems and Functional Areas
  - Subsystems and Functional Areas are principal structural elements of an ITS Architecture. Subsystems can contain one or more Functional Areas. The Functional Areas represent equipment or data processing components. An example of how a subsystem and functional areas are related is shown:
    - Subsystem: Roadway Devices (field subsystem)
    - Functional Areas: Surveillance Cameras, DMS, Signal Controllers



- Terminator
  - Representations of the people, systems, or general environment that interacts with ITS.

- Architecture Flows
  - Representations of data and/or information that is exchanged between subsystems or between a subsystem and a terminator. They are represented by arrows in the diagrams presented in this document.

4.4 Traffic Management

The existing traffic management system in the state of Alaska consists of communications between centralized computers and roadway equipment such as traffic signal controllers, traffic detectors, and traffic surveillance cameras. The data exchanged amongst these existing systems include collecting traffic data, transmitting traffic images, and altering device configurations to support traffic management operations. To improve on the existing system, this service area proposed to incorporate the usage of Bluetooth/Wi-Fi sensors, and a Statewide/Regional Virtual Transportation Operations Center.

A key element proposed in this service area is the element for Bluetooth/Wi-Fi sensors to determine roadway travel times. With the current state of technology, mobile devices such as smart phones are commonplace for travelers. It would be rare to find a traveler without a Bluetooth/Wi-Fi enabled device today, and even more so in the future. The implementation of Bluetooth/Wi-Fi sensors to capture readily available travel times is a logical step to improve traffic operations and measure performance.

A Statewide/Regional Virtual Transportation Operations Center (VTOC) is included in the service area as well. The purpose of this VTOC is to streamline traffic management operations to a more centralized center. This VTOC can help facilitate data transfer by consolidating from multiple sources, processing, and transfering data such as traffic images and Bluetooth & Wi-Fi data to multiple destinations such as the SEOC and the 511 system. The VTOC will essentially be a central hub to assist agencies in daily operations and coordinate responses to traffic incidents with the goal of optimizing network performance. The proposed VTOC concept includes both a statewide VTOC and an envisioned collaboration with MOA for a VTOC in the Anchorage region. These two could be combined in a single VTOC covering both the statewide features and those needed in the Anchorage region.

Table 1. Traffic Management Roles & Responsibilities

Stakeholder	RR Description	RR Status
ADOTPF	Send traffic and road network conditions information to other centers.	Existing
ADOTPF	Collect traffic and road network conditions information from roadway sensors and detectors.	Existing
ADOTPF/ Information Systems and Services Division	Collect traffic and road network conditions information from other centers and field devices.	Existing
ADOTPF/ Information Systems and Services Division	Send traffic and road network conditions information to other centers and to the public.	Existing
ADOTPF/ Transportation Data Programs and Regional Highway Data Sections	Collect traffic sensor information from field devices.	Existing
ADOTPF/ Transportation Data Programs and Regional Highway Data Sections	Send traffic sensor information to traffic centers.	Planned
Combined/ DMS Owners and Operators	Send traffic information to the public via DMS.	Existing

Stakeholder	RR Description	RR Status
Combined/ DMS Owners and Operators	Initialize, configure, operate, and maintain DMS.	Existing
Combined/ Law Enforcement Agencies	Collect traffic and road network conditions information from other centers.	Existing
Combined/ Law Enforcement Agencies	Send traffic information to DMS.	Existing
Combined/ Public Sector Agencies	Collection traffic and road network conditions information from field devices.	Planned
Combined/ Public Sector Agencies	Send traffic and road network conditions to other centers.	Planned
Combined/ Traffic Signal Owners and Operators	Initialize, configure, operate, and maintain field devices such as traffic detectors, cameras, sensors, and preemption/priority systems.	Existing
Combined/ Traffic Signal Owners and Operators	Collect traffic information from field devices.	Existing
Combined/ Traffic Signal Owners and Operators	Receive and process signal preemption/priority requests.	Existing
Public or Private Sector Agency/	Collect user-supplied traffic data.	Planned
Public or Private Sector Agency/	Collect field device status information.	Planned
State of Alaska/ Division of Homeland Security and Emergency Management	Collect traffic and road network conditions information from traffic centers.	Existing

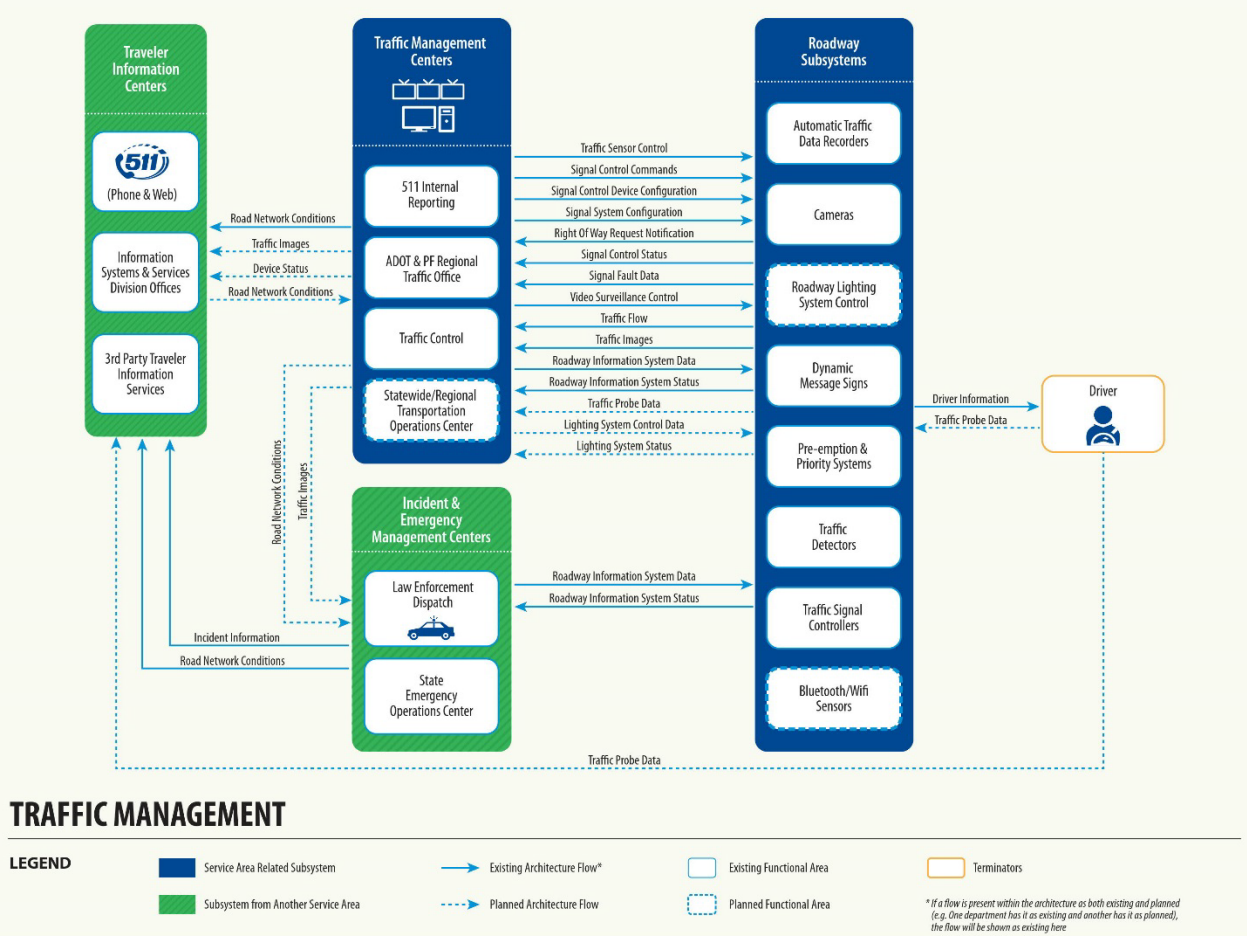


Figure 3. Traffic Management Flow Diagram

A larger version of this flow diagram can be found in Appendix D: Architecture (Data) Flows & Flow Diagrams.

4.5 Winter Maintenance

The Winter Maintenance service area aims to effectively coordinate maintenance and construction activities in the state, especially when it relates to dealing with winter weather. There are many maintenance vehicles such as snow plows with on-board systems and automatic vehicle location (AVL) technologies that help to improve winter maintenance operations and communications. It is proposed that a road weather data repository be used in conjunction with weather services such as the National Weather Service offices to collect and store weather data. ADOT&PF is currently conducting a research project in several regions for testing a Maintenance Decision Support System (MDSS) which will serve as a weather data repository for the Maintenance and Operations staff. Additionally, more communication and data exchange with a traffic management center such as the proposed Statewide/Regional TOC can minimize traffic impacts and a TOC scheduled for construction in Fairbanks in 2016.

The current system involves maintenance centers communicating with roadway devices to collect environmental and road weather data. For example, the network of bridge scour sensors are maintained by the U.S. Geological Survey Alaska Science Center, but data is collected from these sensors by

ADOT&PF's Bridge Design Section Offices. The data collected from these sensors can be used to determine when maintenance on bridges are needed when bridge scour becomes a concern. Other maintenance activities include the Road Weather Information System (RWIS) Server collecting data from environmental sensor stations (ESS) across the state.

Snow plows (and other maintenance vehicles) are slowly being outfitted with on-board systems and AVL. On-board systems include sensory devices, data processing capabilities, data storage, communication functions that support maintenance activities such as data hubs/cell phones and other devices to transmit data back to a National Center for Atmospheric Research databases in Boulder, CO and in turn to the MDSS. The capability of snow plows or maintenance vehicles with installed/built in sensors to collect weather, environmental and vehicle telemetry data provide maintenance centers with the most up-to-date information on current conditions. Additionally, the vehicle telemetry data provides maintenance centers real-time information on the location, speed and status of vehicles so more timely and informed decisions are made. The Alaska specific MDSS integrates real time weather data collection from fixed RWIS sites as well as mobile weather sensors located on mobile maintenance vehicles to provide weather forecasting for specific locations within a geographic area. In addition to weather forecasting, the MDSS system provides pavement temperature forecasting to maintenance forces. Pavement temperature forecasts are a critical component of the decision making process in responding to winter weather events. The MDSS system also provides treatment recommendations as an additional tool to proof decisions made by maintenance personnel. The maintenance foremen are the final link in the decision process for the pavement treatments radioed to the truck operators.

An element labeled as Road Weather Data is also proposed in this service area. This element is meant to act as an archive data repository to store road weather conditions such as surface temperature, icing, treatment status, and others. This supports maintenance and construction operations by creating a consolidated and robust weather database that is more easily accessible to a wider range of departments if needed.

Communication and coordination with departments outside of the maintenance realm is a goal that is highlighted with the planned flows in the architecture. Communication with traffic management centers such as the proposed Statewide/Regional TOC can help to minimize traffic impacts at locations where maintenance work is being completed. Maintenance and construction work plans can be reviewed by TOCs to determine any traffic impacts and feedback can be provided. Other departments and agencies to coordinate maintenance work plans include the ARRC and AMHS.

Table 2. Winter Maintenance Roles & Responsibilities

Stakeholder	RR Description	RR Status
ADOTPF	Collect and distribute maintenance and construction information.	Existing
ADOTPF	Collect and send maintenance and construction asset/equipment information.	Existing
ADOTPF/ Alaska Marine Highway System	Communicate with maintenance centers regarding maintenance and construction activities that may affect AMHS operations.	Planned
ADOTPF/ Alaska Railroad Corporation	Communicate with maintenance centers regarding maintenance and construction activities that may affect ARRC operations.	Planned
ADOTPF/ Bridge Design Section	Collect, process, and distribute information received from bridge scour sensors.	Existing
ADOTPF/ Information Systems and Services Division	Collect maintenance and construction information from maintenance centers.	Existing

Stakeholder	RR Description	RR Status
ADOTPF/ Information Systems and Services Division	Collect and distribute roadway weather information.	Existing
ADOTPF/ Regional Highway Construction Section	Gather and send maintenance and construction information such as work plans, maintenance activities, and asset information.	Existing
ADOTPF/ Regional Maintenance and Operations Districts	Gather and send maintenance and construction information such as work plans, maintenance activities, and asset information.	Existing
ADOTPF/ Regional Maintenance and Operations Districts	Collect road weather information via the RWIS system including the central server, environmental sensor stations, and weather and pavement sensors.	Existing
ADOTPF/ Regional Maintenance and Operations Districts	Collect and send maintenance, construction, vehicle location, and weather information via maintenance vehicle on-board systems.	Existing
ADOTPF/ Regional Maintenance and Operations Districts	Initialize, configure, operate, and maintain field devices such as weather and pavement sensors and automated bridge anti-icing systems.	Existing
Combined/ Law Enforcement Agencies	Communicate with maintenance and construction centers to coordinate with maintenance and construction activities.	Existing
Combined/ Public Sector Agencies	Communicate and coordinate with maintenance centers regarding work plan and maintenance activities.	Planned
Combined/ Weather and Pavement Sensor Owners	Maintain and operate weather and pavement sensors.	Existing
DMVA/ Department of Homeland Security and Emergency Management	Collect current asset restrictions information from maintenance centers.	Existing
National Center for Atmospheric Research/	Collect and send weather information.	Existing
NOAA/ National Weather Service (NWS) Alaska Region	Collect and send weather information.	Existing
U.S. Geological Survey/ Alaska Science Center	Initialize, configure, maintain, and operate the bridge scour system and sensors.	Existing

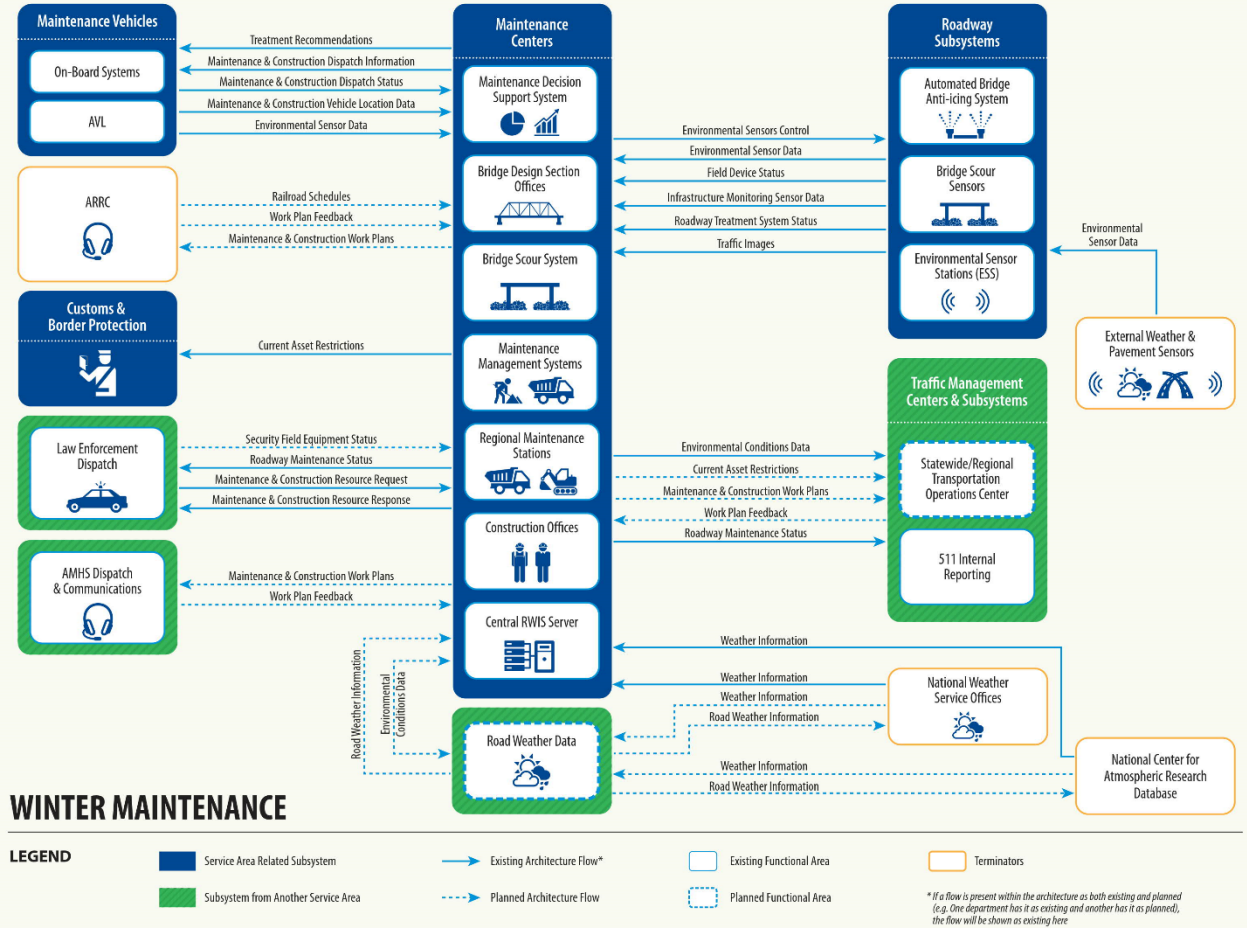


Figure 4. Winter Maintenance Flow Diagram

A larger version of this flow diagram can be found in Appendix D: Architecture (Data) Flows & Flow Diagrams.

4.6 CVO and Freight

This service area summarizes the commercial vehicle and freight operations in the state and proposes new elements and flows that could improve efficiency and effectiveness. The proposed data flows include the flows between ADOT&PF's 511 Internal Reporting and commercial vehicle operation offices and motor carriers to integrate traffic and commercial vehicle operations.

A planned element to be implemented by ADOT&PF's MSCVE division is the extended online permit system. The Permitting Program was formally referred to as the Single and Extended Permit Process (SEPP). The Permitting Program is an electronic oversize and overweight permitting system and expands on the capabilities of the SEPP. Within the Permitting Program is the Temporary Registration for Trucks (TRT) system.

The 511 Internal Reporting system can be used to send alerts and advisories of traffic related incidents to motor carriers and commercial vehicle operation offices. This can help these respective entities adjust their operations accordingly and adapting to real time incidents. Additionally, these motor carriers and

commercial vehicle operation offices can send information regarding their fleet, freight, and equipment information so that the traffic management entities can grab that information from the internal 511 reporting system and adjust their operations accordingly.

Table 3. CVO and Freight Roles & Responsibilities

Stakeholder	RR Description	RR Status
ADOTPF/ Bridge Design Section	Send bridge tolerances information.	Existing
ADOTPF/ Information Systems and Services Division	Collect fleet and freight information including daily site activities.	Existing
ADOTPF/ Information Systems and Services Division	Send border clearance information.	Planned
ADOTPF/ Measurement Standards and Commercial Vehicle Enforcement	Collect, process, and distribute commercial vehicle credential and safety information.	Existing
ADOTPF/ Measurement Standards and Commercial Vehicle Enforcement	Send commercial vehicle citation and violation information.	Existing
ADOTPF/ Measurement Standards and Commercial Vehicle Enforcement	Collect fleet and freight information via roadway systems such as weigh stations, infrared inspection, WIM, and other computerized systems.	Existing
ADOTPF/ Measurement Standards and Commercial Vehicle Enforcement	Process, archive, and distribute fleet and freight information including daily site activities.	Existing
ADOTPF/ Measurement Standards and Commercial Vehicle Enforcement	Collect and process safety information.	Existing
Commercial Vehicle Operators/ Motor Carriers (Any)	Provide fleet and freight information including identification and equipment information.	Existing
Commercial Vehicle Operators/ Motor Carriers (Any)	Send on-board vehicle information and trip log data.	Existing
Federal Motor Carrier Safety Administration/	Collect and distribute safety and credential information.	Existing
State of Alaska/ Department of Public Safety	Receive citation information.	Existing
State of Alaska/ DOA/ Division of Motor Vehicles	Collect credential information including commercial driver's license data.	Existing

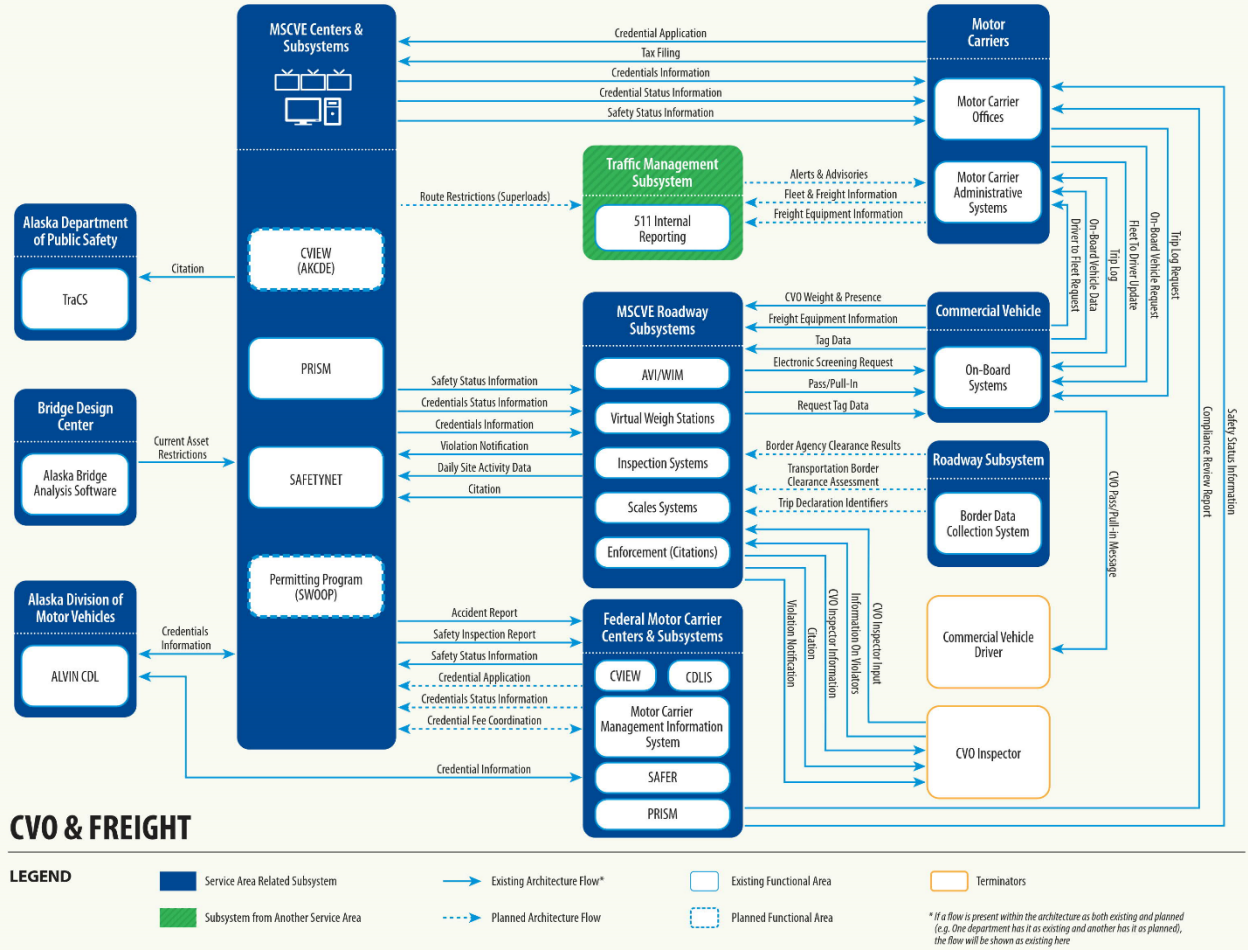


Figure 5. CVO & Freight Flow Diagram

A larger version of this flow diagram can be found in Appendix D: Architecture (Data) Flows & Flow Diagrams.

4.7 Public Transportation

The public transportation aspect of this service area is comprised of many regional/local public transit agencies and the AMHS. The existing service area is mainly made up of the center to roadway and center to vehicle data connections. Public transit agencies and Alaska Marine Highways are shown to operate in a very similar fashion. The main difference is that there is a dedicated Vessel Tracking System for AMHS shown in the service area as well as surveillance cameras at AMHS terminals operated by staff, security, and local law enforcement. It is proposed in this service area that a statewide/regional TOC play a larger role in transit operations.

Some of the proposed/planned data flows shown between the statewide/regional TOC and the public transportation centers include the traffic images, incident information, and transit schedules. Public transit agencies can benefit from receiving traffic images and incident information from the traffic management side because they can use that real-time information to adapt to changing conditions and more effectively utilize their fleets. Even if no action can be made to a disruptive traffic condition, public transit agencies can use that information to better inform their riders of an incident. On the other side, traffic operation

centers can use public transportation schedules to coordinate how to best mitigate traffic impacts. Both sides can benefit from this exchange of information.

Public transit vehicle on-board systems and AVL is another key aspect to this service area. Many of the public transit agencies already have robust on-board systems and vehicle tracking technology implemented in their operations. Other agencies are at varying stages of deploying that component into their system. The flow diagram shows that these flows exist between the vehicles and the centers even though some agencies may not have that technology at this point.

Table 4. Public Transportation Roles & Responsibilities

Stakeholder	RR Description	RR Status
ADOTPF/ Alaska Marine Highway System	Maintain and operate a vessel tracking system.	Existing
ADOTPF/ Alaska Marine Highway System	Collect and send ferry location, schedule, incident, and service information.	Existing
ADOTPF/ Alaska Marine Highway System	Maintain cameras at AMHS terminals.	Existing
Combined/ Law Enforcement Agencies	Operate cameras at AMHS terminals.	Existing
Combined/ Law Enforcement Agencies	Collect and send incident and emergency information.	Existing
Combined/ Public Sector Agencies	Send traffic and incident information to transit centers.	Planned
Combined/ Transit Agencies	Collect and send transit vehicle location, schedule, incident, and service information.	Existing

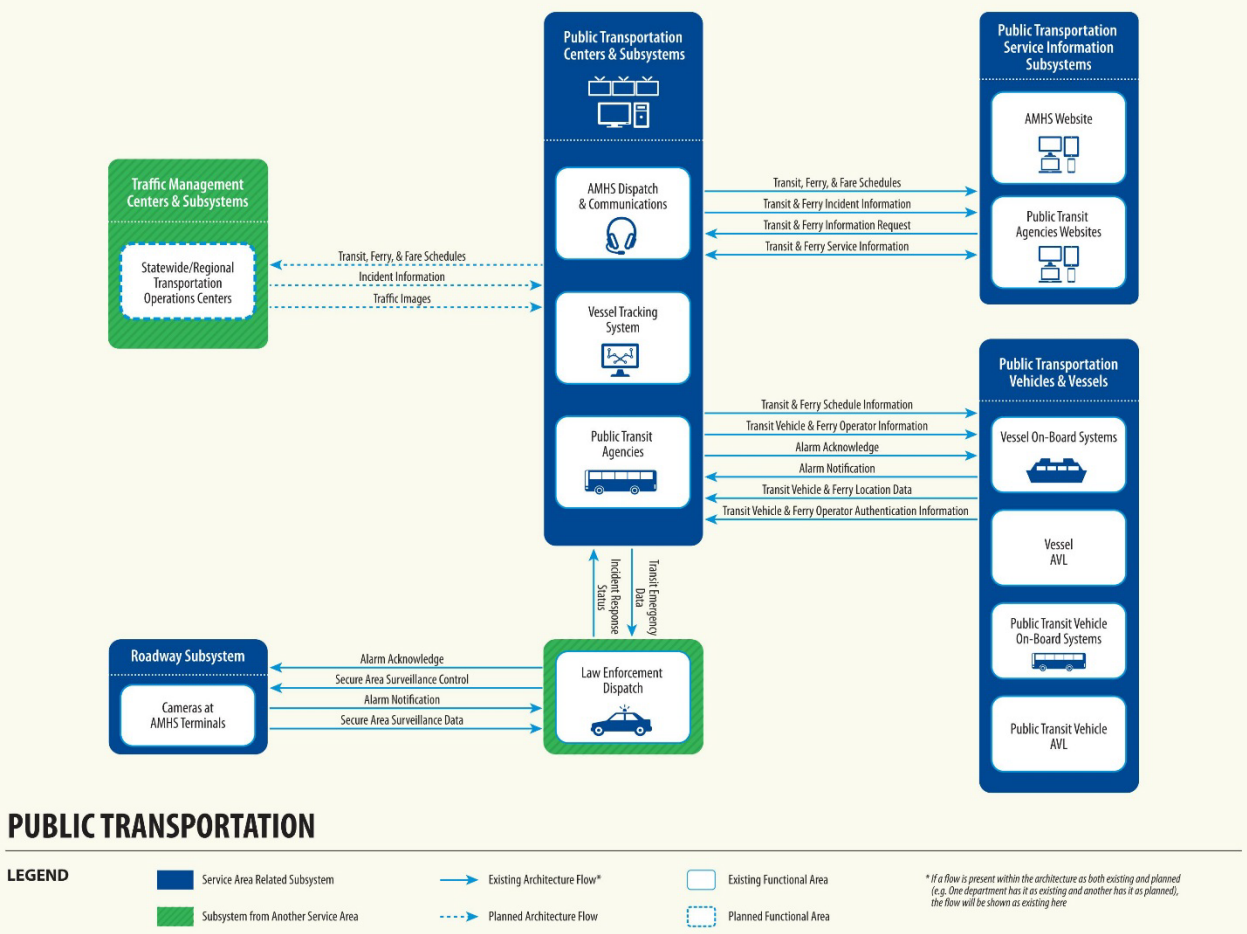


Figure 6. Public Transportation Flow Diagram

A larger version of this flow diagram can be found in Appendix D: Architecture (Data) Flows & Flow Diagrams.

4.8 Incident and Emergency Management

Incident and emergency management is a critical component of any transportation system. For the state of Alaska, the existing elements and systems consist of the regional 911 system, law enforcement dispatch, EMS dispatch, the State Emergency Operations Center (SEOC), and the communication and data exchanged with other systems and centers. These incident and emergency centers communicate and coordinate with the appropriate agencies during an emergency to gather information and respond to an incident. For ADOT&PF, adverse weather and snowfall is a concern throughout the year. As such, an Avalanche Detection System is shown as planned in this service area to support in early detection and incident mitigation. As with many of the service areas, a connection with a statewide/regional TOC can be beneficial and therefore proposed in this area as well.

The Avalanche Detection System is a GIS-based avalanche prediction system. The system will consist of remote automated weather stations (RAWS) installed in areas that may be prone to avalanches. This system can potentially integrate with the RWIS program to collect data and provide a forecast of potential

avalanche occurrences. The data collected from this system would then be sent to the appropriate emergency management and winter maintenance centers. In the architecture, the Regional Maintenance Stations and the SEOC are shown to be the proposed recipients of this data.

The proposed statewide/regional TOC is a large part of the architecture in general. The same can be said about its role in this service area. During an emergency or incident, the exchange of emergency and traffic data can be crucial. The emergency management centers can provide information on the incident and the response status. In return, the TOC can provide emergency routes, emergency traffic control information, and traffic images so emergency centers can get the latest traffic conditions. The information sent from the emergency management centers can also be sent to the internal 511 system so other departments and agencies can be kept up to date on the incident. Additionally, the statewide/regional TOC can forward the emergency information received to other centers and the 511 phone and web system so the public can be informed.

Table 5. Incident & Emergency Management Roles & Responsibilities

Stakeholder	RR Description	RR Status
ADOTPF	Collect incident and emergency information.	Existing
ADOTPF	Send incident and emergency information.	Existing
ADOTPF	Coordinate incident and emergency response.	Existing
ADOTPF/ Alaska Marine Highway System	Send incident and emergency information to emergency management centers.	Existing
ADOTPF/ Alaska Railroad Corporation	Send incident and emergency information to emergency management centers.	Existing
ADOTPF/ Information Systems and Services Division	Collect and distribute incident and emergency information.	Existing
ADOTPF/ Information Systems and Services Division	Collection and send emergency traffic control information in the Anton Anderson Tunnel.	Existing
ADOTPF/ Information Systems and Services Division	Collect and send avalanche data including monitoring sensor data and incident information.	Planned
ADOTPF/ Regional Highway Construction Section	Send construction and work zone information to emergency management centers.	Existing
ADOTPF/ Regional Highway Construction Section	Communicate with emergency management centers.	Existing
ADOTPF/ Regional Maintenance and Operations Districts	Communicate with emergency management centers.	Existing
ADOTPF/ Regional Maintenance and Operations Districts	Send real time road weather data.	Planned
ADOTPF/ Regional Maintenance and Operations Districts	Collect and send avalanche related data including monitoring sensor and incident data.	Planned
Combined/ Law Enforcement Agencies	Collect and distribute incident and emergency information.	Existing
Combined/ Law Enforcement Agencies	Communicate and coordinate with other centers for emergency response.	Existing
Combined/ Law Enforcement Agencies	Collect law enforcement vehicle location data via on-board systems.	Existing
Combined/ Public Sector Agencies	Send traffic and road network conditions information.	Planned
Combined/ Public Sector Agencies	Send incident and emergency information.	Planned
Combined/ Public Sector Agencies	Distribute emergency traveler information.	Planned
Combined/ Public Sector Agencies	Communicate and coordinate with incident and emergency centers and response teams.	Planned

Stakeholder	RR Description	RR Status
Combined/ Traffic Signal Owners and Operators	Receive and process emergency preemption requests.	Existing
Combined/ Transit Agencies	Communicate and coordinate with incident and emergency centers and response teams.	Existing
Combined/ Transit Agencies	Distribute transit emergency data.	Existing
EMS Providers/	Communicate and coordinate with other centers for emergency response.	Existing
EMS Providers/	Collect emergency vehicle location data via on-board systems.	Existing
EMS Providers/	Collect and distribute incident and emergency information.	Existing
NOAA/ National Weather Service (NWS) Alaska Region	Send weather information.	Existing
State of Alaska/ Division of Homeland Security and Emergency Management	Broadcast incident and emergency information.	Existing
State of Alaska/ Division of Public Health	Communicate and coordinate with other centers for emergency response.	Existing
State of Alaska/ Division of Public Health	Collect and distribute incident and emergency information.	Existing

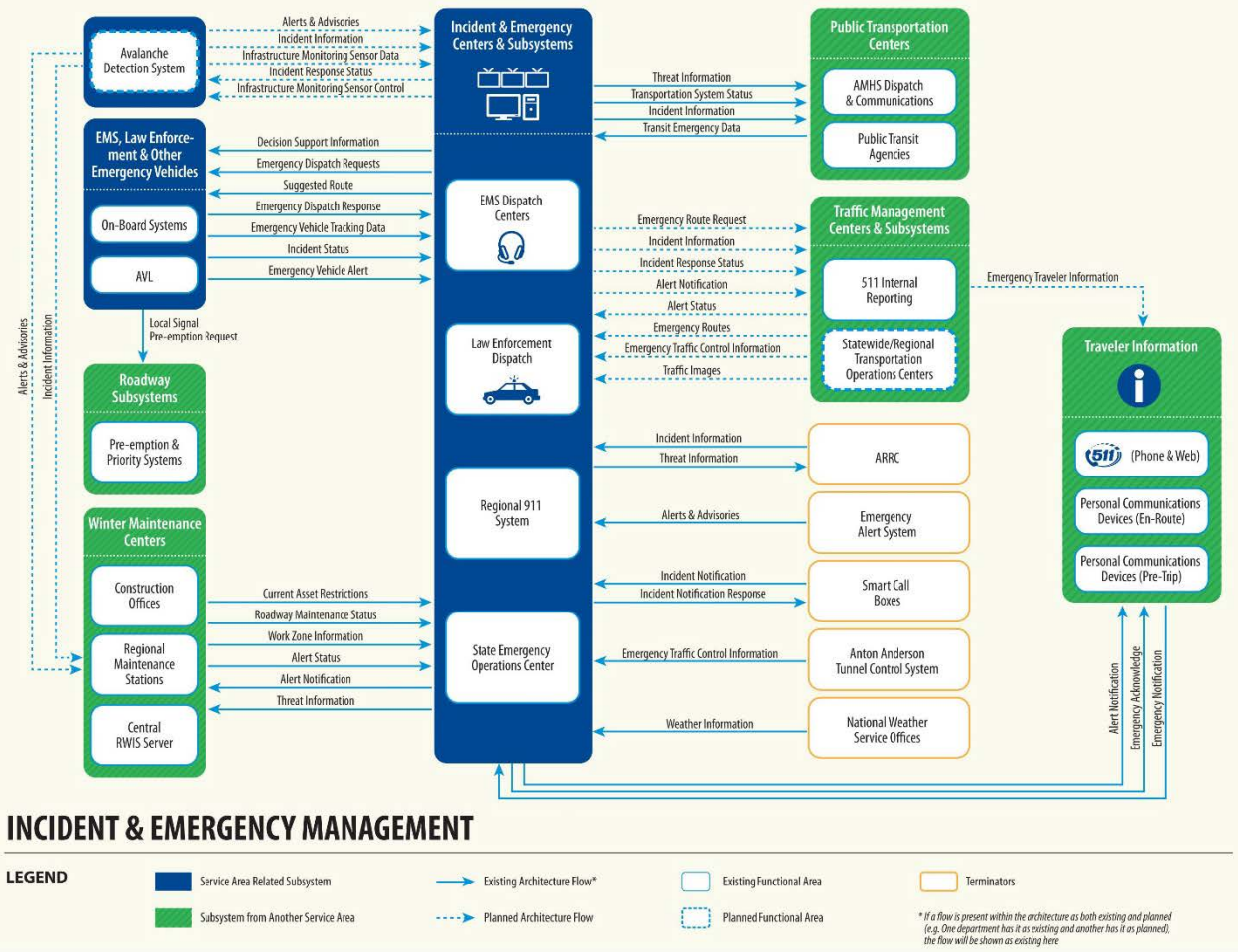


Figure 7. Incident & Emergency Management Flow Diagram

A larger version of this flow diagram can be found in Appendix D: Architecture (Data) Flows & Flow Diagrams.

4.9 Traveler Information

One of the main ways for the public to obtain traveler information is through the state's 511 phone, smartphone app and web interface. Users can go on the website to view an interactive map that shows current driving conditions, traffic images, weather information, planned events, etc. Users can also use the 511 phone system with either voice or touch-tone commands to find the information they need. Currently, there are links that direct users to the various public transit websites including AMHS. The service area proposes that there is more integration between the 511 system and public transit information from the various agencies. A 3rd party traveler information services element is also proposed within this service area. This element is meant to serve as a way to collect information from travelers on the roadway and have that information accessible to the TOCs.

One of the ways public transit agencies can more closely integrate with the 511 system is to share transit related incident information and other transit operations and service information with the system. 511 can use this information to provide travelers with more information when they use the phone system to call in instead of forwarding the call. The web interface and interactive map can also include more transit information so users don't have to search for the link to the different transit agencies.

Having a 3rd party traveler information service that collects data from traveler inputted applications can also be beneficial to this service area. An example of this service could be Waze or social media applications. Waze is a smart phone application that allows travelers to input information on traffic conditions and incidents in real-time. Social media such as Twitter can also provide such information as travelers can Tweet about incidents as they are stuck in the roadway. This information can be valuable and timely in ways that other methods of data collection cannot achieve. Data would be collected in real time and the location can be determine based on the type of application and if users have location services turned on in their mobile devices. Traffic management centers such as the proposed statewide/regional TOC can collect, process, and redistribute this data in a way that is beneficial to all travelers and other agencies.

Table 6. Traveler Information Roles & Responsibilities

Stakeholder	RR Description	RR Status
ADOTPF/ Alaska Marine Highway System	Send ferry information including fares, schedule, incident, and service information.	Existing
ADOTPF/ Information Systems and Services Division	Collect and distribute traveler information including traffic, transit, ferry, and incident information.	Existing
ADOTPF/ Regional Highway Construction Section	Send construction and work zone information.	Existing
ADOTPF/ Regional Maintenance and Operations Districts	Send maintenance and work zone information.	Existing
ADOTPF/ Regional Maintenance and Operations Districts	Send road weather information.	Existing
Combined/ Law Enforcement Agencies	Send incident information.	Existing
Combined/ Public Sector Agencies	Send incident and traffic information.	Planned

Combined/ Traffic Signal Owners and Operators	Collect and send road network condition information.	Existing
Combined/ Transit Agencies	Send transit information including fares, schedule, incident, and service information.	Existing
Media/	Collect and send to the public traveler information.	Existing
NOAA/ National Weather Service (NWS) Alaska Region	Send weather information.	Existing
Public or Private Sector Agency/	Collect traveler information.	Planned

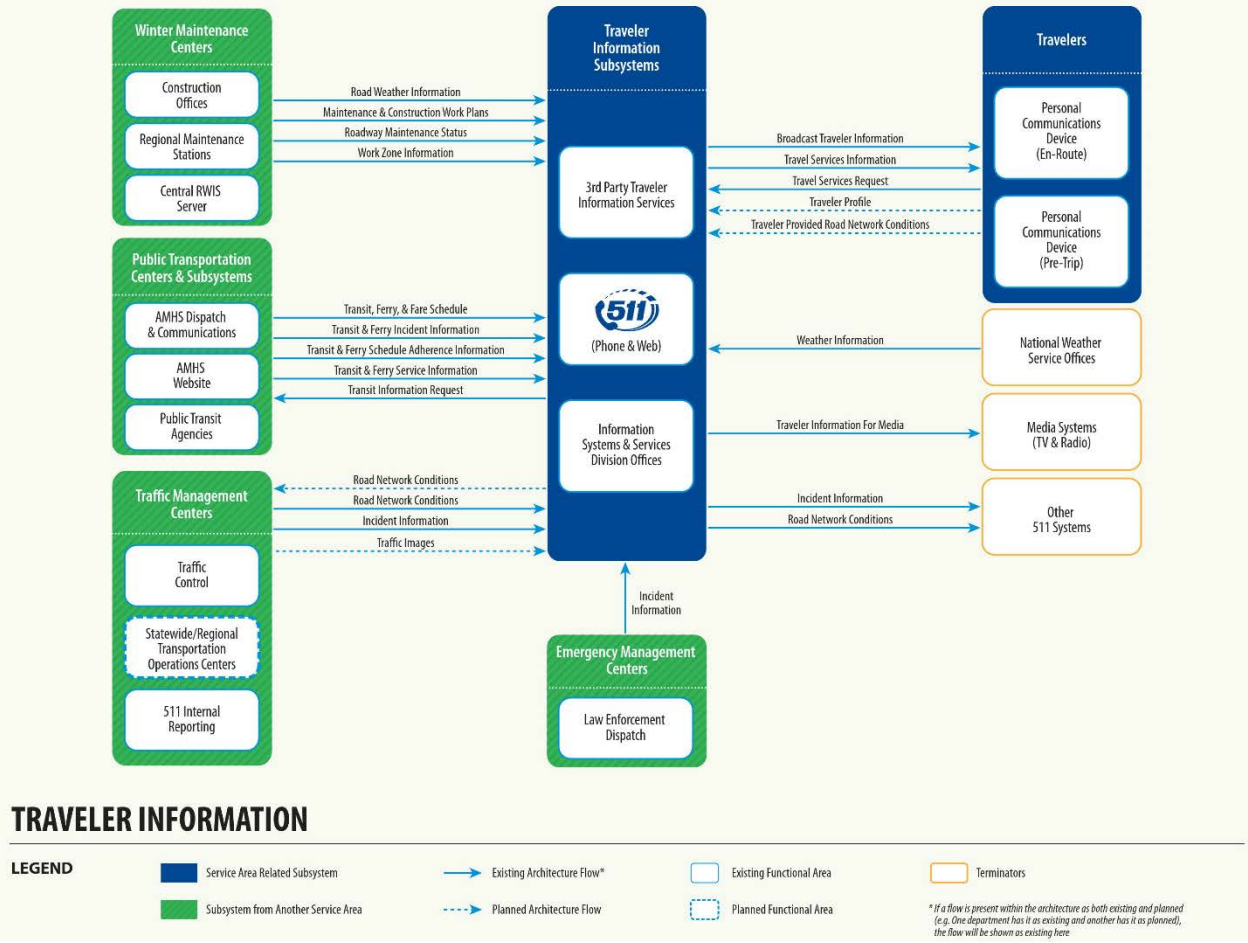


Figure 8. Traveler Information Flow Diagram

A larger version of this flow diagram can be found in Appendix D: Architecture (Data) Flows & Flow Diagrams.

4.10 Data Archive

Agencies within the state currently maintain their own data archives. This makes it convenient for internal operations within each agency to access historic data. However, accessing information from other archives and agencies is not as easy. This service area aims to support multi-agency archive data sharing. It is proposed that a "Transportation Data Archive System" act as a central data archive in which other archives can contribute to and retrieve data from. Some of the data exchanged and archived should be protected and access controlled. This is to protect privacy and sensitive data that is being exchanged. Sharing is also subject to permissions from the data source.

Potential stakeholders that can contribute to this from the ADOT&PF side include the Bridge Design Section, the Transportation Data Programs, the ISSD, Regional Maintenance and Operations Districts, and Statewide Materials. Other agencies that are shown to be potential contributors include law enforcement agencies (AST and APD) and the various transit agencies.
The Bridge Design Section maintains the Bridge Management System which keeps information and on the State's public bridges. They can provide maintenance information on the bridges to the central archive.

The Transportation Data Programs Section and the Information Systems and Services Division are proposed to be the maintainers of the central Transportation Data Archive System.

The Transportation Data Programs Section is responsible for incorporating the information from the Transportation Asset Management System into the central repository such as physical transportation infrastructure data. Additionally, they are responsible for collecting road network data, traffic data, and crash data; which can be useful information to contribute to the central archive. They are also the stakeholder for the Traffic Data System.

The Information Systems and Services Division is the stakeholder for the Road Weather Data and 511 Internal Reporting elements. It is proposed that the ISSD performs archive coordination with the central archive as well.

The Regional Maintenance and Operations Districts are responsible for managing the Maintenance Management System (MMS) which stores highway maintenance activities information. Having this information readily accessible in the central Transportation Data Archive System would support the service area.

Statewide Materials is responsible for monitoring pavement conditions and reporting pavement condition information through their Pavement Management System. Again, this would be another valuable source of data to be exchanged.

Finally law enforcement agencies (such as AST and APD) and public transit agencies (such as People Mover or MACS Transit) can contribute to the archival sharing. Crash data from law enforcement and transit data from public transit agencies would be valuable additions to the central repository.

Table 7. Data Archive

Stakeholder	RR Description	RR Status
ADOTPF/ Bridge Design Section	Coordinate archive data with other archive management systems.	Planned
ADOTPF/ Bridge Design Section	Send bridge related archive data.	Planned
ADOTPF/ Information Systems and Services Division	Coordinate archive data with other archive management systems.	Planned
ADOTPF/ Information Systems and Services Division	Send traffic and road weather related archive data.	Planned
ADOTPF/ Information Systems and Services Division	Maintain and operate a central archive database to allow for coordination with other archive management systems.	Planned
ADOTPF/ Regional Maintenance and Operations Districts	Coordinate archive data with other archive management systems.	Planned
ADOTPF/ Regional Maintenance and Operations Districts	Send maintenance related archive data.	Planned
ADOTPF/ Statewide Materials	Coordinate archive data with other archive management systems.	Planned
ADOTPF/ Statewide Materials	Send pavement related archive data.	Planned
ADOTPF/ Transportation Data Programs and Regional Highway Data Sections	Coordinate archive data with other archive management systems.	Planned
ADOTPF/ Transportation Data Programs and Regional Highway Data Sections	Send traffic related archive data.	Planned
ADOTPF/ Transportation Data Programs and Regional Highway Data Sections	Maintain and operate a central archive database to allow for coordination with other archive management systems.	Planned
Combined/ Law Enforcement Agencies	Coordinate archive data with other archive management systems.	Planned
Combined/ Law Enforcement Agencies	Send crash and incident related archive data.	Planned
Combined/ Transit Agencies	Coordinate archive data with other archive management systems.	Planned
Combined/ Transit Agencies	Send transit related archive data.	Planned

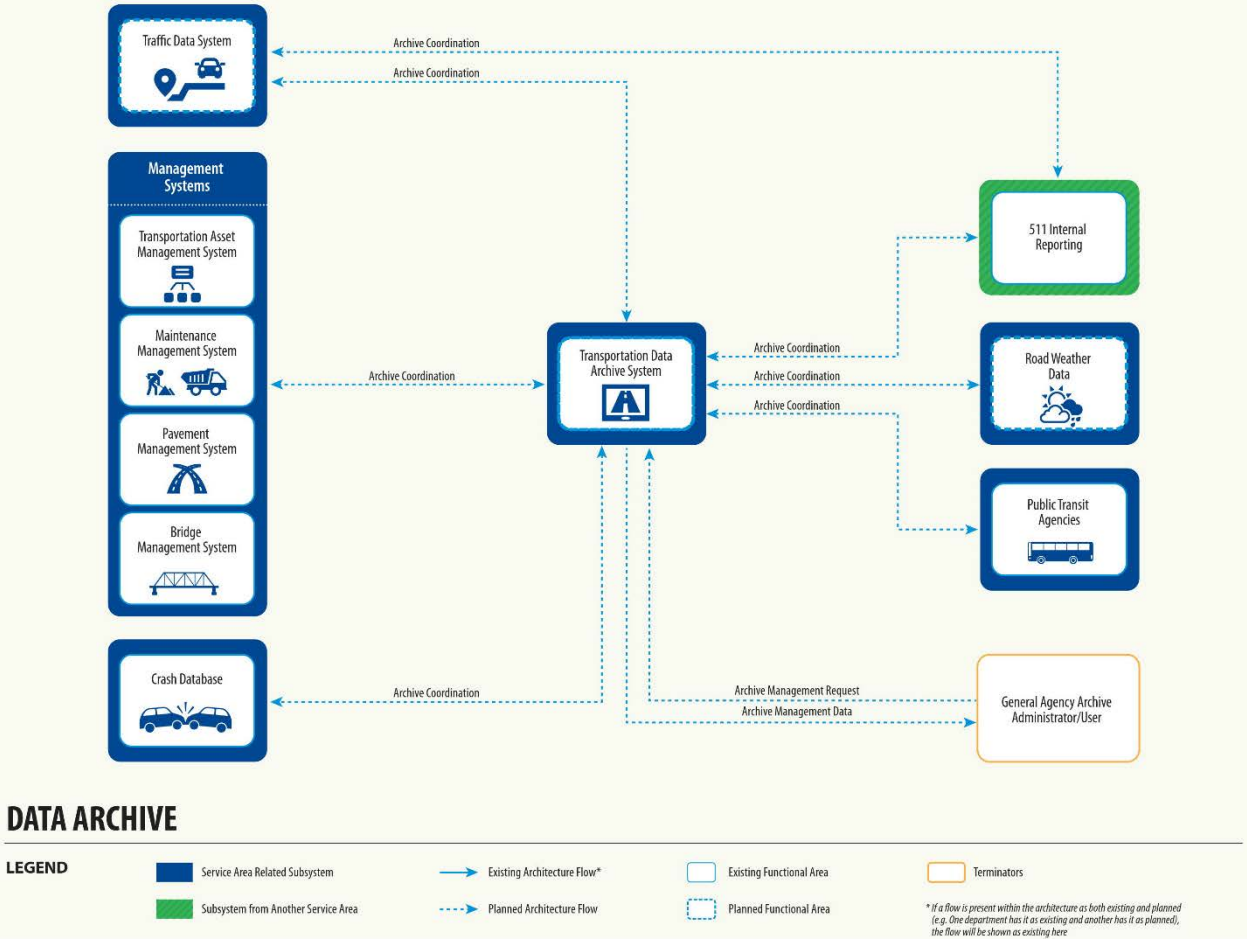


Figure 9. Data Archive Flow Diagram

A larger version of this flow diagram can be found in Appendix D: Architecture (Data) Flows & Flow Diagrams.

5 Interfaces and Information Exchanges

This chapter provides the interface requirements and information exchanges with planned and existing elements.

5.1 Identification of Interconnects

The architecture set of interconnects is an accumulation of all existing and planned connections between ITS elements within the AKIA. At a high level, the interconnect diagram (otherwise known as the 'sausage diagram') displays the regional systems and their connections to one another. Figure 10 presents the sausage diagram for the Alaska Iways Architecture update, which has been tailored to reflect the planned and existing ITS elements within the state of Alaska. The white boxes represent planned/existing elements or subsystems for Alaska; while those that are grayed out are not planned. Out of the possible 22 subsystems, the AKIA update includes 18 subsystems.

The pink rounded rectangles represent the types of communications used to interconnect the elements and subsystems. Each type of communication is listed:

- Field – Vehicle Communications:
  - A wireless communications link that is used between vehicles and infrastructure on the field. The channel is used for close-proximity communications and supports location-specific capabilities such as toll collection, transit vehicle management, driver information, signal pre-emption/priority, and automated commercial vehicle operations.
- Fixed Point – Fixed Point Communications:
  - Also known as FP2FP. This is a communication link that serves stationary subsystems/elements. A variety of public or private communication networks and technologies can be implemented. The network can be made up of twisted pair, coaxial cable, fiber optic, microwave relay networks, spread spectrum, etc. The most important issue of FP2FP is that it serves stationary entities. This link supports both dedicated and shared communication resources.
- Wide Area Wireless (Mobile) Communications:
  - A type of communication link that connects a wireless device between a user and an infrastructure-based system. This is considered a wide area communication link because both broadcast (one-way) and interactive (two-way) communications services are grouped into this category. This link supports a wide range of services in the National ITS Architecture including real-time traveler information and fleet communications.
- Vehicle – Vehicle Communications:
  - A dedicated wireless system that is capable of transferring high data rates with a low probability of error. This link is a type of line of sight communication between vehicles. Advanced vehicle services may use this link in the future to support advanced collision avoidance technologies, road condition information sharing, and active coordination to advanced control systems.

As shown in the diagram in Figure 10, communications are a core part of subsystem and element connections in the architecture.

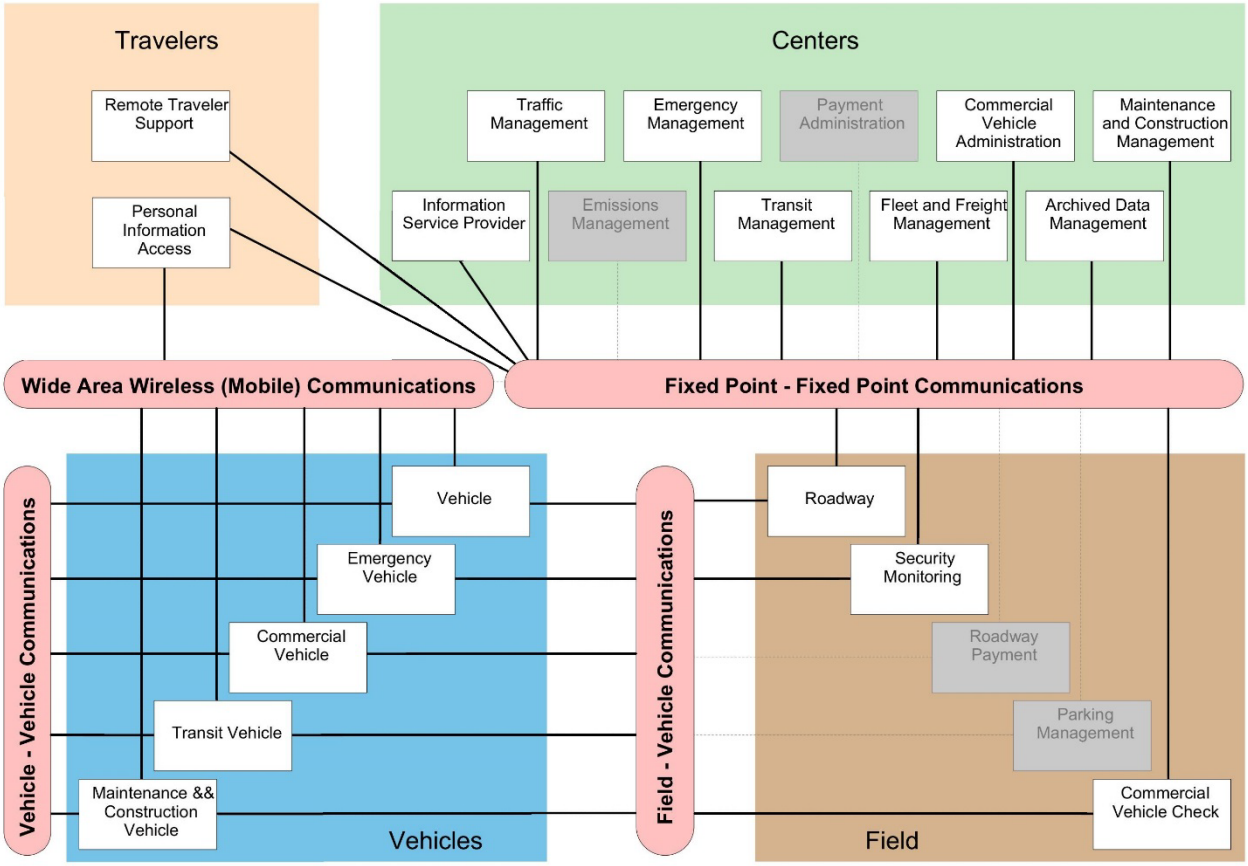


Figure 10. AKIA Interconnect Diagram

5.2 Information Flows

The National ITS Architecture defines information flows as exchange of information between subsystems and terminators in the physical architecture. Information flow and architecture flow are terms that are used interchangeably. Information flows are also the primary tool used to define the ITS architecture interfaces. Each information flow is defined by the source element (where the information originates), a destination element (where the information is sent), and a descriptive name for the flow itself. The status of the information flow (e.g. existing vs. planned) is also documented. For example the flow "signal control status" may have a source element of "Field/ Traffic Signal Controllers" and a destination element of "Center/ Signal Control." The status would be "existing" because this flow currently exists within the State.

The AKIA update defines all existing and planned flows between ITS elements. A table that presents all of the architecture flows can be found in Appendix D: Architecture (Data) Flows & Flow Diagrams. The flows have been shown graphically in the service area diagrams presented earlier in this report as well as in Appendix D: Architecture (Data) Flows & Flow Diagrams along with the flows in a tabular format as generated from the Turbo Architecture™ database. A glossary of the flow name definitions is also provided in Appendix C: Architecture (Data) Flow Definitions.

6 Standards

Standards are technical specifications that define how system components interconnect and interact. Because ITS standards are based on open, non-proprietary technology, their use can facilitate the deployment of interoperable ITS systems, and make it easier for state and local ITS deployers to develop and deploy integrated transportation systems.

Standards are established by the consensus of manufacturers, regulators, and users to provide guidelines for data interfaces of transportation system components. Essentially, standards allow for different systems to communicate using a common language, data elements, structures, and protocols.

There are currently nine Standards Development Organizations (SDOs) participating in ITS standards development processes:

- AASHTO (American Association of State Highway and Transportation Officials)
- ANSI (American National Standards Institute)
- APTA (American Public Transportation Association)
- ASTM (American Society for Testing and Materials)
- IEEE (Institute of Electrical and Electronics Engineers)
- ISO (International Organization for Standardization)
- ITE (Institute of Transportation Engineers)
- NEMA (National Electrical Manufacturers Association)
- SAE (Society of Automotive Engineers)

The life cycle of a standard begins with its publication. The standard is then reviewed and revised until it is ready for approval by the SDO. The standard is then tested over time and refined based on real-world implementation. The standard would then, over time, become broadly adopted by the industry. When a standard becomes widespread, stable, and available from a variety of manufacturers, they are considered mature. Once this occurs, the USDOT will consider the official adoption of the standard. According to Rule 940, if an ITS project receives Federal funds, the project must use applicable standards that have been adopted by USDOT. However, there are no standards that have been officially adopted by the USDOT at the time of this writing.

Currently, there are 91 standards that have been published by SDOs. Standards are continuously being developed and revised as technology continues to evolve and change. This list of standards may change dramatically within the foreseeable future. To see the most up to date list of published standards, please refer to the following link:

http://www.standards.its.dot.gov/DevelopmentActivities/PublishedStandards

Appendix E: Standards presents a table showing which standards are relevant for each architecture flow so that they may be considered in the project design phases. It is anticipated that many of the standards will eventually be adopted by USDOT and that their use will be made mandatory at some point in the future. Therefore, in the interim, it makes sense to consider using relevant published ITS standards in system design and implementation regardless of the status of USDOT adoption. This approach will facilitate future integration opportunities.

7 Agreements

It is not anticipated that any agreements are required to implement the systems outlined in the AKIA. There are currently three existing agreements in place.

7.1 MOA Traffic Signal Memorandum of Agreement

The Traffic Signal Memorandum of Agreement addresses the operations and maintenance of public agency owned traffic signals. There is an agreement between DOT&PF and MOA in which MOA operations and responsibilities extend beyond the municipality owned signals. The MOA signal section has control of all state owned traffic signals with the municipality boundaries. This also includes the monitoring and maintenance of signal pre-emption equipment and operating and maintaining traffic detection systems.

7.2 511 Management Center Memorandum of Agreement

This agreement exists between ADOT&PF and Alaska State Troopers for the 511 Management Center. This Memorandum of Agreement involves the AST providing 511 related services through an RSA for $63,000 per year.

7.3 Fairbanks Traffic Signal Memorandum of Agreement

This Memorandum of Agreement is between the City of Fairbanks and ADOT&PF in which the controllers of newly constructed signalized intersections will be maintained by the State.

8 Appendix A: Glossary of Terms

This glossary of terms is compiled from the National ITS Architecture website: http://www.iteris.com/itsarch/.

Architecture: A framework within which a system can be built. Requirements dictate what functionality the architecture must satisfy. An architecture functionally defines what the pieces of the system are and the information that is exchanged between them. An architecture is functionally oriented and not technology-specific which allows the architecture to remain effective over time. It defines "what must be done," not "how it will be done."

Architecture Flow: Information that is exchanged between subsystems and terminators in the physical architecture of the National ITS Architecture. Architecture flows are the primary tool that is used to define interfaces in regional ITS architectures and project ITS architectures. Architecture flows and their communication requirements define the interfaces which form the basis for much of the ongoing standards work in the national ITS program. The terms "information flow" and "architecture flow" are used interchangeably.

Architecture Interconnect: Communications paths that carry information between subsystems and terminators in the physical architecture of the National ITS Architecture. Several different types of interconnects are defined in the National ITS Architecture to reflect the range of interface requirements in ITS. The majority of the interconnects are various types of communications links that are defined in the communications layer. Four different types of communications links are defined: Fixed Point - Fixed Point Communications, Wide Area Wireless (Mobile) Communications, Field - Vehicle Communications, and Vehicle - Vehicle Communications. In addition to these types, several specialized interconnects are also defined to reflect other interface requirements. These include human interface (e.g., what the system user sees and hears) and physical/environmental (e.g., what the ITS sensors sense).

Center Subsystems: Subsystems that provide management, administrative, and support functions for the transportation system. The center subsystems each communicate with other centers to enable coordination between modes and across jurisdictions. Some examples of center subsystems are Traffic Management, Transit Management, Commercial Vehicle Administration, Archived Data Management, Emissions Management, Toll Administration, Emergency Management, Information Service Provider, and Fleet and Freight Management. The Center subsystems class is one of four general subsystem classes defined in the National ITS Architecture.

Data Flow: Representations of data flowing between processes or between a process and a terminator in the logical architecture of the National ITS Architecture. A data flow is shown as an arrow on a data flow diagram and is defined in a data dictionary entry in the logical architecture. Data flows are aggregated together to form high-level architecture flows in the physical architecture of the National ITS Architecture.

Element: An ITS system or piece of a system named as the name used by stakeholders. Elements are the basic building blocks of regional ITS architectures and project ITS architectures.

Equipment Package: The building blocks of the subsystems of the physical architecture subsystems. Equipment packages group similar processes of a particular subsystem together into an "implementable" package. The grouping also takes into account the user services and the need to accommodate various levels of functionality. The equipment packages were used as a basis for estimating deployment costs (as part of the evaluation that was performed). Since equipment packages are both the most detailed elements of the physical architecture of the National ITS Architecture and tied to specific service packages, they provide the common link between the interface-oriented architecture definition and the deployment-oriented service packages.

Federal Highway Administration (FHWA): An agency of the United States Department of Transportation. FHWA administers the Federal-aid Highway Program, which provides financial assistance to States to construct and improve highways, urban and rural roads, and bridges. FHWA also administers the Federal Lands Highway Program, which provides access to and within national forests, national parks, Indian Tribal lands, and other public lands. FHWA is headquartered in Washington, DC, with field offices across the country, including one in or near each State capital.

Federal Transit Administration (FTA): An agency of the United States Department of Transportation. FTA is the principal source of Federal financial assistance to America's communities for the planning, development, and improvement of public or mass transportation systems. FTA provides leadership, technical assistance, and financial resources for safe, technologically advanced public transportation that enhances mobility and accessibility, improves the nation's communities and natural environment, and strengthens the national economy. FTA is headquartered in Washington, DC, with regional offices in Atlanta, Boston, Chicago, Dallas, Denver, Kansas City, New York, Philadelphia, San Francisco, and Seattle.

Field Subsystems: Intelligent infrastructure distributed along the transportation network which performs surveillance, information provision, and plan execution control functions and whose operation is governed by center subsystems. Field subsystems also directly interface to vehicle subsystems. The Field subsystems class is one of the four general subsystem classes defined in the National ITS Architecture.

Field – Vehicle Communications: A wireless communications channel used for close-proximity communications between vehicles and the immediate infrastructure. It supports location-specific communications for ITS capabilities such as toll collection, transit vehicle management, driver information, and automated commercial vehicle operations. One of the types of architecture interconnects defined in the National ITS Architecture.

Fixed Point – Fixed Point Communications: A communication link serving stationary entities. It may be implemented using a variety of public or private communication networks and technologies. It can include, but is not limited to, twisted pair, coaxial cable, fiber optic, microwave relay networks, spread spectrum, etc. In Fixed Point - Fixed Point (FP2FP) communication the important issue is that it serves stationary entities. Both dedicated and shared communication resources may be used. One of the types of architecture interconnects defined in the National ITS Architecture.

Field – Vehicle Communications: A wireless communications channel used for close-proximity communications between vehicles and the immediate infrastructure. It supports location-specific communications for ITS capabilities such as toll collection, transit vehicle management, driver information, and automated commercial vehicle operations. One of the types of architecture interconnects defined in the National ITS Architecture.

Functional Requirement: A statement that specifies WHAT a system must do. The statement should use formal “shall” language and specify a function in terms that the stakeholders, particularly the system implementers, will understand. In the National ITS Architecture, functional requirements have been defined for each Equipment Package that focus on the high-level requirements that support regional integration.

Information Flow: Information that is exchanged between subsystems and terminators in the physical architecture of the National ITS Architecture. The terms "information flow" and "architecture flow" are used interchangeably. Information flows are the primary tool that is used to define the ITS architecture interfaces. These information flows and their communication requirements define the interfaces which form the basis for much of the ongoing standards work in the national ITS program.

Intelligent Transportation Systems: The system defined as the electronics, communications or information processing in transportation infrastructure and in vehicles used singly or integrated to improve transportation safety and mobility and enhance productivity. Intelligent transportation systems (ITS) encompass a broad range of wireless and wire line communications-based information and electronics technologies.

Logical Architecture: The part of the National ITS Architecture that defines what has to be done to support the ITS user services. It defines the processes that perform ITS functions and the information or data flows that are shared between these processes. The logical architecture was developed using Structured Analysis techniques and consists of data flow diagrams, process specifications, and data dictionary entries. The logical architecture has also been called an "Essential Model" because it is not technology specific, nor does it dictate a particular implementation. This implementation independence makes the logical architecture accommodating to innovation, scalable from small scale implementations to large regional systems, and supportive of widely varied system designs.

National ITS Architecture: A common, established framework for developing integrated transportation systems. The National ITS Architecture is comprised of the logical architecture and the physical architecture, which satisfy a defined set of user service requirements. The National ITS Architecture is maintained by the United States Department of Transportation (USDOT).

Operational Concept: A component of a regional architecture that identifies the roles and responsibilities of participating agencies and stakeholders. It defines the institutional and technical vision for the region and describes how ITS will work at a very high-level, frequently using operational scenarios as a basis.

Physical Architecture: The part of the National ITS Architecture that provides agencies with a physical representation (though not a detailed design) of the important ITS interfaces and major system components. It provides a high-level structure around the processes and data flows defined in the logical architecture. The principal elements in the physical architecture are the subsystems and architecture flows that connect

these subsystems and terminators into an overall structure. The physical architecture takes the processes identified in the logical architecture and assigns them to subsystems. In addition, the data flows (also from the logical architecture) are grouped together into architecture flows. These architecture flows and their communication requirements define the interfaces required between subsystems, which form the basis for much of the ongoing standards work in the ITS program.

Project ITS Architecture: A framework that identifies the institutional agreement and technical integration necessary to interface a major ITS project with other ITS projects and systems.

Region: The geographical area that identifies the boundaries of the regional ITS architecture and is defined by and based on the needs of the participating agencies and other stakeholders. In metropolitan areas, a region should be no less than the boundaries of the metropolitan planning area.

Regional ITS Architecture: A specific, tailored framework for ensuring institutional agreement and technical integration for the implementation of ITS projects or groups of projects in a particular region. It functionally defines what pieces of the system are linked to others and what information is exchanged between them.

Service Package: The service packages, formerly known as market packages, provide an accessible, service-oriented perspective to the National ITS Architecture. They are tailored to fit, separately or in combination, real world transportation problems and needs. Service packages collect together one or more equipment packages that must work together to deliver a given ITS service and the architecture flows that connect them and other important external systems. In other words, they identify the pieces of the physical architecture that are required to implement a particular ITS service. Service packages are implemented through projects (or groups of projects, aka programs) and in transportation planning, are directly related to ITS strategies used to meet regional goals and objectives.

Stakeholders: A widely used term that notates a public agency, private organization or the traveling public with a vested interest, or a "stake" in one or more transportation elements within a regional ITS architecture or project ITS architecture.

Standards: Documented technical specifications sponsored by a Standards Development Organization (SDO) to be used consistently as rules, guidelines, or definitions of characteristics for the interchange of data. A broad array of ITS standards is currently under development that will specifically define the interfaces identified in the National ITS Architecture.

Subsystem: The principle structural element of the physical architecture of the National ITS Architecture. Subsystems are individual pieces of the Intelligent Transportation System defined by the National ITS Architecture. Subsystems are grouped into four classes: Centers, Field, Vehicles, and Travelers. Example subsystems are the Traffic Management Subsystem, the Vehicle Subsystem, and the Roadway Subsystem. These correspond to the physical world: respectively traffic operations centers, automobiles, and roadside signal controllers. Due to this close correspondence between the physical world and the subsystems, the subsystem interfaces are prime candidates for standardization.

System: A collection of hardware, software, data, processes, and people that work together to achieve a common goal. Note the scope of a "system" depends on one's viewpoint. To a sign manufacturer, a dynamic message sign is a "system". To a state DOT, the same sign is only a component of a larger Freeway Management "System". In a regional ITS architecture or project ITS architecture, a Freeway Management System is a part of the overall surface transportation "system" for the region.

System Inventory: The list of all ITS-related elements in a regional ITS architecture or project ITS architecture.

Terminator: Terminators define the boundary of an architecture. The National ITS Architecture terminators represent the people, systems, and general environment that interface to ITS. The interfaces between terminators and the subsystems and processes within the National ITS Architecture are defined, but no functional requirements are allocated to terminators. The logical architecture and physical architecture of the National ITS Architecture both contain the same set of terminators.

Traveler Subsystem: Equipment used by travelers to access ITS services pre-trip and en-route. This includes equipment that are owned and operated by the traveler as well as equipment that are owned by transportation and information providers. The Traveler subsystems class is one of four general subsystem classes defined in the National ITS Architecture.

Turbo Architecture: An automated software tool used to input and manage system inventory, service packages, architecture flows and interconnects of a regional ITS architecture and/or multiple project ITS architectures.

Vehicle – Vehicle Communications: Dedicated wireless system handling high data rate, low probability of error, line of sight communications between vehicles. Advanced vehicle services may use this link in the future to support advanced collision avoidance implementations, road condition information sharing, and active coordination to advanced control systems. One of the types of architecture interconnects defined in the National ITS Architecture

Vehicle Subsystem: Covers ITS related elements on vehicle platforms. Vehicle subsystems include general driver information and safety systems applicable to all vehicle types. Four fleet vehicle subsystems (Transit, Emergency, Commercial and Maintenance and Construction Vehicles) add ITS capabilities unique to these special vehicle types. The Vehicle subsystems class is one of four general subsystem classes defined in the National ITS Architecture.

Wide Area Wireless (mobile) Communications: A communications link that provides communications via a wireless device between a user and an infrastructure-based system. Both broadcast (one-way) and interactive (two-way) communications services are grouped into wide-area wireless communications in the National ITS Architecture. These links support a range of services in the National ITS Architecture including real-time traveler information and various forms of fleet communications. One of the types of architecture interconnects defined in the National ITS Architecture.

9 Appendix B: Functional Requirements

This appendix presents the functional requirements of the AKIA update. Functional requirements are high-level descriptions of what each ITS element is supposed to do in a service area. Essentially, it outlines the required tasks of each element to support the ITS services that area is supposed to provide. They also contain the high-level status (e.g. existing or planned) of each element. They are not detailed design requirements.

Functional requirements presented in this section act more like a list of options or capabilities that a user may select from for their projects, but are not required to. For example, users can use these functional requirements as a starting point for projects that do not have a Concept of Operations developed yet.

The functional requirement tables are organized by element/subsystem name in each service area. Each element is then organized by functional areas that each requirement falls under. A functional area in Turbo Architecture™ is a grouping of related functional requirements. The tables are sorted by the proposed service areas.

Each of the functional requirements are consistent with the National ITS Architecture. The information found in these tables is also found in the AKIA update Turbo Architecture™ database.

9.1 Traffic Management Functional Requirements

Table 8. Traffic Management Functional Requirements

Element Name	Functional Area	Requirement	Status
Center/ 3rd Party Traveler Information Services			
Center/ 3rd Party Traveler Information Services	ISP Data Collection	The center shall collect traveler information data, such as parking lot data, rideshare data, road network use data, vehicle probe data, and other data from traveler information system operations.	Planned
Center/ 3rd Party Traveler Information Services	ISP Probe Information Collection	The center shall aggregate collected traffic probe data, calculate route segment travel times, route segment speeds, and route usage, and disseminate to other centers.	Planned
Center/ 511 (phone and web)	ISP Traveler Data Collection	The center shall collect, process, and store traffic and highway condition information, including incident information, detours and road closures, event information, recommended routes, and current speeds on specific routes.	Existing
Center/ 511 (phone and web)	ISP Traveler Data Collection	The center shall collect, process, and store current and forecast road conditions and surface weather conditions.	Existing
Center/ 511 Internal Reporting			
Center/ 511 Internal Reporting	TMC Traffic Information Dissemination	The center shall retrieve locally stored traffic information, including current and forecasted traffic information, road and weather conditions, traffic incident information, information on diversions and alternate routes, closures, and special traffic restrictions (lane/shoulder use, weight restrictions, width restrictions, HOV requirements), and the definition of the road network itself.	Existing
Center/ 511 Internal Reporting	TMC Traffic Information Dissemination	The center shall distribute traffic data to maintenance and construction centers, transit centers, emergency management centers, and traveler information providers.	Planned
Center/ 511 Internal Reporting	TMC Transportation Operations Data Collection	The center shall collect real-time information on the state of the regional transportation system including current traffic and road conditions, weather conditions, special event and incident information.	Planned
Center/ 511 Internal Reporting	TMC Transportation Operations Data Collection	The center shall support the capability for the system operator to monitor and control the information collection service.	Planned
Center/ 511 Internal Reporting	Traffic Data Collection	The center shall collect traffic management data such as operational data, event logs, etc.	Existing
Center/ ADOTPF Regional Traffic Office	TMC Incident Detection	The center shall collect and store traffic flow and image data from the field equipment to detect and verify incidents.	Existing

Element Name	Functional Area	Requirement	Status
Center/ ADOTPF Regional Traffic Office	TMC Incident Detection	The center shall provide road network conditions and traffic images to emergency management centers to support the detection, verification, and classification of incidents.	Existing
Center/ ADOTPF Regional Traffic Office	TMC Probe Information Collection	The center shall collect traffic probe data from vehicles via roadside field equipment.	Planned
Center/ ADOTPF Regional Traffic Office	TMC Probe Information Collection	The center shall assimilate current and forecast traffic conditions based on collected probe data and distribute to other centers for dissemination to travelers.	Planned
Center/ ADOTPF Regional Traffic Office	TMC Regional Traffic Management	The center shall exchange traffic information with other traffic management centers including incident information, congestion data, traffic data, signal timing plans, and real-time signal control information.	Existing
Center/ ADOTPF Regional Traffic Office	TMC Transportation Operations Data Collection	The center shall collect real-time information on the state of the regional transportation system including current traffic and road conditions, weather conditions, special event and incident information.	Existing
Center/ Information Systems and Services Division	TMC Regional Traffic Management	The center shall exchange traffic information with other traffic management centers including incident information, congestion data, traffic data, signal timing plans, and real-time signal control information.	Planned
Center/ Information Systems and Services Division	TMC Regional Traffic Management	The center shall exchange traffic control information with other traffic management centers to support remote monitoring and control of traffic management devices (e.g. signs, sensors, signals, cameras, etc.).	Planned
Center/ Law Enforcement Dispatch			
Center/ Law Enforcement Dispatch	TMC Regional Traffic Management	The center shall exchange traffic information with other traffic management centers including incident information, congestion data, traffic data, signal timing plans, and real-time signal control information.	Planned
Center/ Law Enforcement Dispatch	TMC Regional Traffic Management	The center shall exchange traffic control information with other traffic management centers to support remote monitoring and control of traffic management devices (e.g. signs, sensors, signals, cameras, etc.).	Planned
Center/ Law Enforcement Dispatch	TMC Traffic Information Dissemination	The center shall remotely control dynamic messages signs for dissemination of traffic and other information to drivers.	Existing
Center/ Law Enforcement Dispatch	TMC Traffic Information Dissemination	The center shall collect operational status for the driver information systems equipment (DMS, HAR, etc.).	Existing
Center/ Law Enforcement Dispatch	TMC Traffic Information Dissemination	The center shall collect fault data for the driver information systems equipment (DMS, HAR, etc.) for repair.	Existing

Element Name	Functional Area	Requirement	Status
Center/ Law Enforcement Dispatch	TMC Traffic Information Dissemination	The center shall retrieve locally stored traffic information, including current and forecasted traffic information, road and weather conditions, traffic incident information, information on diversions and alternate routes, closures, and special traffic restrictions (lane/shoulder use, weight restrictions, width restrictions, HOV requirements), and the definition of the road network itself.	Planned
Center/ Law Enforcement Dispatch	TMC Traffic Information Dissemination	The center shall distribute traffic data to maintenance and construction centers, transit centers, emergency management centers, and traveler information providers.	Planned
Center/ State Emergency Operations Center (SEOC)			
Center/ State Emergency Operations Center (SEOC)	Emergency Transportation Operations Data Collection	The center shall collect real-time information on the state of the regional transportation system including current traffic and road conditions, weather conditions, special event and incident information.	Planned
Center/ Statewide/Regional Transportation Operations Centers			
Center/ Statewide/Regional Transportation Operations Centers	Collect Traffic Surveillance	The center shall monitor, analyze, and store traffic sensor data (speed, volume, occupancy) collected from field elements under remote control of the center.	Planned
Center/ Statewide/Regional Transportation Operations Centers	Collect Traffic Surveillance	The center shall monitor, analyze, and distribute traffic images from CCTV systems under remote control of the center.	Planned
Center/ Statewide/Regional Transportation Operations Centers	Collect Traffic Surveillance	The center shall distribute road network conditions data (raw or processed) based on collected and analyzed traffic sensor and surveillance data to other centers.	Planned
Center/ Statewide/Regional Transportation Operations Centers	Collect Traffic Surveillance	The center shall respond to control data from center personnel regarding sensor and surveillance data collection, analysis, storage, and distribution.	Planned
Center/ Statewide/Regional Transportation Operations Centers	TMC Probe Information Collection	The center shall collect traffic probe data from vehicles via roadside field equipment.	Planned
Center/ Statewide/Regional Transportation Operations Centers	TMC Probe Information Collection	The center shall assimilate current and forecast traffic conditions based on collected probe data and distribute to other centers for dissemination to travelers.	Planned
Center/ Statewide/Regional Transportation Operations Centers	TMC Regional Traffic Management	The center shall exchange traffic information with other traffic management centers including incident information, congestion data, traffic data, signal timing plans, and real-time signal control information.	Planned

Element Name	Functional Area	Requirement	Status
Center/ Statewide/Regional Transportation Operations Centers	TMC Regional Traffic Management	The center shall exchange traffic control information with other traffic management centers to support remote monitoring and control of traffic management devices (e.g. signs, sensors, signals, cameras, etc.).	Planned
Center/ Traffic Control	Collect Traffic Surveillance	The center shall monitor, analyze, and store traffic sensor data (speed, volume, occupancy) collected from field elements under remote control of the center.	Existing
Center/ Traffic Control	Collect Traffic Surveillance	The center shall monitor, analyze, and distribute traffic images from CCTV systems under remote control of the center.	Planned
Center/ Traffic Control	Collect Traffic Surveillance	The center shall distribute road network conditions data (raw or processed) based on collected and analyzed traffic sensor and surveillance data to other centers.	Planned
Center/ Traffic Control	TMC Lighting System Control	The center shall remotely control electrical lighting systems.	Planned
Center/ Traffic Control	TMC Lighting System Control	The center shall collect lighting system operational status and compare against the control information sent by the center.	Planned
Center/ Traffic Control	TMC Lighting System Control	The center shall collect lighting system fault data from the field and send to the maintenance center for repair.	Planned
Center/ Traffic Control	TMC Regional Traffic Management	The center shall exchange traffic information with other traffic management centers including incident information, congestion data, traffic data, signal timing plans, and real-time signal control information.	Planned
Center/ Traffic Control	TMC Regional Traffic Management	The center shall exchange traffic control information with other traffic management centers to support remote monitoring and control of traffic management devices (e.g. signs, sensors, signals, cameras, etc.).	Planned
Center/ Traffic Control	TMC Signal Control	The center shall remotely control traffic signal controllers.	Existing
Center/ Traffic Control	TMC Signal Control	The center shall collect traffic signal controller operational status and compare against the control information sent by the center.	Existing
Center/ Traffic Control	TMC Signal Control	The center shall collect traffic signal controller fault data from the field.	Existing
Center/ Traffic Control	TMC Signal Control	The center shall manage (define, store and modify) control plans to coordinate signalized intersections, to be engaged at the direction of center personnel or according to a daily schedule.	Existing
Center/ Traffic Control	TMC Transportation Operations Data Collection	The center shall collect real-time information on the state of the regional transportation system including current traffic and road conditions, weather conditions, special event and incident information.	Existing
Center/ Traffic Control	Traffic Equipment Maintenance	The center shall collect and store sensor (traffic, pedestrian, multimodal crossing) operational status.	Existing
Center/ Traffic Control	Traffic Equipment Maintenance	The center shall collect and store CCTV surveillance system (traffic, pedestrian) operational status.	Existing
Center/ Traffic Control	Traffic Equipment Maintenance	The center shall collect and store sensor (traffic, pedestrian, multimodal crossing) fault data and send to the maintenance center for repair.	Existing

Element Name	Functional Area	Requirement	Status
Center/ Traffic Control	Traffic Equipment Maintenance	The center shall collect and store CCTV surveillance system (traffic, pedestrian) fault data send to the maintenance center for repair.	Planned
Field/ Automatic Traffic Data Recorders	Roadway Basic Surveillance	The field element shall collect, process, digitize, and send traffic sensor data (speed, volume, and occupancy) to the center for further analysis and storage, under center control.	Existing
Field/ Automatic Traffic Data Recorders	Roadway Data Collection	The field element shall include the sensors and supporting roadside devices that sense, collect, and send traffic, road, and environmental conditions information to a center for archival.	Existing
Field/ Automatic Traffic Data Recorders	Roadway Equipment Coordination	The field element shall include sensors that provide data and status information to other field element devices, without center control.	Existing
Field/ Automatic Traffic Data Recorders	Roadway Equipment Coordination	The field element shall include devices that provide data and status information to other field element devices without center control.	Existing
Field/ Automatic Traffic Data Recorders	Roadway Equipment Coordination	The field element shall include devices that receive configuration data from other field element devices, without center control.	Existing
Field/ Bluetooth and WiFi Sensors	Roadway Probe Data Communications	The field element shall communicate with passing vehicles for traffic data link time calculations and send collected data to the controlling center; identification will be removed to ensure anonymity.	Planned
Field/ Bluetooth and WiFi Sensors	Roadway Probe Data Communications	The field element shall communicate with on-board equipment on passing vehicles to collect current vehicle position, speed, and heading and a record of previous events (e.g., starts and stops, link travel times) that can be used to determine current traffic conditions.	Planned
Field/ Bluetooth and WiFi Sensors	Roadway Probe Data Communications	The field element shall aggregate and forward collected probe information to the center.	Planned
Field/ Bluetooth and WiFi Sensors	Roadway Probe Data Communications	The field element shall provide roadside equipment operational status to the center.	Planned
Field/ Bluetooth and WiFi Sensors	Roadway Probe Data Communications	The field element shall provide roadside equipment fault indication to the center for repair.	Planned
Field/ Cameras	Roadway Basic Surveillance	The field element shall collect, process, and send traffic images to the center for further analysis and distribution.	Planned
Field/ Cameras	Roadway Basic Surveillance	The field element shall return sensor and CCTV system operational status to the controlling center.	Planned
Field/ Cameras	Roadway Basic Surveillance	The field element shall return sensor and CCTV system fault data to the controlling center for repair.	Planned
Field/ Cameras	Roadway Equipment Coordination	The field element shall include devices that provide data and status information to other field element devices without center control.	Planned
Field/ Cameras	Roadway Equipment Coordination	The field element shall include devices that receive configuration data from other field element devices, without center control.	Planned

Element Name	Functional Area	Requirement	Status
Field/ Dynamic Message Signs	Roadway Traffic Information Dissemination	The field element shall include dynamic messages signs for dissemination of traffic and other information to drivers, under center control; the DMS may be either those that display variable text messages, or those that have fixed format display(s) (e.g. vehicle restrictions, or lane open/close).	Existing
Field/ Dynamic Message Signs	Roadway Traffic Information Dissemination	The field element shall include pedestrian information systems under center control (e.g. warning pedestrians of a potential hazard, or providing mandatory instructions as to the availability of pedestrian access).	Existing
Field/ Pre-emption and Priority Systems	Roadway Signal Preemption	The field element shall respond to signal preemption requests from emergency vehicles.	Existing
Field/ Pre-emption and Priority Systems	Roadway Signal Priority	The field element shall respond to signal priority requests from transit vehicles.	Existing
Field/ Pre-emption and Priority Systems	Roadway Signal Priority	The field element shall notify controlling traffic management center and maintenance center that the signal timing has changed based on a signal preemption/priority request to help those centers determine whether a fault detected at the signal is a true malfunction or due to a signal override.	Existing
Field/ Roadway Lighting System Control	Roadside Lighting System Control	The field element shall control lighting systems along the roadside under center control.	Planned
Field/ Roadway Lighting System Control	Roadside Lighting System Control	The field element shall return operational status for the lighting system equipment to the center.	Planned
Field/ Roadway Lighting System Control	Roadside Lighting System Control	The field element shall return lighting system equipment fault data to the center for repair.	Planned
Field/ Traffic Detectors			
Field/ Traffic Detectors	Roadway Basic Surveillance	The field element shall collect, process, digitize, and send traffic sensor data (speed, volume, and occupancy) to the center for further analysis and storage, under center control.	Existing
Field/ Traffic Detectors	Roadway Basic Surveillance	The field element shall return sensor and CCTV system operational status to the controlling center.	Existing
Field/ Traffic Detectors	Roadway Basic Surveillance	The field element shall return sensor and CCTV system fault data to the controlling center for repair.	Existing
Field/ Traffic Detectors	Roadway Equipment Coordination	The field element shall include sensors that provide data and status information to other field element devices, without center control.	Existing
Field/ Traffic Detectors	Roadway Equipment Coordination	The field element shall include sensors that receive configuration data from other field element devices, without center control.	Existing
Field/ Traffic Signal Controllers	Roadway Equipment Coordination	The field element shall include sensors that provide data and status information to other field element devices, without center control.	Existing
Field/ Traffic Signal Controllers	Roadway Equipment Coordination	The field element shall include sensors that receive configuration data from other field element devices, without center control.	Existing

Element Name	Functional Area	Requirement	Status
Field/ Traffic Signal Controllers	Roadway Signal Controls	The field element shall control traffic signals under center control.	Existing
Field/ Traffic Signal Controllers	Roadway Signal Controls	The field element shall return traffic signal controller operational status to the center.	Existing
Field/ Traffic Signal Controllers	Roadway Signal Controls	The field element shall return traffic signal controller fault data to the center.	Existing
Terminator/ Driver			
Vehicle/ General Public Vehicle			
Vehicle/ General Public Vehicle	Vehicle Traffic Probe Support	The vehicle shall respond to requests from short range communications equipment for identification information that can be used to collect basic probe information; the field equipment will remove identification information to ensure anonymity.	Planned

9.2 Winter Maintenance Functional Requirements

Table 9. Winter Maintenance Functional Requirements

Element Name	Functional Area	Requirement	Status
Center/ 511 Internal Reporting			
Center/ 511 Internal Reporting	MCM Winter Maintenance Management	The center shall exchange information with administrative systems to support the planning and scheduling of winter maintenance activities. This information includes: equipment and consumables resupply purchase request status, personnel qualifications including training and special certifications, environmental regulations and rules that may impact maintenance activities, and requests and project requirements from contract administration.	Planned
Center/ 511 Internal Reporting	MCM Winter Maintenance Management	The center shall collect real-time information on the state of the regional transportation system from other centers including current traffic and road conditions, weather conditions, special event and incident information and use the collected information to support winter maintenance operations.	Planned
Center/ 511 Internal Reporting	MCM Work Activity Coordination	The center shall collect and disseminate asset restriction information levied on transportation asset usage based on infrastructure design, surveys, tests, or analyses. This includes standard facility design height, width, and weight restrictions, special restrictions such as spring weight restrictions, and temporary facility restrictions that are imposed during maintenance and construction.	Existing
Center/ 511 Internal Reporting	MCM Work Activity Coordination	The center shall exchange information with administrative systems to support the planning and scheduling of maintenance and construction activities. This information includes: equipment and consumables resupply purchase request status, personnel qualifications including training and special certifications, environmental regulations and rules that may impact maintenance activities, and requests and project requirements from contract administration.	Planned
Center/ AMHS Dispatch and Communications			
Center/ AMHS Dispatch and Communications	Transit Center Multi-Modal Coordination	The center shall coordinate schedules and services between transit agencies, traffic management, maintenance and construction operations, parking management, and other surface or air transportation modes.	Planned
Center/ Bridge Design Section Offices	MCM Environmental Information Collection	The center shall remotely control environmental sensors that measure road surface temperature, moisture, icing, salinity, and other measures.	Existing
Center/ Bridge Design Section Offices	MCM Environmental Information Collection	The center shall respond to control data from center personnel regarding environmental sensor control and weather data collection and processing.	Existing

Element Name	Functional Area	Requirement	Status
Center/ Bridge Design Section Offices	MCM Environmental Information Processing	The center shall use the various data inputs of environmental sensors and road weather data to develop a view of current and predicted road weather and road conditions.	Existing
Center/ Bridge Design Section Offices	MCM Maintenance Decision Support	The center shall provide the center personnel with tailored external information, including weather or road condition observations, forecasted weather information or road conditions, current usage of treatments and materials, available resources, equipment and vehicle availability, road network information, and source reliability information.	Existing
Center/ Bridge Design Section Offices	MCM Roadway Maintenance and Construction	The center shall maintain an interface with asset management systems to track the inventory, restrictions, repair needs and status updates of transportation assets (pavement, bridges, signs, etc.) including location, installation and materials information, vendor/contractor, current maintenance status, standard height, width, and weight restrictions.	Existing
Center/ Bridge Design Section Offices	MCM Roadway Maintenance and Construction	The center shall collect the status and fault data from roadside equipment, such as traffic, infrastructure, and environmental sensors, highway advisory radio and dynamic message signs, automated roadway treatment systems, barrier and safeguard systems, cameras, traffic signals and override equipment, ramp meters, short range communications equipment, security sensors and surveillance equipment, etc., and provide a cohesive view of equipment repair needs.	Existing
Center/ Bridge Design Section Offices	MCM Roadway Maintenance and Construction	The center shall report the status of field equipment maintenance activities to the centers that operate the equipment.	Existing
Center/ Bridge Design Section Offices	MCM Roadway Maintenance and Construction	The center shall exchange information with administrative systems to support the planning and scheduling of maintenance activities. This information includes: equipment and consumables resupply purchase request status, personnel qualifications including training and special certifications, environmental regulations and rules that may impact maintenance activities, and requests and project requirements from contract administration.	Planned
Center/ Bridge Scour System	MCM Environmental Information Collection	The center shall remotely control environmental sensors that measure road surface temperature, moisture, icing, salinity, and other measures.	Existing
Center/ Bridge Scour System	MCM Environmental Information Collection	The center shall collect operational status for the roadside and vehicle-based environmental sensor equipment.	Existing
Center/ Bridge Scour System	MCM Environmental Information Collection	The center shall collect fault data for the roadside and vehicle-based environmental sensor equipment for repair.	Existing
Center/ Bridge Scour System	MCM Infrastructure Monitoring	The center shall remotely control and collect data from fixed infrastructure monitoring sensors that monitor vibration, stress, temperature, surface continuity, and other condition measures.	Existing

Element Name	Functional Area	Requirement	Status
Center/ Bridge Scour System	MCM Roadway Maintenance and Construction	The center shall exchange information with administrative systems to support the planning and scheduling of maintenance activities. This information includes: equipment and consumables resupply purchase request status, personnel qualifications including training and special certifications, environmental regulations and rules that may impact maintenance activities, and requests and project requirements from contract administration.	Existing
Center/ Central RWIS Server	MCM Environmental Information Collection	The center shall remotely control environmental sensors that measure road surface temperature, moisture, icing, salinity, and other measures.	Existing
Center/ Central RWIS Server	MCM Environmental Information Collection	The center shall remotely control environmental sensors that measure weather conditions including temperature, wind, humidity, precipitation, and visibility.	Existing
Center/ Central RWIS Server	MCM Environmental Information Collection	The center shall respond to control data from center personnel regarding environmental sensor control and weather data collection and processing.	Existing
Center/ Central RWIS Server	MCM Environmental Information Collection	The center shall collect fault data for the roadside and vehicle-based environmental sensor equipment for repair.	Existing
Center/ Central RWIS Server	MCM Environmental Information Processing	The center shall respond to control data from center personnel regarding environmental sensor control and weather data collection and processing.	Existing
Center/ Construction Offices	MCM Roadway Maintenance and Construction	The center shall maintain an interface with asset management systems to track the inventory, restrictions, repair needs and status updates of transportation assets (pavement, bridges, signs, etc.) including location, installation and materials information, vendor/contractor, current maintenance status, standard height, width, and weight restrictions.	Existing
Center/ Construction Offices	MCM Roadway Maintenance and Construction	The center shall exchange information with administrative systems to support the planning and scheduling of maintenance activities. This information includes: equipment and consumables resupply purchase request status, personnel qualifications including training and special certifications, environmental regulations and rules that may impact maintenance activities, and requests and project requirements from contract administration.	Existing
Center/ Construction Offices	MCM Winter Maintenance Management	The center shall exchange information with administrative systems to support the planning and scheduling of winter maintenance activities. This information includes: equipment and consumables resupply purchase request status, personnel qualifications including training and special certifications, environmental regulations and rules that may impact maintenance activities, and requests and project requirements from contract administration.	Existing

Element Name	Functional Area	Requirement	Status
Center/ Construction Offices	MCM Winter Maintenance Management	The center shall provide status information about scheduled winter maintenance activities including anticipated closures and impact to the roadway, alternate routes, anticipated delays, closure times, and durations. The information is provided to other management centers such as traffic, emergency, transit, traveler information providers, other maintenance centers, and the media.	Existing
Center/ Construction Offices	MCM Winter Maintenance Management	The center shall determine the need for roadway treatment based on current and forecasted weather information, current usage of treatments and materials, available resources, requests for action from other agencies, and recommendations from the Maintenance Decision Support system, specifically under winter conditions. This supports winter maintenance such as plowing, treating, anti-icing, etc.	Existing
Center/ Construction Offices	MCM Winter Maintenance Management	The center shall assess the current status of all winter maintenance activities, including actual work activities performed, current locations and operational conditions of vehicles, materials and equipment inventories, field equipment status, environmental information, etc.	Existing
Center/ Construction Offices	MCM Work Activity Coordination	The center shall provide work zone activities affecting the road network including the nature of the maintenance or construction activity, location, impact to the roadway, expected time(s) and duration of impact, anticipated delays, alternate routes, and suggested speed limits. This information may be augmented with images that provide a visual indication of current work zone status and traffic impacts.	Existing
Center/ Construction Offices	MCM Work Activity Coordination	The center shall provide status information about scheduled maintenance and construction activities including anticipated closures and impact to the roadway, alternate routes, anticipated delays, closure times, and durations. The information is provided to other management centers such as traffic, emergency, transit, traveler information providers, other maintenance centers, multimodal transportation providers, rail operations, and the media.	Existing
Center/ Construction Offices	MCM Work Activity Coordination	The center shall collect and disseminate asset restriction information levied on transportation asset usage based on infrastructure design, surveys, tests, or analyses. This includes standard facility design height, width, and weight restrictions, special restrictions such as spring weight restrictions, and temporary facility restrictions that are imposed during maintenance and construction.	Existing
Center/ Customs and Border Protection	Credentials and Taxes Administration	The center shall use information on asset restrictions received from maintenance centers to develop the commercial vehicle route restrictions and process credentials applications.	Existing
Center/ Law Enforcement Dispatch			
Center/ Law Enforcement Dispatch	Emergency Response Management	The center shall manage coordinated inter-agency responses to and recovery from large-scale emergencies. Such agencies include traffic management, transit, maintenance and construction management, rail operations, and other emergency management agencies.	Existing

Element Name	Functional Area	Requirement	Status
Center/ Law Enforcement Dispatch	Emergency Response Management	The center shall provide the capability to implement response plans and track progress through the incident by exchanging incident information and response status with allied agencies.	Existing
Center/ Law Enforcement Dispatch	Emergency Response Management	The center shall track the availability of resources and coordinate resource sharing with allied agency centers including traffic, maintenance, or other emergency centers.	Existing
Center/ Maintenance Decision Support System	MCM Maintenance Decision Support	The center shall provide the center personnel with tailored external information, including weather or road condition observations, forecasted weather information or road conditions, current usage of treatments and materials, available resources, equipment and vehicle availability, road network information, and source reliability information.	Existing
Center/ Maintenance Decision Support System	MCM Maintenance Decision Support	The center shall provide dispatch information to maintenance and construction vehicles based on the outputs of the decision support system, including recommended roadway treatment actions.	Existing
Center/ Maintenance Management Systems			
Center/ Maintenance Management Systems	MCM Data Collection	The center shall collect maintenance and construction data (such as field equipment status, infrastructure status, maintenance and construction activity data) gathered from roadway, traffic, and other maintenance and construction sources.	Existing
Center/ Maintenance Management Systems	MCM Data Collection	The center shall receive and respond to requests from ITS Archives for either a catalog of the maintenance and construction data or for the data itself.	Existing
Center/ Maintenance Management Systems	MCM Data Collection	The center shall provide data to Asset Management to be used in updating the status of assets in the inventory.	Existing
Center/ Maintenance Management Systems	MCM Vehicle and Equipment Maintenance Management	The center shall collect and analyze vehicle diagnostics information from maintenance and construction vehicles. The information includes engine temperature, mileage, tire wear, brake wear, belt wear, and any warnings or alarms concerning the operational condition of the vehicle and ancillary equipment.	Existing
Center/ Maintenance Management Systems	MCM Winter Maintenance Management	The center shall exchange information with administrative systems to support the planning and scheduling of winter maintenance activities. This information includes: equipment and consumables resupply purchase request status, personnel qualifications including training and special certifications, environmental regulations and rules that may impact maintenance activities, and requests and project requirements from contract administration.	Existing
Center/ Maintenance Management Systems	MCM Winter Maintenance Management	The center shall receive equipment availability and materials storage status information from storage facilities to support the scheduling of winter maintenance activities.	Existing
Center/ Maintenance Management Systems	MCM Winter Maintenance Management	The center shall assess the current status of all winter maintenance activities, including actual work activities performed, current locations and operational conditions of vehicles, materials and equipment inventories, field equipment status, environmental information, etc.	Existing

Element Name	Functional Area	Requirement	Status
Center/ Maintenance Management Systems	MCM Work Activity Coordination	The center shall collect and disseminate asset restriction information levied on transportation asset usage based on infrastructure design, surveys, tests, or analyses. This includes standard facility design height, width, and weight restrictions, special restrictions such as spring weight restrictions, and temporary facility restrictions that are imposed during maintenance and construction.	Existing
Center/ Maintenance Management Systems	MCM Work Activity Coordination	The center shall exchange information with administrative systems to support the planning and scheduling of maintenance and construction activities. This information includes: equipment and consumables resupply purchase request status, personnel qualifications including training and special certifications, environmental regulations and rules that may impact maintenance activities, and requests and project requirements from contract administration.	Existing
Center/ Regional Maintenance Stations			
Center/ Regional Maintenance Stations	MCM Environmental Information Collection	The center shall remotely control environmental sensors that measure road surface temperature, moisture, icing, salinity, and other measures.	Existing
Center/ Regional Maintenance Stations	MCM Environmental Information Collection	The center shall remotely control environmental sensors that measure weather conditions including temperature, wind, humidity, precipitation, and visibility.	Existing
Center/ Regional Maintenance Stations	MCM Environmental Information Collection	The center shall respond to control data from center personnel regarding environmental sensor control and weather data collection and processing.	Existing
Center/ Regional Maintenance Stations	MCM Environmental Information Collection	The center shall collect operational status for the roadside and vehicle-based environmental sensor equipment.	Existing
Center/ Regional Maintenance Stations	MCM Environmental Information Collection	The center shall collect fault data for the roadside and vehicle-based environmental sensor equipment for repair.	Existing
Center/ Regional Maintenance Stations	MCM Environmental Information Collection	The center shall remotely control environmental sensors on-board maintenance and construction vehicles that measure road and weather conditions including air and surface temperatures, wind speed, humidity, precipitation, visibility and other measures.	Planned
Center/ Regional Maintenance Stations	MCM Maintenance Decision Support	The center shall provide the center personnel with tailored external information, including weather or road condition observations, forecasted weather information or road conditions, current usage of treatments and materials, available resources, equipment and vehicle availability, road network information, and source reliability information.	Existing
Center/ Regional Maintenance Stations	MCM Maintenance Decision Support	The center shall provide dispatch information to maintenance and construction vehicles based on the outputs of the decision support system, including recommended roadway treatment actions.	Planned
Center/ Regional Maintenance Stations	MCM Roadway Maintenance and Construction	The center shall maintain an interface with asset management systems to track the inventory, restrictions, repair needs and status updates of transportation assets (pavement, bridges, signs, etc.) including location, installation and materials information, vendor/contractor, current maintenance status, standard height, width, and weight restrictions.	Existing

Element Name	Functional Area	Requirement	Status
Center/ Regional Maintenance Stations	MCM Roadway Maintenance and Construction	The center shall respond to requests from emergency management and traffic management centers for hazard removal, field equipment repair, and other roadway maintenance.	Existing
Center/ Regional Maintenance Stations	MCM Roadway Maintenance and Construction	The center shall exchange information with administrative systems to support the planning and scheduling of maintenance activities. This information includes: equipment and consumables resupply purchase request status, personnel qualifications including training and special certifications, environmental regulations and rules that may impact maintenance activities, and requests and project requirements from contract administration.	Existing
Center/ Regional Maintenance Stations	MCM Roadway Maintenance and Construction	The center shall provide emergency management and traffic management centers with information about scheduled maintenance and construction work activities including anticipated closures and impact to the roadway, alternate routes, anticipated delays, closure times, and durations.	Existing
Center/ Regional Maintenance Stations	MCM Roadway Maintenance and Construction	The center shall collect the status and fault data from roadside equipment, such as traffic, infrastructure, and environmental sensors, highway advisory radio and dynamic message signs, automated roadway treatment systems, barrier and safeguard systems, cameras, traffic signals and override equipment, ramp meters, short range communications equipment, security sensors and surveillance equipment, etc., and provide a cohesive view of equipment repair needs.	Existing
Center/ Regional Maintenance Stations	MCM Roadway Maintenance and Construction	The center shall collect the status and fault data from the centers that operate the equipment, including data for traffic, infrastructure, and environmental sensors, highway advisory radio and dynamic message signs, automated roadway treatment systems, barrier and safeguard systems, cameras, traffic signals and override equipment, ramp meters, short range communications equipment, security sensors and surveillance equipment, etc., and provide a cohesive view of equipment repair needs.	Existing
Center/ Regional Maintenance Stations	MCM Roadway Maintenance and Construction	The center shall track the status of roadway maintenance and construction activities by monitoring collected data from the dispatched vehicles and equipment.	Existing
Center/ Regional Maintenance Stations	MCM Roadway Maintenance and Construction	The center shall report the status of field equipment maintenance activities to the centers that operate the equipment.	Existing
Center/ Regional Maintenance Stations	MCM Roadway Maintenance and Construction	The center shall collect current and forecast traffic and weather information from traffic management centers and weather service providers (such as the National Weather Service and value-added sector specific meteorological services).	Planned
Center/ Regional Maintenance Stations	MCM Roadway Maintenance and Construction	The center shall dispatch and route maintenance and construction vehicle drivers and support them with route-specific environmental, incident, advisory, threat, alert, and traffic congestion information.	Planned

Element Name	Functional Area	Requirement	Status
Center/ Regional Maintenance Stations	MCM Vehicle Tracking	The center shall monitor the locations of all maintenance and construction vehicles and other equipment under its jurisdiction.	Planned
Center/ Regional Maintenance Stations	MCM Winter Maintenance Management	The center shall respond to requests from emergency management and traffic management centers for hazard removal, field equipment repair, and other winter roadway maintenance.	Existing
Center/ Regional Maintenance Stations	MCM Winter Maintenance Management	The center shall exchange information with administrative systems to support the planning and scheduling of winter maintenance activities. This information includes: equipment and consumables resupply purchase request status, personnel qualifications including training and special certifications, environmental regulations and rules that may impact maintenance activities, and requests and project requirements from contract administration.	Existing
Center/ Regional Maintenance Stations	MCM Winter Maintenance Management	The center shall provide status information about scheduled winter maintenance activities including anticipated closures and impact to the roadway, alternate routes, anticipated delays, closure times, and durations. The information is provided to other management centers such as traffic, emergency, transit, traveler information providers, other maintenance centers, and the media.	Existing
Center/ Regional Maintenance Stations	MCM Winter Maintenance Management	The center shall determine the need for roadway treatment based on current and forecasted weather information, current usage of treatments and materials, available resources, requests for action from other agencies, and recommendations from the Maintenance Decision Support system, specifically under winter conditions. This supports winter maintenance such as plowing, treating, anti-icing, etc.	Existing
Center/ Regional Maintenance Stations	MCM Winter Maintenance Management	The center shall provide dispatch instructions for vehicle operators based on input parameters from center personnel, specifically for winter conditions. This could include a treatment route, treatment application rates, start and end times, and other treatment instructions.	Planned
Center/ Regional Maintenance Stations	MCM Winter Maintenance Management	The center shall assess the current status of all winter maintenance activities, including actual work activities performed, current locations and operational conditions of vehicles, materials and equipment inventories, field equipment status, environmental information, etc.	Planned
Center/ Regional Maintenance Stations	MCM Work Activity Coordination	The center shall provide work zone activities affecting the road network including the nature of the maintenance or construction activity, location, impact to the roadway, expected time(s) and duration of impact, anticipated delays, alternate routes, and suggested speed limits. This information may be augmented with images that provide a visual indication of current work zone status and traffic impacts.	Existing
Center/ Road Weather Data	ITS Data Repository	The center shall collect data to be archived from one or more data sources.	Planned
Center/ Road Weather Data	ITS Data Repository	The center shall store the archived data in a focused repository that is suited to a particular set of ITS data users.	Planned

Element Name	Functional Area	Requirement	Status
Center/ Road Weather Data	MCM Environmental Information Collection	The center shall assimilate current and forecast road conditions and surface weather information using a combination of weather service provider information (such as the National Weather Service and value-added sector specific meteorological services), data from traffic and traveler information providers, and environmental data collected from sensors deployed on and about the roadway as well as the fleet of maintenance and construction vehicles and the broader population of vehicle probes.	Planned
Center/ Road Weather Data	MCM Environmental Information Collection	The center shall provide weather and road condition information to weather service providers and center personnel.	Planned
Center/ Road Weather Data	MCM Environmental Information Processing	The center shall assimilate current and forecast road conditions and surface weather information using a combination of weather service provider information (such as the National Weather Service and value-added sector specific meteorological services) and local environmental sensor data.	Planned
Center/ Road Weather Data	MCM Environmental Information Processing	The center shall use the various data inputs of environmental sensors and road weather data to develop a view of current and predicted road weather and road conditions.	Planned
Center/ Road Weather Data	MCM Environmental Information Processing	The center shall disseminate current and forecasted road weather and road condition information to weather service providers (such as the National Weather Service and value-added sector specific meteorological services) as well as other agencies including traffic, emergency, and transit management, traveler information providers, rail operations centers, media, and other maintenance management centers.	Planned
Center/ Statewide/Regional Transportation Operations Centers			
Center/ Statewide/Regional Transportation Operations Centers	TMC Work Zone Traffic Management	The center shall receive proposed maintenance and construction work plans, analyze the activity as a possible incident, and provide work plan feedback to the sending center.	Planned
Field/ Automated Bridge Anti-icing	Roadway Automated Treatment	The field element shall activate automated roadway treatment systems based on environmental or atmospheric conditions. Treatments can be in the form of fog dispersion, anti-icing chemicals, etc.	Existing
Field/ Automated Bridge Anti-icing	Roadway Automated Treatment	The field element shall return automated roadway treatment system and associated environmental sensor operational status to the maintenance center.	Existing
Field/ Automated Bridge Anti-icing	Roadway Automated Treatment	The field element shall return automated roadway treatment system and associated environmental sensor fault data to the maintenance center for repair.	Existing
Field/ Bridge Scour Sensors			
Field/ Bridge Scour Sensors	Roadway Infrastructure Monitoring	The field element shall include infrastructure condition monitoring sensors that monitor the condition of pavement, bridges, tunnels, associated hardware, and other transportation-related infrastructure (e.g., culverts), under maintenance center control.	Existing

Element Name	Functional Area	Requirement	Status
Field/ Bridge Scour Sensors	Roadway Infrastructure Monitoring	The field element shall provide operational status for the infrastructure condition monitoring sensors to the maintenance center.	Existing
Field/ Bridge Scour Sensors	Roadway Infrastructure Monitoring	The field element shall provide fault data for the infrastructure condition monitoring sensors to the maintenance center for repair.	Existing
Field/ Environmental Sensor Stations (ESS)	Roadway Environmental Monitoring	The field element shall include surface and sub-surface environmental sensors that measure road surface temperature, moisture, icing, salinity, and other measures.	Existing
Field/ Environmental Sensor Stations (ESS)	Roadway Environmental Monitoring	The field element shall include environmental sensors that measure weather conditions including temperature, wind, humidity, precipitation, and visibility.	Existing
Field/ Environmental Sensor Stations (ESS)	Roadway Environmental Monitoring	The field element's environmental sensors shall be remotely controlled by a maintenance center.	Existing
Field/ Environmental Sensor Stations (ESS)	Roadway Environmental Monitoring	The field element shall provide environmental sensor equipment operational status to the controlling center or maintenance vehicle.	Existing
Field/ Environmental Sensor Stations (ESS)	Roadway Environmental Monitoring	The field element shall provide environmental sensor equipment fault indication to the controlling center or maintenance vehicle.	Existing
Field/ Environmental Sensor Stations (ESS)	Roadway Environmental Monitoring	The field element shall provide weather and road surface condition data to centers.	Existing
Terminator/ ARRC			
Terminator/ National Center for Atmospheric Research Database			
Terminator/ National Weather Service Offices			
Terminator/ Weather and Pavement Sensors			
Vehicle/ ADOTPF Maintenance Vehicle AVL			
Vehicle/ ADOTPF Maintenance Vehicle AVL	Vehicle Location Determination	The vehicle shall provide the vehicle's current location to other in-vehicle functions.	Existing

Element Name	Functional Area	Requirement	Status
Vehicle/ ADOTPF Maintenance Vehicle AVL	Vehicle Location Determination	The vehicle shall calculate the location from one or more data sources including positioning systems such as GPS, sensors that track vehicle movement, and maps used to determine the likely vehicle route.	Existing
Vehicle/ Maintenance Vehicle On-board Systems (State)	MCV Roadway Maintenance and Construction	The maintenance and construction vehicle shall monitor materials information including remaining quantity and current application rate of materials on the vehicle.	Existing
Vehicle/ Maintenance Vehicle On-board Systems (State)	MCV Roadway Maintenance and Construction	The maintenance and construction vehicle shall respond to dispatch information from the center, presented to the vehicle operator for acknowledgement and returning status.	Existing
Vehicle/ Maintenance Vehicle On-board Systems (State)	MCV Roadway Maintenance and Construction	The maintenance and construction vehicle shall send operational data to the center including the operational state of the maintenance equipment (e.g., blade up/down, spreader pattern), types and quantities of materials used for construction and maintenance activities, and a record of the actual work performed.	Existing
Vehicle/ Maintenance Vehicle On-board Systems (State)	MCV Vehicle Location Tracking	The maintenance and construction vehicle shall track its current location.	Existing
Vehicle/ Maintenance Vehicle On-board Systems (State)	MCV Vehicle Location Tracking	The maintenance and construction vehicle shall send the time stamped vehicle location to the controlling center.	Existing
Vehicle/ Maintenance Vehicle On-board Systems (State)	MCV Winter Maintenance	The maintenance and construction vehicle shall respond to dispatch information from the center, presented to the vehicle operator for acknowledgement and returning status.	Planned

9.3 CVO and Freight Functional Requirements

Element Name	Functional Area	Requirement	Status
Center/ 511 Internal Reporting			
Center/ 511 Internal Reporting	CV Information Exchange	The center shall exchange safety and credentials data among other commercial vehicle administration centers; includes border clearance status, credentials information, credentials status information, driver records, accident reports, permit information, and safety status information.	Planned
Center/ 511 Internal Reporting	ITS Data Repository	The center shall collect data to be archived from one or more data sources.	Planned
Center/ 511 Internal Reporting	ITS Data Repository	The center shall collect data catalogs from one or more data sources. A catalog describes the data contained in the collection of archived data and may include descriptions of the schema or structure of the data, a description of the contents of the data; e.g., time range of entries, number of entries; or a sample of the data (e. g. a thumbnail).	Planned
Center/ 511 Internal Reporting	ITS Data Repository	The center shall store the archived data in a focused repository that is suited to a particular set of ITS data users.	Planned
Center/ Alaska Bridge Analysis Software	MCM Infrastructure Monitoring	The center shall provide current infrastructure conditions information to the asset management system.	Existing
Center/ ALVIN CDL	Credentials and Taxes Administration	The center shall exchange credentials and tax information with other commercial vehicle administration centers - either in other states or the federal government.	Existing
Center/ ALVIN CDL	Credentials and Taxes Administration	The center shall provide credentials information about commercial vehicle operators and carriers to authorized requestors such as insurance agencies.	Existing
Center/ ALVIN CDL	Credentials and Taxes Administration	The center shall receive and store information on commercial vehicle violations from enforcement agencies as part of the processing of credentials applications.	Existing
Center/ ALVIN CDL	CV Information Exchange	The center shall exchange safety and credentials data among other commercial vehicle administration centers; includes border clearance status, credentials information, credentials status information, driver records, accident reports, permit information, and safety status information.	Existing
Center/ CDLIS	CV Safety and Security Administration	The center shall manage the citation records and provide the citations to enforcement agencies and the commercial fleet management center.	Existing
Center/ CVIEW (Fed)	CV Information Exchange	The center shall exchange safety and credentials data among other commercial vehicle administration centers; includes border clearance status, credentials information, credentials status information, driver records, accident reports, permit information, and safety status information.	Existing
Center/ CVIEW (MSCVE)	Credentials and Taxes Administration	The center shall manage electronic credentials filing and processing for commercial vehicles.	Existing

Element Name	Functional Area	Requirement	Status
Center/ CVIEW (MSCVE)	Credentials and Taxes Administration	The center shall exchange credentials and tax information with other commercial vehicle administration centers - either in other states or the federal government.	Existing
Center/ CVIEW (MSCVE)	Credentials and Taxes Administration	The center shall receive and store information on commercial vehicle violations from enforcement agencies as part of the processing of credentials applications.	Planned
Center/ CVIEW (MSCVE)	CV Information Exchange	The center shall exchange safety and credentials data among other commercial vehicle administration centers; includes border clearance status, credentials information, credentials status information, driver records, accident reports, permit information, and safety status information.	Existing
Center/ CVIEW (MSCVE)	CV Information Exchange	The center shall package data concerning commercial vehicle safety and credentials into profiles (detailed and historical data).	Existing
Center/ CVIEW (MSCVE)	CV Information Exchange	The center shall exchange information with roadside check facilities, including credentials and credentials status information, safety status information, daily site activity data, driver records, and citations.	Planned
Center/ CVIEW (MSCVE)	CV Safety and Security Administration	The center shall provide commercial vehicle safety and security data to roadside check facilities.	Existing
Center/ CVIEW (MSCVE)	CV Safety and Security Administration	The center shall collect and review safety inspection reports and violations from the roadside check facilities and pass on appropriate portions to other commercial vehicle administrative centers and commercial vehicle fleet operators.	Existing
Center/ Motor Carrier Administrative Systems	Credentials and Taxes Administration	The center shall manage electronic credentials filing and processing for commercial vehicles.	Planned
Center/ Motor Carrier Administrative Systems	Credentials and Taxes Administration	The center shall manage the filing of appropriate taxes for the operation of commercial vehicles.	Planned
Center/ Motor Carrier Administrative Systems	CV Information Exchange	The center shall provide individual drivers access to their own driver records on request.	Existing
Center/ Motor Carrier Administrative Systems	CV Information Exchange	The center shall exchange safety and credentials data among other commercial vehicle administration centers; includes border clearance status, credentials information, credentials status information, driver records, accident reports, permit information, and safety status information.	Planned
Center/ Motor Carrier Administrative Systems	Fleet Administration	The center shall access driver records from the appropriate commercial vehicle administration center and use the records to support pre-hiring checks for potential drivers and monitor the performance of each driver who is hired.	Existing

Element Name	Functional Area	Requirement	Status
Center/ Motor Carrier Administrative Systems	Fleet Administration	The center shall send data concerning enrollment of commercial vehicles for electronic clearance and tax filing to the appropriate commercial vehicle administration center. The data may include driver and vehicle identification, safety inspections/status, carrier credentials, related citations, and accident information.	Planned
Center/ Motor Carrier Administrative Systems	Fleet Credentials and Taxes Management and Reporting	The center shall send data concerning enrollment and purchase of commercial vehicles credentials and tax filing to the appropriate commercial vehicle administration center.	Planned
Center/ Motor Carrier Management Information System			
Center/ Motor Carrier Management Information System	Credentials and Taxes Administration	The center shall exchange credentials and tax information with other commercial vehicle administration centers - either in other states or the federal government.	Existing
Center/ Motor Carrier Management Information System	Credentials and Taxes Administration	The center shall receive and store information on commercial vehicle violations from enforcement agencies as part of the processing of credentials applications.	Existing
Center/ Motor Carrier Management Information System	CV Information Exchange	The center shall exchange safety and credentials data among other commercial vehicle administration centers; includes border clearance status, credentials information, credentials status information, driver records, accident reports, permit information, and safety status information.	Existing
Center/ Motor Carrier Management Information System	CV Information Exchange	The center shall package data concerning commercial vehicle safety and credentials into snapshots (top-level summary and critical status information).	Existing
Center/ Motor Carrier Offices	Fleet Administration	The center shall send data concerning enrollment of commercial vehicles for electronic clearance and tax filing to the appropriate commercial vehicle administration center. The data may include driver and vehicle identification, safety inspections/status, carrier credentials, related citations, and accident information.	Existing
Center/ Motor Carrier Offices	Fleet Administration	The center shall monitor the locations and progress of commercial vehicles against their planned routes and raise appropriate warnings based on route monitoring parameters.	Existing
Center/ Motor Carrier Offices	Fleet Credentials and Taxes Management and Reporting	The center shall send data concerning enrollment and purchase of commercial vehicles credentials and tax filing to the appropriate commercial vehicle administration center.	Existing
Center/ Motor Carrier Offices	Fleet Credentials and Taxes Management and Reporting	The center shall provide audit data to the appropriate commercial vehicle administration center to support tax audits.	Existing

Element Name	Functional Area	Requirement	Status
Center/ Motor Carrier Offices	Freight Administration and Management	The center shall collect data from the commercial vehicles carrying freight or from the freight equipment itself. Includes container, trailer, or chassis information regarding identity, type, location, brake wear data, mileage, seal number/type, door open/close status, chassis bare/covered status, tethered / untethered status, bill of lading, and sensor status.	Existing
Center/ Motor Carrier Offices	Freight Administration and Management	The center shall coordinate the shipment of cargo using freight equipment with intermodal freight depots. Information to be coordinated includes information regarding a freight transportation booking and the assigned driver and vehicle scheduled to transport the freight along with cargo movement logs, routing information, and cargo ID's.	Existing
Center/ Motor Carrier Offices	Freight Administration and Management	The center shall track the progress of freight equipment as it moves from source to destination based on inputs from the commercial vehicles, the freight equipment, intermodal freight depots, shippers, and commercial vehicle administration centers that provide border clearance status information.	Existing
Center/ Permitting Program			
Center/ Permitting Program	Credentials and Taxes Administration	The center shall manage electronic credentials filing and processing for commercial vehicles.	Planned
Center/ Permitting Program	CV Information Exchange	The center shall exchange safety and credentials data among other commercial vehicle administration centers; includes border clearance status, credentials information, credentials status information, driver records, accident reports, permit information, and safety status information.	Planned
Center/ PRISM (Fed)	CV Information Exchange	The center shall exchange safety and credentials data among other commercial vehicle administration centers; includes border clearance status, credentials information, credentials status information, driver records, accident reports, permit information, and safety status information.	Existing
Center/ PRISM (MSCVE)	Credentials and Taxes Administration	The center shall manage electronic credentials filing and processing for commercial vehicles.	Planned
Center/ PRISM (MSCVE)	Credentials and Taxes Administration	The center shall exchange credentials and tax information with other commercial vehicle administration centers - either in other states or the federal government.	Planned
Center/ PRISM (MSCVE)	CV Information Exchange	The center shall exchange safety and credentials data among other commercial vehicle administration centers; includes border clearance status, credentials information, credentials status information, driver records, accident reports, permit information, and safety status information.	Planned
Center/ SAFER	Credentials and Taxes Administration	The center shall exchange credentials and tax information with other commercial vehicle administration centers - either in other states or the federal government.	Existing
Center/ SAFER	Credentials and Taxes Administration	The center shall receive and store information on commercial vehicle violations from enforcement agencies as part of the processing of credentials applications.	Existing

Element Name	Functional Area	Requirement	Status
Center/ SAFER	CV Information Exchange	The center shall exchange safety and credentials data among other commercial vehicle administration centers; includes border clearance status, credentials information, credentials status information, driver records, accident reports, permit information, and safety status information.	Existing
Center/ SAFER	CV Information Exchange	The center shall package data concerning commercial vehicle safety and credentials into snapshots (top-level summary and critical status information).	Existing
Center/ SAFER	CV Information Exchange	The center shall package data concerning commercial vehicle safety and credentials into profiles (detailed and historical data).	Existing
Center/ SAFER	CV Information Exchange	The center shall provide commercial vehicle credentials and safety status information to authorized requestors such as insurance agencies.	Existing
Center/ SAFER	CV Safety and Security Administration	The center shall provide commercial vehicle safety and security data to roadside check facilities.	Existing
Center/ SAFER	CV Safety and Security Administration	The center shall collect and review safety inspection reports and violations from the roadside check facilities and pass on appropriate portions to other commercial vehicle administrative centers and commercial vehicle fleet operators.	Existing
Center/ SAFER	CV Safety and Security Administration	The center shall provide commercial vehicle accident reports to enforcement agencies.	Existing
Center/ SAFETYNET	Credentials and Taxes Administration	The center shall manage electronic credentials filing and processing for commercial vehicles.	Planned
Center/ SAFETYNET	CV Information Exchange	The center shall package data concerning commercial vehicle safety and credentials into snapshots (top-level summary and critical status information).	Existing
Center/ SAFETYNET	CV Information Exchange	The center shall package data concerning commercial vehicle safety and credentials into profiles (detailed and historical data).	Existing
Center/ SAFETYNET	CV Information Exchange	The center shall exchange safety and credentials data among other commercial vehicle administration centers; includes border clearance status, credentials information, credentials status information, driver records, accident reports, permit information, and safety status information.	Planned
Center/ SAFETYNET	Fleet Credentials and Taxes Management and Reporting	The center shall receive compliance review reports from the appropriate commercial vehicle administration centers concerning the operations of the commercial vehicle fleet, including concomitant out-of-service notifications, and carrier warnings/notifications.	Existing
Center/ Traffic and Criminal Software			
Center/ Traffic and Criminal Software	CV Safety and Security Administration	The center shall manage the citation records and provide the citations to enforcement agencies and the commercial fleet management center.	Existing

Element Name	Functional Area	Requirement	Status
Field/ AVI/WIM	Roadside Electronic Screening	The roadside check facility equipment shall detect the presence of commercial vehicles and freight equipment approaching a facility. Sensors can differentiate between different types of vehicles and determine the number of axles, gross vehicle weight, and the identification of the vehicle and its cargo.	Existing
Field/ AVI/WIM	Roadside Electronic Screening	The roadside check facility equipment shall verify that pull-in requests are heeded by drivers, notifying the facility operator if a vehicle fails to pull in as requested.	Existing
Field/ AVI/WIM	Roadside WIM	The roadside check facility equipment shall detect the presence of commercial vehicles and freight equipment approaching a facility. Sensors can differentiate between different types of vehicles and determine the number of axles, gross vehicle weight, weight per axle, and the identification of the vehicle and its cargo.	Existing
Field/ AVI/WIM	Roadside WIM	The roadside check facility equipment shall request and input electronic screening data from the commercial vehicle's electronic tag data.	Existing
Field/ AVI/WIM	Roadside WIM	The roadside check facility equipment shall send a pass/pull-in notification to the commercial vehicle and its driver based on the information received from the vehicle and the measurements taken. The message may be sent to the on-board equipment in the commercial vehicle or transmitted to the driver using equipment such as dynamic message signs, red-green lights, flashing signs, etc.	Existing
Field/ Border Data Collection System			
Field/ Enforcement (Citations)	Citation and Accident Electronic Recording	The roadside check facility equipment shall forward results of the roadside inspections to the commercial vehicle administration center either as needed or on a periodic basis. These reports include accident reports, violation notifications, citations, and daily site activity logs.	Existing
Field/ Inspection System	Roadside Electronic Screening	The roadside check facility equipment shall detect the presence of commercial vehicles and freight equipment approaching a facility. Sensors can differentiate between different types of vehicles and determine the number of axles, gross vehicle weight, and the identification of the vehicle and its cargo.	Existing
Field/ Inspection System	Roadside Electronic Screening	The roadside check facility equipment shall receive the credential and credentials status information (e.g. snapshots) from the commercial vehicle administration center to maintain an up to date list of which vehicles have been cleared (enrolled) to potentially pass through without stopping.	Existing
Field/ Inspection System	Roadside Electronic Screening	The roadside check facility equipment shall request and input electronic screening data from the commercial vehicle's electronic tag data.	Existing
Field/ Inspection System	Roadside Electronic Screening	The roadside check facility equipment shall send a pass/pull-in notification to the commercial vehicle and its driver based on the information received from the vehicle, the administration center, enforcement agencies, and the inspector. The message may be sent to the on-board equipment in the commercial vehicle or transmitted to the driver using equipment such as dynamic message signs, red-green lights, flashing signs, etc.	Existing

Element Name	Functional Area	Requirement	Status
Field/ Inspection System	Roadside Electronic Screening	The roadside check facility equipment shall send a record of daily activities at the facility including summaries of screening events and inspections to the commercial vehicle administration center.	Existing
Field/ Inspection System	Roadside Safety and Security Inspection	The roadside check facility equipment shall forward results of the roadside safety inspections to the commercial vehicle administration center.	Existing
Field/ Inspection System	Roadside Safety and Security Inspection	The roadside check facility equipment shall receive information concerning commercial vehicles and freight equipment approaching a facility that are being pulled in for safety and security inspections.	Existing
Field/ Scale Systems	Roadside WIM	The roadside check facility equipment shall detect the presence of commercial vehicles and freight equipment approaching a facility. Sensors can differentiate between different types of vehicles and determine the number of axles, gross vehicle weight, weight per axle, and the identification of the vehicle and its cargo.	Existing
Field/ Virtual Weigh Station	Roadside Electronic Screening	The roadside check facility equipment shall detect the presence of commercial vehicles and freight equipment approaching a facility. Sensors can differentiate between different types of vehicles and determine the number of axles, gross vehicle weight, and the identification of the vehicle and its cargo.	Existing
Field/ Virtual Weigh Station	Roadside Electronic Screening	The roadside check facility equipment shall receive the credential and credentials status information (e.g. snapshots) from the commercial vehicle administration center to maintain an up to date list of which vehicles have been cleared (enrolled) to potentially pass through without stopping.	Existing
Field/ Virtual Weigh Station	Roadside WIM	The roadside check facility equipment shall detect the presence of commercial vehicles and freight equipment approaching a facility. Sensors can differentiate between different types of vehicles and determine the number of axles, gross vehicle weight, weight per axle, and the identification of the vehicle and its cargo.	Existing
Field/ Virtual Weigh Station	Roadside WIM	The roadside check facility equipment shall request and input electronic screening data from the commercial vehicle's electronic tag data.	Existing
Field/ Virtual Weigh Station	Roadside WIM	The roadside check facility equipment shall send a pass/pull-in notification to the commercial vehicle and its driver based on the information received from the vehicle and the measurements taken. The message may be sent to the on-board equipment in the commercial vehicle or transmitted to the driver using equipment such as dynamic message signs, red-green lights, flashing signs, etc.	Existing
Terminator/ Commercial Vehicle Driver			
Terminator/ CVO Inspector			

Element Name	Functional Area	Requirement	Status
Vehicle/ Commercial Vehicle On-Board Systems			
Vehicle/ Commercial Vehicle On-Board Systems	On-board CV Electronic Data	The commercial vehicle shall receive pass/pull-in messages from the roadside check facilities and present them to the driver in either audible or visual forms.	Existing
Vehicle/ Commercial Vehicle On-Board Systems	On-board CV Electronic Data	The commercial vehicle shall respond to requests to provide data accumulated on-board the vehicle to roadside check facilities for inspection including driver logs, electronic identifiers, credentials, border clearance data, and other screening data such as cargo status, hazmat identifiers, out of service status, vehicle axle weight, vehicle weight, and time.	Existing
Vehicle/ Commercial Vehicle On-Board Systems	On-board CV Electronic Data	The commercial vehicle shall respond to requests to provide the identity, status and other information from the electronic cargo lock tag, if so equipped, to roadside check facilities, including border crossings.	Planned
Vehicle/ Commercial Vehicle On-Board Systems	On-board CV Safety and Security	The commercial vehicle shall receive pass/pull-in messages from the roadside check facilities and present them to the driver in either audible or visual forms.	Existing
Vehicle/ Commercial Vehicle On-Board Systems	On-board CV Safety and Security	The commercial vehicle shall respond to requests to provide on-board safety inspection data to roadside check facilities including vehicle identification, driver logs, and characteristics data for initiating safety and security checking. Results of the inspection are read back into the on-board equipment.	Existing
Vehicle/ Commercial Vehicle On-Board Systems	On-board CV Safety and Security	The commercial vehicle shall monitor on-board systems pertaining to the safety and security of the vehicle, its driver, and its cargo/freight equipment; and provide the information to the driver, roadside check facilities, and commercial fleet management centers.	Planned
Vehicle/ Commercial Vehicle On-Board Systems	On-board Driver Authentication	The commercial vehicle shall receive and store driver assignments and associated driver identity characteristic keys from the commercial vehicle fleet management center.	Planned
Vehicle/ Commercial Vehicle On-Board Systems	On-board Trip Monitoring	The commercial vehicle shall provide details of the route input from the commercial vehicle fleet management center.	Existing
Vehicle/ Commercial Vehicle On-Board Systems	On-board Trip Monitoring	The commercial vehicle shall provide on-board vehicle data to the commercial vehicle fleet management center upon request - includes location, credentials, driver license citations, fuel purchase data, identity details, inspection data, log data, service records, safety systems diagnostics, and freight equipment data.	Existing
Vehicle/ Commercial Vehicle On-Board Systems	On-board Trip Monitoring	The commercial vehicle shall maintain the driver's daily log, vehicle location, mileage, and trip activity (includes screening, inspection and border clearance event data as well as fare payments) and distribute it to the driver and to the commercial vehicle fleet management center upon request.	Planned

9.4 Public Transportation Functional Requirements

Table 10. Public Transportation Functional Requirements

Element Name	Functional Area	Requirement	Status
Center/ AMHS Dispatch and Communications			
Center/ AMHS Dispatch and Communications	Transit Center Fixed-Route Operations	The center shall dispatch fixed route or flexible route transit vehicles	Existing
Center/ AMHS Dispatch and Communications	Transit Center Fixed-Route Operations	The center shall collect transit operational data for use in the generation of routes and schedules.	Existing
Center/ AMHS Dispatch and Communications	Transit Center Fixed-Route Operations	The center shall provide instructions or corrective actions to the transit vehicle operators based upon operational needs.	Existing
Center/ AMHS Dispatch and Communications	Transit Center Fixed-Route Operations	The center shall generate the necessary corrective actions which may involve more than the vehicles concerned and more far reaching action, such as, the introduction of extra vehicles, wide area signal priority by traffic management, the premature termination of some services, etc.	Existing
Center/ AMHS Dispatch and Communications	Transit Center Fixed-Route Operations	The center shall generate transit routes and schedules based on such factors as parameters input by the system operator, road network conditions, incident information, operational data on current routes and schedules, and digitized map data.	Planned
Center/ AMHS Dispatch and Communications	Transit Center Information Services	The center shall provide transit service information to traveler information service providers including routes, schedules, schedule adherence, and fare information as well as transit service information during evacuation.	Existing
Center/ AMHS Dispatch and Communications	Transit Center Security	The center shall monitor transit vehicle operational data to determine if the transit vehicle is off-route and assess whether a security incident is occurring.	Existing
Center/ AMHS Dispatch and Communications	Transit Center Security	The center shall coordinate the response to security incidents involving transit with other agencies including Emergency Management, other transit agencies, media, traffic management, and traveler information service providers.	Existing
Center/ AMHS Dispatch and Communications	Transit Center Security	The center shall receive threat information and status on the integrity of the transit infrastructure.	Existing
Center/ AMHS Dispatch and Communications	Transit Center Vehicle Tracking	The center shall monitor the locations of all transit vehicles within its network.	Existing
Center/ AMHS Dispatch and Communications	Transit Center Vehicle Tracking	The center shall determine adherence of transit vehicles to their assigned schedule.	Existing

Element Name	Functional Area	Requirement	Status
Center/ AMHS Dispatch and Communications	Transit Center Vehicle Tracking	The center shall support an interface with a map update provider, or other appropriate data sources, through which updates of digitized map data can be obtained and used as a background for transit tracking and dispatch.	Existing
Center/ AMHS Dispatch and Communications	Transit Center Vehicle Tracking	The center shall provide transit operational data to traveler information service providers.	Existing
Center/ AMHS Website	Infrastructure Provided Trip Planning	The center shall provide the capability to provide specific pre-trip and enroute directions to travelers (and drivers), including costs, arrival times, and transfer points.	Existing
Center/ AMHS Website	ISP Traveler Data Collection	The center shall collect, process, and store traffic and highway condition information, including incident information, detours and road closures, event information, recommended routes, and current speeds on specific routes.	Existing
Center/ AMHS Website	ISP Traveler Data Collection	The center shall collect, process, and store transit routes and schedules, transit transfer options, transit fares, and real-time schedule adherence information.	Existing
Center/ Law Enforcement Dispatch			
Center/ Law Enforcement Dispatch	Center Secure Area Alarm Support	After the alarm message has been received, the center shall generate an alarm acknowledgment to the sender.	Existing
Center/ Law Enforcement Dispatch	Center Secure Area Alarm Support	After the alarm message becomes a verified incident, the center shall determine the appropriate response.	Existing
Center/ Law Enforcement Dispatch	Center Secure Area Sensor Management	The center shall remotely monitor and control security sensor data collected in secure areas including facilities (e.g. transit yards) and transportation infrastructure (e.g. bridges, tunnels, interchanges, roadway infrastructure, and transit railways or guideways). The types of security sensor data include environmental threat (e.g. chemical agent, toxic industrial chemical, biological, explosives, and radiological sensors), infrastructure condition and integrity, intrusion and motion, and object detection sensors. The data may be raw or pre-processed in the field.	Existing
Center/ Law Enforcement Dispatch	Center Secure Area Sensor Management	The center shall remotely monitor and control security sensor data collected in traveler secure areas, which include transit stations, transit stops, rest areas, park and ride lots, and other fixed sites along travel routes (e.g., emergency pull-off areas and travel information centers). The types of security sensor data include environmental threat (e.g. chemical agent, toxic industrial chemical, biological, explosives, and radiological sensors), intrusion and motion, and object detection sensors. The data may be raw or pre-processed in the field.	Existing
Center/ Law Enforcement Dispatch	Center Secure Area Sensor Management	The center shall identify potential security threats based on collected security sensor data.	Existing

Element Name	Functional Area	Requirement	Status
Center/ Law Enforcement Dispatch	Center Secure Area Sensor Management	The center shall disseminate threat information to other agencies, including traffic, transit, maintenance, rail operations, and other emergency management centers.	Existing
Center/ Law Enforcement Dispatch	Center Secure Area Surveillance	The center shall remotely monitor video images and audio surveillance data collected in secure areas including facilities (e.g. transit yards) and transportation infrastructure (e.g. bridges, tunnels, interchanges, roadway infrastructure, and transit railways or guideways). The data may be raw or pre-processed in the field.	Existing
Center/ Law Enforcement Dispatch	Center Secure Area Surveillance	The center shall remotely monitor video images and audio surveillance data collected in traveler secure areas, which include transit stations, transit stops, rest areas, park and ride lots, and other fixed sites along travel routes (e.g., emergency pull-off areas and travel information centers). The data may be raw or pre-processed in the field.	Existing
Center/ Law Enforcement Dispatch	Center Secure Area Surveillance	The center shall remotely control security surveillance devices in secure areas including facilities (e.g. transit yards) and transportation infrastructure (e.g. bridges, tunnels, interchanges, roadway infrastructure, and transit railways or guideways).	Existing
Center/ Law Enforcement Dispatch	Center Secure Area Surveillance	The center shall remotely control security surveillance devices in traveler secure areas, which include transit stations, transit stops, rest areas, park and ride lots, and other fixed sites along travel routes (e.g., emergency pull-off areas and travel information centers).	Existing
Center/ Public Transit Agencies			
Center/ Public Transit Agencies	Transit Center Fixed-Route Operations	The center shall be able to generate special routes and schedules to support an incident, disaster, evacuation, or other emergency.	Existing
Center/ Public Transit Agencies	Transit Center Fixed-Route Operations	The center shall provide instructions or corrective actions to the transit vehicle operators based upon operational needs.	Existing
Center/ Public Transit Agencies	Transit Center Fixed-Route Operations	The center shall collect transit operational data for use in the generation of routes and schedules.	Planned
Center/ Public Transit Agencies	Transit Center Information Services	The center shall provide travelers using public transportation with traffic and advisory information upon request. Such information may include transit routes, schedules, transfer options, fares, real-time schedule adherence, current incidents, weather conditions, and special events.	Existing
Center/ Public Transit Agencies	Transit Center Information Services	The center shall provide transit information to the media including details of deviations from schedule of regular transit services.	Existing
Center/ Public Transit Agencies	Transit Center Vehicle Tracking	The center shall monitor the locations of all transit vehicles within its network.	Existing

Element Name	Functional Area	Requirement	Status
Center/ Public Transit Agencies	Transit Center Vehicle Tracking	The center shall determine adherence of transit vehicles to their assigned schedule.	Existing
Center/ Public Transit Agencies	Transit Center Vehicle Tracking	The center shall support an interface with a map update provider, or other appropriate data sources, through which updates of digitized map data can be obtained and used as a background for transit tracking and dispatch.	Existing
Center/ Public Transit Agencies	Transit Center Vehicle Tracking	The center shall provide transit operational data to traveler information service providers.	Existing
Center/ Public Transit Agency Websites	ISP Traveler Data Collection	The center shall collect, process, and store transit routes and schedules, transit transfer options, transit fares, and real-time schedule adherence information.	Existing
Center/ Statewide/Regional Transportation Operations Centers			
Center/ Statewide/Regional Transportation Operations Centers	Collect Traffic Surveillance	The center shall distribute road network conditions data (raw or processed) based on collected and analyzed traffic sensor and surveillance data to other centers.	Planned
Center/ Statewide/Regional Transportation Operations Centers	TMC Multimodal Coordination	The center shall exchange information with transit management centers including details current transit routes, the level of service on each route, and the progress of individual vehicles along their routes.	Planned
Center/ Vessel Tracking System	Transit Center Fixed-Route Operations	The center shall collect transit operational data for use in the generation of routes and schedules.	Existing
Center/ Vessel Tracking System	Transit Center Fixed-Route Operations	The center shall provide instructions or corrective actions to the transit vehicle operators based upon operational needs.	Existing
Center/ Vessel Tracking System	Transit Center Fixed-Route Operations	The center shall generate the necessary corrective actions which may involve more than the vehicles concerned and more far reaching action, such as, the introduction of extra vehicles, wide area signal priority by traffic management, the premature termination of some services, etc.	Existing
Center/ Vessel Tracking System	Transit Center Vehicle Tracking	The center shall monitor the locations of all transit vehicles within its network.	Existing
Center/ Vessel Tracking System	Transit Center Vehicle Tracking	The center shall determine adherence of transit vehicles to their assigned schedule.	Existing
Center/ Vessel Tracking System	Transit Center Vehicle Tracking	The center shall support an interface with a map update provider, or other appropriate data sources, through which updates of digitized map data can be obtained and used as a background for transit tracking and dispatch.	Existing
Center/ Vessel Tracking System	Transit Center Vehicle Tracking	The center shall provide transit operational data to traveler information service providers.	Existing

Element Name	Functional Area	Requirement	Status
Center/ Vessel Tracking System	Transit Center Vehicle Tracking	The center shall provide collected transit probe data to traffic management centers and traveler information service providers for use in measuring current traffic conditions.	Existing
Center/ Vessel Tracking System	Transit Vehicle Operator Assignment	The center shall provide an interface through which the transit vehicle operator information can be maintained - either from the transit vehicle operator, center personnel, or other functions.	Existing
Field/ Cameras (at AMHS Terminals)			
Field/ Cameras (at AMHS Terminals)	Traveler Secure Area Surveillance	The field element shall include video and/or audio surveillance of traveler secure areas including transit stations, transit stops, rest areas, park and ride lots, and other fixed sites along travel routes (e.g., emergency pull-off areas and traveler information centers).	Existing
Field/ Cameras (at AMHS Terminals)	Traveler Secure Area Surveillance	The field element shall be remotely controlled by a center.	Existing
Field/ Cameras (at AMHS Terminals)	Traveler Secure Area Surveillance	The field element shall provide equipment status and fault indication of surveillance equipment to a center.	Existing
Field/ Cameras (at AMHS Terminals)	Traveler Secure Area Surveillance	The field element shall provide raw video or audio data.	Existing
Field/ Cameras (at AMHS Terminals)	Traveler Secure Area Surveillance	The field element shall remotely process video and audio data and provide an indication of potential incidents or threats to a center.	Existing
Vehicle/ Public Transit Vehicle AVL			
Vehicle/ Public Transit Vehicle AVL	Vehicle Location Determination	The vehicle shall provide the vehicle's current location to other in-vehicle functions.	Existing
Vehicle/ Public Transit Vehicle AVL	Vehicle Location Determination	The vehicle shall calculate the location from one or more data sources including positioning systems such as GPS, sensors that track vehicle movement, and maps used to determine the likely vehicle route.	Existing
Vehicle/ Public Transit Vehicle On-Board Systems	On-board Schedule Management	The transit vehicle shall receive a vehicle assignment including transit route information, transit service instructions, traffic information, road conditions, and other information for the operator.	Existing
Vehicle/ Public Transit Vehicle On-Board Systems	On-board Schedule Management	The transit vehicle shall use the route information and its current location to determine the deviation from the predetermined schedule.	Existing
Vehicle/ Public Transit Vehicle On-Board Systems	On-board Schedule Management	The transit vehicle shall calculate the estimated times of arrival (ETA) at transit stops.	Existing
Vehicle/ Public Transit Vehicle On-Board Systems	On-board Transit Security	The transit vehicle shall output an indication of potential incidents or threats and the processed sensor information to the center along with the vehicle’s current location.	Existing
Vehicle/ Public Transit Vehicle On-Board Systems	On-board Transit Security	The transit vehicle shall accept emergency inputs from either the transit vehicle operator or a traveler through such interfaces as panic buttons, silent or audible alarms, etc.	Existing

Element Name	Functional Area	Requirement	Status
Vehicle/ Public Transit Vehicle On-Board Systems	On-board Transit Trip Monitoring	The transit vehicle shall track the current location of the transit vehicle.	Existing
Vehicle/ Public Transit Vehicle On-Board Systems	On-board Transit Trip Monitoring	The transit vehicle shall support the computation of the location of a transit vehicle using on-board sensors to augment the location determination function. This may include proximity to the transit stops or other known reference points as well as recording trip length.	Existing
Vehicle/ Vessels AVL			
Vehicle/ Vessels AVL	Vehicle Location Determination	The vehicle shall provide the vehicle's current location to other in-vehicle functions.	Existing
Vehicle/ Vessels AVL	Vehicle Location Determination	The vehicle shall calculate the location from one or more data sources including positioning systems such as GPS, sensors that track vehicle movement, and maps used to determine the likely vehicle route.	Existing
Vehicle/ Vessels On-board Systems			
Vehicle/ Vessels On-board Systems	On-board Schedule Management	The transit vehicle shall receive a vehicle assignment including transit route information, transit service instructions, traffic information, road conditions, and other information for the operator.	Existing
Vehicle/ Vessels On-board Systems	On-board Schedule Management	The transit vehicle shall use the route information and its current location to determine the deviation from the predetermined schedule.	Existing
Vehicle/ Vessels On-board Systems	On-board Schedule Management	The transit vehicle shall calculate the estimated times of arrival (ETA) at transit stops.	Existing
Vehicle/ Vessels On-board Systems	On-board Transit Security	The transit vehicle shall output an indication of potential incidents or threats and the processed sensor information to the center along with the vehicle's current location.	Existing
Vehicle/ Vessels On-board Systems	On-board Transit Security	The transit vehicle shall accept emergency inputs from either the transit vehicle operator or a traveler through such interfaces as panic buttons, silent or audible alarms, etc.	Existing
Vehicle/ Vessels On-board Systems	On-board Transit Trip Monitoring	The transit vehicle shall track the current location of the transit vehicle.	Existing
Vehicle/ Vessels On-board Systems	On-board Transit Trip Monitoring	The transit vehicle shall support the computation of the location of a transit vehicle using on-board sensors to augment the location determination function. This may include proximity to the transit stops or other known reference points as well as recording trip length.	Existing

9.5 Incident and Emergency Management Functional Requirements

Table 11. Incident and Emergency Management Functional Requirements

Element Name	Functional Area	Requirement	Status
Center/ 511 (phone and web)	ISP Emergency Traveler Information	The center shall disseminate wide-area alert information to the traveler interface systems, including major emergencies such as a natural or man-made disaster, civil emergency, child abductions, severe weather watches and warnings, military activities, and law enforcement warnings.	Existing
Center/ 511 (phone and web)	Traveler Telephone Information	The center shall receive and forward region-specific wide-area alert and advisory information to the traveler telephone information system, including major emergencies such as a natural or man-made disaster, civil emergency, child abductions, severe weather watches and warnings, military activities, and law enforcement warnings.	Existing
Center/ 511 Internal Reporting			
Center/ 511 Internal Reporting	Emergency Early Warning System	The center shall process status information from each of the centers that have been sent the wide-area alert.	Planned
Center/ 511 Internal Reporting	Emergency Early Warning System	The center shall support the entry of alert and advisory information directly from the emergency system operator.	Planned
Center/ 511 Internal Reporting	ISP Traveler Data Collection	The center shall collect, process, and store traffic and highway condition information, including incident information, detours and road closures, event information, recommended routes, and current speeds on specific routes.	Planned
Center/ 511 Internal Reporting	TMC Incident Dispatch Coordination/Communication	The center shall exchange alert information and status with emergency management centers. The information includes notification of a major emergency such as a natural or man-made disaster, civil emergency, or child abduction for distribution to the public. The information may include the alert originator, the nature of the emergency, the geographic area affected by the emergency, the effective time period, and information and instructions necessary for the public to respond to the alert. This may also identify specific information that should not be released to the public.	Planned
Center/ 511 Internal Reporting	TMC Incident Dispatch Coordination/Communication	The center shall exchange incident information with emergency management centers, maintenance and construction centers, transit centers, information service providers, and the media including description, location, traffic impact, status, expected duration, and response information.	Planned

Element Name	Functional Area	Requirement	Status
Center/ 511 Internal Reporting	TMC Incident Dispatch Coordination/Communication	The center shall provide road network conditions and traffic images to emergency management centers, maintenance and construction centers, and traveler information service providers.	Planned
Center/ 511 Internal Reporting	TMC Incident Dispatch Coordination/Communication	The center shall receive inputs from emergency management and transit management centers to develop an overall status of the transportation system including emergency transit schedules in effect and current status and condition of the transportation infrastructure.	Planned
Center/ AMHS Dispatch and Communications			
Center/ AMHS Dispatch and Communications	Transit Center Security	The center shall coordinate the response to security incidents involving transit with other agencies including Emergency Management, other transit agencies, media, traffic management, and traveler information service providers.	Existing
Center/ AMHS Dispatch and Communications	Transit Center Security	The center shall receive threat information and status on the integrity of the transit infrastructure.	Existing
Center/ Avalanche Detection System			
Center/ Avalanche Detection System	MCM Environmental Information Processing	The center shall respond to control data from center personnel regarding environmental sensor control and weather data collection and processing.	Planned
Center/ Avalanche Detection System	MCM Environmental Information Processing	The center shall use the various data inputs of environmental sensors and road weather data to develop a view of current and predicted road weather and road conditions.	Planned
Center/ Avalanche Detection System	MCM Incident Management	The center shall exchange alert information and status with emergency management centers. The information includes notification of a major emergency such as a natural or man-made disaster, civil emergency, or child abduction. The information may include the alert originator, the nature of the emergency, the geographic area affected by the emergency, the effective time period, etc.	Planned
Center/ Central RWIS Server	MCM Environmental Information Processing	The center shall use the various data inputs of environmental sensors and road weather data to develop a view of current and predicted road weather and road conditions.	Planned
Center/ Central RWIS Server	MCM Environmental Information Processing	The center shall disseminate current and forecasted road weather and road condition information to weather service providers (such as the National Weather Service and value-added sector specific meteorological services) as well as other agencies including traffic, emergency, and transit management, traveler information providers, rail operations centers, media, and other maintenance management centers.	Planned

Element Name	Functional Area	Requirement	Status
Center/ Construction Offices	MCM Incident Management	The center shall coordinate planning for incidents with emergency management centers - including pre-planning activities for disaster response, evacuation, and recovery operations.	Existing
Center/ Construction Offices	MCM Incident Management	The center shall respond to requests from emergency management to provide maintenance and construction resources to implement response plans, assist in clean up, verify an incident, etc. This may also involve coordination with traffic management centers and other maintenance centers.	Existing
Center/ Construction Offices	MCM Incident Management	The center shall provide work zone activities affecting the road network including the nature of the maintenance or construction activity, location, impact to the roadway, expected time(s) and duration of impact, anticipated delays, alternate routes, and suggested speed limits. This information may be augmented with images that provide a visual indication of current work zone status and traffic impacts.	Existing
Center/ EMS Dispatch Centers (Placeholder)	Emergency Dispatch	The center shall dispatch emergency vehicles to respond to verified emergencies under center personnel control.	Existing
Center/ EMS Dispatch Centers (Placeholder)	Emergency Dispatch	The center shall store the current status of all emergency vehicles available for dispatch and those that have been dispatched.	Existing
Center/ EMS Dispatch Centers (Placeholder)	Emergency Dispatch	The center shall relay location and incident details to the responding vehicles.	Existing
Center/ EMS Dispatch Centers (Placeholder)	Emergency Dispatch	The center shall track the location and status of emergency vehicles responding to an emergency based on information from the emergency vehicle.	Existing
Center/ EMS Dispatch Centers (Placeholder)	Emergency Dispatch	The center shall coordinate response to incidents with other Emergency Management centers to ensure appropriate resources are dispatched and utilized.	Existing
Center/ EMS Dispatch Centers (Placeholder)	Emergency Dispatch	The center shall receive traffic images to support dispatch of emergency vehicles.	Planned
Center/ EMS Dispatch Centers (Placeholder)	Emergency Evacuation Support	The center shall manage inter-agency coordination of evacuation operations, from initial planning through the evacuation process and reentry.	Existing
Center/ EMS Dispatch Centers (Placeholder)	Emergency Evacuation Support	The center shall develop and exchange evacuation plans with allied agencies prior to the occurrence of a disaster.	Existing
Center/ EMS Dispatch Centers (Placeholder)	Emergency Evacuation Support	The center shall request traffic management agencies to implement special traffic control strategies and to control evacuation traffic, including traffic on local streets and arterials as well as the major evacuation routes.	Planned

Element Name	Functional Area	Requirement	Status
Center/ EMS Dispatch Centers (Placeholder)	Emergency Response Management	The center shall provide strategic emergency response capabilities provided by an Emergency Operations Center for large-scale incidents and disasters.	Existing
Center/ EMS Dispatch Centers (Placeholder)	Emergency Response Management	The center shall manage coordinated inter-agency responses to and recovery from large-scale emergencies. Such agencies include traffic management, transit, maintenance and construction management, rail operations, and other emergency management agencies.	Existing
Center/ EMS Dispatch Centers (Placeholder)	Emergency Response Management	The center shall provide the capability to implement response plans and track progress through the incident by exchanging incident information and response status with allied agencies.	Existing
Center/ EMS Dispatch Centers (Placeholder)	Emergency Response Management	The center shall develop, coordinate with other agencies, and store emergency response plans.	Existing
Center/ EMS Dispatch Centers (Placeholder)	Emergency Response Management	The center shall track the availability of resources and coordinate resource sharing with allied agency centers including traffic, maintenance, or other emergency centers.	Existing
Center/ EMS Dispatch Centers (Placeholder)	Emergency Routing	The center shall track current emergency vehicle location and status.	Existing
Center/ EMS Dispatch Centers (Placeholder)	Emergency Routing	The center shall collect current traffic and road condition information for emergency vehicle route calculation.	Planned
Center/ EMS Dispatch Centers (Placeholder)	Incident Command	The center shall provide tactical decision support, resource coordination, and communications integration for Incident Commands that are established by first responders to support local management of an incident.	Existing
Center/ Law Enforcement Dispatch			
Center/ Law Enforcement Dispatch	Emergency Dispatch	The center shall dispatch emergency vehicles to respond to verified emergencies under center personnel control.	Existing
Center/ Law Enforcement Dispatch	Emergency Dispatch	The center shall store the current status of all emergency vehicles available for dispatch and those that have been dispatched.	Existing
Center/ Law Enforcement Dispatch	Emergency Dispatch	The center shall relay location and incident details to the responding vehicles.	Existing
Center/ Law Enforcement Dispatch	Emergency Dispatch	The center shall track the location and status of emergency vehicles responding to an emergency based on information from the emergency vehicle.	Existing
Center/ Law Enforcement Dispatch	Emergency Dispatch	The center shall provide the capability for digitized map data to act as the background to the information presented to the emergency system operator.	Existing

Element Name	Functional Area	Requirement	Status
Center/ Law Enforcement Dispatch	Emergency Dispatch	The center shall coordinate response to incidents with other Emergency Management centers to ensure appropriate resources are dispatched and utilized.	Existing
Center/ Law Enforcement Dispatch	Emergency Dispatch	The center shall receive traffic images to support dispatch of emergency vehicles.	Planned
Center/ Law Enforcement Dispatch	Emergency Dispatch	The center shall provide the capability to request remote control of traffic surveillance devices	Planned
Center/ Law Enforcement Dispatch	Emergency Response Management	The center shall manage coordinated inter-agency responses to and recovery from large-scale emergencies. Such agencies include traffic management, transit, maintenance and construction management, rail operations, and other emergency management agencies.	Existing
Center/ Law Enforcement Dispatch	Emergency Response Management	The center shall develop, coordinate with other agencies, and store emergency response plans.	Existing
Center/ Law Enforcement Dispatch	Emergency Response Management	The center shall provide the capability to request transit resource availability from transit centers for use during disaster and evacuation operations.	Existing
Center/ Law Enforcement Dispatch	Emergency Routing	The center shall collect current traffic and road condition information for emergency vehicle route calculation.	Planned
Center/ Law Enforcement Dispatch	Emergency Routing	The center shall receive information on the location and status of traffic control equipment and work zones along potential emergency routes.	Planned
Center/ Law Enforcement Dispatch	Emergency Routing	The center shall calculate emergency vehicle routes, under center personnel control, based on the collected traffic and road conditions information.	Planned
Center/ Law Enforcement Dispatch	Incident Command	The center shall assess the status of responding emergency vehicles as part of an incident command.	Existing
Center/ Law Enforcement Dispatch	Incident Command	The center shall provide tactical decision support, resource coordination, and communications integration for Incident Commands that are established by first responders to support local management of an incident.	Planned
Center/ Law Enforcement Dispatch	Incident Command	The center shall provide incident command communications with public safety, emergency management, transportation, and other allied response agency centers.	Planned
Center/ Law Enforcement Dispatch	Mayday Support	The center shall collect mayday messages from vehicles and drivers.	Existing
Center/ Law Enforcement Dispatch	Mayday Support	The center shall collect mayday messages from travelers via personal handheld devices.	Existing

Element Name	Functional Area	Requirement	Status
Center/ Law Enforcement Dispatch	Mayday Support	The center shall acknowledge the request for emergency assistance, whether originated by the driver, automatically by the vehicle's safety systems, or by a traveler via a personal handheld device.	Existing
Center/ Public Transit Agencies			
Center/ Public Transit Agencies	Transit Center Information Services	The center shall broadcast transit advisory data, including alerts and advisories pertaining to major emergencies, or man made disasters.	Existing
Center/ Public Transit Agencies	Transit Evacuation Support	The center shall manage the use of transit resources to support evacuation and subsequent reentry of a population in the vicinity of a disaster or other emergency.	Existing
Center/ Public Transit Agencies	Transit Evacuation Support	The center shall coordinate regional evacuation plans with Emergency Management - identifying the transit role in an evacuation and the transit resources that would be used.	Existing
Center/ Regional 911 System (Placeholder)			
Center/ Regional 911 System (Placeholder)	Emergency Call-Taking	The center shall support the interface to the Emergency Telecommunications System (e.g. 911 or 7-digit call routing) to receive emergency notification information and provide it to the emergency system operator.	Existing
Center/ Regional 911 System (Placeholder)	Emergency Call-Taking	The center shall receive emergency call information from 911 services and present the possible incident information to the emergency system operator.	Existing
Center/ Regional 911 System (Placeholder)	Emergency Call-Taking	The center shall receive emergency call information from motorist call-boxes and present the possible incident information to the emergency system operator.	Existing
Center/ Regional 911 System (Placeholder)	Emergency Call-Taking	The center shall receive emergency call information from mayday service providers and present the possible incident information to the emergency system operator.	Existing
Center/ Regional 911 System (Placeholder)	Emergency Call-Taking	The center shall forward the verified emergency information to the responding agency based on the location and nature of the emergency.	Existing
Center/ Regional 911 System (Placeholder)	Emergency Call-Taking	The center shall update the incident information log once the emergency system operator has verified the incident.	Existing
Center/ Regional 911 System (Placeholder)	Emergency Dispatch	The center shall coordinate response to incidents with other Emergency Management centers to ensure appropriate resources are dispatched and utilized.	Existing
Center/ Regional 911 System (Placeholder)	Mayday Support	The center shall collect mayday messages from vehicles and drivers.	Existing
Center/ Regional 911 System (Placeholder)	Mayday Support	The center shall collect mayday messages from travelers via personal handheld devices.	Existing

Element Name	Functional Area	Requirement	Status
Center/ Regional 911 System (Placeholder)	Mayday Support	The center shall acknowledge the request for emergency assistance, whether originated by the driver, automatically by the vehicle's safety systems, or by a traveler via a personal handheld device.	Existing
Center/ Regional 911 System (Placeholder)	Mayday Support	After the mayday becomes a verified incident, the center shall determine the appropriate response to the mayday message.	Existing
Center/ Regional 911 System (Placeholder)	Mayday Support	The center shall determine whether the mayday message indicates an emergency that requires the attention of public safety agencies, and forward mayday emergency data to the appropriate agency as necessary.	Existing
Center/ Regional Maintenance Stations			
Center/ Regional Maintenance Stations	MCM Environmental Information Processing	The center shall respond to control data from center personnel regarding environmental sensor control and weather data collection and processing.	Planned
Center/ Regional Maintenance Stations	MCM Environmental Information Processing	The center shall assimilate current and forecast road conditions and surface weather information using a combination of weather service provider information (such as the National Weather Service and value-added sector specific meteorological services) and local environmental sensor data.	Planned
Center/ Regional Maintenance Stations	MCM Incident Management	The center shall exchange alert information and status with emergency management centers. The information includes notification of a major emergency such as a natural or man-made disaster, civil emergency, or child abduction. The information may include the alert originator, the nature of the emergency, the geographic area affected by the emergency, the effective time period, etc.	Existing
Center/ Regional Maintenance Stations	MCM Incident Management	The center shall exchange incident and threat information with emergency management centers as well as traffic management centers; including notification of existence of incident and expected severity, location, time and nature of incident.	Existing
Center/ Regional Maintenance Stations	MCM Incident Management	The center shall coordinate planning for incidents with emergency management centers - including pre-planning activities for disaster response, evacuation, and recovery operations.	Existing
Center/ Regional Maintenance Stations	MCM Incident Management	The center shall provide work zone activities affecting the road network including the nature of the maintenance or construction activity, location, impact to the roadway, expected time(s) and duration of impact, anticipated delays, alternate routes, and suggested speed limits. This information may be augmented with images that provide a visual indication of current work zone status and traffic impacts.	Existing

Element Name	Functional Area	Requirement	Status
Center/ Regional Maintenance Stations	MCM Maintenance Decision Support	The center shall provide the center personnel with tailored external information, including weather or road condition observations, forecasted weather information or road conditions, current usage of treatments and materials, available resources, equipment and vehicle availability, road network information, and source reliability information.	Existing
Center/ State Emergency Operations Center (SEOC)			
Center/ State Emergency Operations Center (SEOC)	Emergency Early Warning System	The center shall broadcast wide-area alerts and advisories to other emergency management centers for emergency situations such as severe weather events, civil emergencies, child abduction (AMBER alert system), military activities, and other situations that pose a threat to life and property.	Existing
Center/ State Emergency Operations Center (SEOC)	Emergency Early Warning System	The center shall broadcast wide-area alerts and advisories to traffic management centers for emergency situations such as severe weather events, civil emergencies, child abduction (AMBER alert system), military activities, and other situations that pose a threat to life and property.	Existing
Center/ State Emergency Operations Center (SEOC)	Emergency Early Warning System	The center shall provide the capability to correlate alerts and advisories, incident information, and security sensor and surveillance data.	Planned
Center/ State Emergency Operations Center (SEOC)	Emergency Environmental Monitoring	The center shall collect current and forecast road and weather information from weather service providers (such as the National Weather Service and value-added sector specific meteorological services).	Planned
Center/ State Emergency Operations Center (SEOC)	Emergency Environmental Monitoring	The center shall assimilate current and forecast road conditions and surface weather information to support incident management.	Planned
Center/ State Emergency Operations Center (SEOC)	Emergency Evacuation Support	The center shall manage inter-agency coordination of evacuation operations, from initial planning through the evacuation process and reentry.	Existing
Center/ State Emergency Operations Center (SEOC)	Emergency Evacuation Support	The center shall develop and exchange evacuation plans with allied agencies prior to the occurrence of a disaster.	Existing
Center/ State Emergency Operations Center (SEOC)	Emergency Evacuation Support	The center shall provide evacuation information to traffic, transit, maintenance and construction, rail operations, and other emergency management centers as needed.	Existing
Center/ State Emergency Operations Center (SEOC)	Emergency Evacuation Support	The center shall provide traveler information systems with evacuation guidance including basic information to assist potential evacuees in determining whether evacuation is necessary and when it is safe to return.	Planned

Element Name	Functional Area	Requirement	Status
Center/ State Emergency Operations Center (SEOC)	Emergency Response Management	The center shall provide strategic emergency response capabilities provided by an Emergency Operations Center for large-scale incidents and disasters.	Existing
Center/ State Emergency Operations Center (SEOC)	Emergency Response Management	The center shall manage coordinated inter-agency responses to and recovery from large-scale emergencies. Such agencies include traffic management, transit, maintenance and construction management, rail operations, and other emergency management agencies.	Existing
Center/ State Emergency Operations Center (SEOC)	Emergency Response Management	The center shall provide the capability to implement response plans and track progress through the incident by exchanging incident information and response status with allied agencies.	Existing
Center/ State Emergency Operations Center (SEOC)	Emergency Response Management	The center shall develop, coordinate with other agencies, and store emergency response plans.	Existing
Center/ State Emergency Operations Center (SEOC)	Emergency Response Management	The center shall track the availability of resources and coordinate resource sharing with allied agency centers including traffic, maintenance, or other emergency centers.	Existing
Center/ Statewide/Regional Transportation Operations Centers	ISP Emergency Traveler Information	The center shall disseminate emergency evacuation information to the traveler interface systems, including evacuation zones, shelter information, available transportation modes, road closures and detours, changes to transit services, and traffic and road conditions at the origin, destination, and along the evacuation routes.	Planned
Center/ Statewide/Regional Transportation Operations Centers	ISP Emergency Traveler Information	The center shall disseminate wide-area alert information to the traveler interface systems, including major emergencies such as a natural or man-made disaster, civil emergency, child abductions, severe weather watches and warnings, military activities, and law enforcement warnings.	Planned
Center/ Statewide/Regional Transportation Operations Centers	TMC Evacuation Support	The center shall coordinate planning for evacuation with emergency management centers - including pre-planning activities such as establishing routes, areas to be evacuated, timing, etc.	Planned
Center/ Statewide/Regional Transportation Operations Centers	TMC Evacuation Support	The center shall support requests from emergency management centers to preempt the current traffic control strategy, activate traffic control and closure systems such as gates and barriers, activate safeguard systems, or use driver information systems to support evacuation traffic control plans.	Planned
Center/ Statewide/Regional Transportation Operations Centers	TMC Evacuation Support	The center shall coordinate execution of evacuation strategies with emergency management centers - including activities such as setting closures and detours, establishing routes, updating areas to be evacuated, timing the process, etc.	Planned

Element Name	Functional Area	Requirement	Status
Center/ Statewide/Regional Transportation Operations Centers	TMC Incident Dispatch Coordination/Communication	The center shall exchange alert information and status with emergency management centers. The information includes notification of a major emergency such as a natural or man-made disaster, civil emergency, or child abduction for distribution to the public. The information may include the alert originator, the nature of the emergency, the geographic area affected by the emergency, the effective time period, and information and instructions necessary for the public to respond to the alert. This may also identify specific information that should not be released to the public.	Planned
Center/ Statewide/Regional Transportation Operations Centers	TMC Incident Dispatch Coordination/Communication	The center shall coordinate planning for incidents with emergency management centers - including pre-planning activities for disaster response, evacuation, and recovery operations.	Planned
Center/ Statewide/Regional Transportation Operations Centers	TMC Incident Dispatch Coordination/Communication	The center shall exchange incident information with emergency management centers, maintenance and construction centers, transit centers, information service providers, and the media including description, location, traffic impact, status, expected duration, and response information.	Planned
Center/ Statewide/Regional Transportation Operations Centers	TMC Incident Dispatch Coordination/Communication	The center shall share resources with allied agency centers to implement special traffic control measures, assist in clean up, verify an incident, etc. This may also involve coordination with maintenance centers.	Planned
Center/ Statewide/Regional Transportation Operations Centers	TMC Incident Dispatch Coordination/Communication	The center shall receive inputs from emergency management and transit management centers to develop an overall status of the transportation system including emergency transit schedules in effect and current status and condition of the transportation infrastructure.	Planned
Center/ Statewide/Regional Transportation Operations Centers	TMC Traffic Information Dissemination	The center shall distribute traffic data to maintenance and construction centers, transit centers, emergency management centers, and traveler information providers.	Planned
Field/ Pre-emption and Priority Systems	Roadway Signal Preemption	The field element shall respond to signal preemption requests from emergency vehicles.	Existing
Terminator/ Anton Anderson Tunnel Control System			
Terminator/ ARRC			
Terminator/ Emergency Alert System			
Terminator/ National Weather Service Offices			
Terminator/ Smart Call Boxes			

Element Name	Functional Area	Requirement	Status
Travelers/ Personal Communications/Computing Devices (en-route)			
Travelers/ Personal Communications/Computing Devices (en-route)	Personal Location Determination	The personal traveler interface shall provide the traveler's current location. It is intended for use by traveler personal navigation and guidance systems, as well as emergency notification systems.	Existing
Travelers/ Personal Communications/Computing Devices (en-route)	Personal Mayday I/F	The personal traveler interface shall provide the capability for a traveler to report an emergency and summon assistance.	Existing
Travelers/ Personal Communications/Computing Devices (pre-trip)			
Travelers/ Personal Communications/Computing Devices (pre-trip)	Personal Location Determination	The personal traveler interface shall provide the traveler's current location. It is intended for use by traveler personal navigation and guidance systems, as well as emergency notification systems.	Existing
Travelers/ Personal Communications/Computing Devices (pre-trip)	Personal Mayday I/F	The personal traveler interface shall provide the capability for a traveler to report an emergency and summon assistance.	Existing
Vehicle/ EMS Vehicle AVL			
Vehicle/ EMS Vehicle AVL	Vehicle Location Determination	The vehicle shall provide the vehicle's current location to other in-vehicle functions.	Existing
Vehicle/ EMS Vehicle AVL	Vehicle Location Determination	The vehicle shall calculate the location from one or more data sources including positioning systems such as GPS, sensors that track vehicle movement, and maps used to determine the likely vehicle route.	Existing
Vehicle/ EMS Vehicle On-board Systems	On-board EV En Route Support	The emergency vehicle, including roadway service patrols, shall track its current location.	Existing
Vehicle/ EMS Vehicle On-board Systems	On-board EV En Route Support	The emergency vehicle, including roadway service patrols, shall send the vehicle's location and operational data to the center for emergency management and dispatch.	Existing
Vehicle/ EMS Vehicle On-board Systems	On-board EV En Route Support	The emergency vehicle, including roadway service patrols, shall receive incident details and a suggested route when dispatched to a scene.	Existing
Vehicle/ EMS Vehicle On-board Systems	On-board EV En Route Support	The emergency vehicle shall send the current en route status (including estimated time of arrival) and requests for emergency dispatch updates.	Existing
Vehicle/ EMS Vehicle On-board Systems	On-board EV En Route Support	The emergency vehicle shall send requests to traffic signal control equipment at the roadside to preempt the signal.	Existing

Element Name	Functional Area	Requirement	Status
Vehicle/ EMS Vehicle On-board Systems	On-board EV En Route Support	The emergency vehicle shall provide the personnel on-board with dispatch information, including incident type and location, and forward an acknowledgment from personnel to the center that the vehicle is on its way to the incident scene.	Existing
Vehicle/ EMS Vehicle On-board Systems	On-board EV En Route Support	The emergency vehicle shall send patient status information to the care facility along with a request for further information.	Existing
Vehicle/ EMS Vehicle On-board Systems	On-board EV En Route Support	The emergency vehicle shall forward care facility status information to emergency vehicle personnel, including the location, specialized services, quality of care, waiting time, number of rooms available, and emergency room status of hospitals or emergency care providers.	Existing
Vehicle/ EMS Vehicle On-board Systems	On-board EV Incident Management Communication	The emergency vehicle shall receive dispatch instructions sufficient to enable emergency personnel in the field to implement an effective incident response. It includes local traffic, road, and weather conditions, hazardous material information, and the current status of resources that have been allocated to an incident.	Existing
Vehicle/ EMS Vehicle On-board Systems	On-board EV Incident Management Communication	The emergency vehicle shall provide an interface to the center for emergency personnel to transmit information about the incident site such as the extent of injuries, identification of vehicles and people involved, hazardous material, etc.	Existing
Vehicle/ EMS Vehicle On-board Systems	On-board EV Incident Management Communication	The emergency vehicle shall provide an interface to the center for emergency personnel to transmit information about the current incident response status such as the identification of the resources on site, site management strategies in effect, and current clearance status.	Existing
Vehicle/ Law Enforcement Vehicle AVL			
Vehicle/ Law Enforcement Vehicle AVL	Vehicle Location Determination	The vehicle shall provide the vehicle's current location to other in-vehicle functions.	Existing
Vehicle/ Law Enforcement Vehicle AVL	Vehicle Location Determination	The vehicle shall calculate the location from one or more data sources including positioning systems such as GPS, sensors that track vehicle movement, and maps used to determine the likely vehicle route.	Existing
Vehicle/ Law Enforcement Vehicle On-board Systems	On-board EV En Route Support	The emergency vehicle, including roadway service patrols, shall track its current location.	Existing
Vehicle/ Law Enforcement Vehicle On-board Systems	On-board EV En Route Support	The emergency vehicle, including roadway service patrols, shall send the vehicle's location and operational data to the center for emergency management and dispatch.	Existing
Vehicle/ Law Enforcement Vehicle On-board Systems	On-board EV En Route Support	The emergency vehicle, including roadway service patrols, shall receive incident details and a suggested route when dispatched to a scene.	Existing

Element Name	Functional Area	Requirement	Status
Vehicle/ Law Enforcement Vehicle On-board Systems	On-board EV En Route Support	The emergency vehicle shall send the current en route status (including estimated time of arrival) and requests for emergency dispatch updates.	Existing
Vehicle/ Law Enforcement Vehicle On-board Systems	On-board EV En Route Support	The emergency vehicle shall send requests to traffic signal control equipment at the roadside to preempt the signal.	Existing
Vehicle/ Law Enforcement Vehicle On-board Systems	On-board EV En Route Support	The emergency vehicle shall provide the personnel on-board with dispatch information, including incident type and location, and forward an acknowledgment from personnel to the center that the vehicle is on its way to the incident scene.	Existing
Vehicle/ Law Enforcement Vehicle On-board Systems	On-board EV Incident Management Communication	The emergency vehicle shall receive dispatch instructions sufficient to enable emergency personnel in the field to implement an effective incident response. It includes local traffic, road, and weather conditions, hazardous material information, and the current status of resources that have been allocated to an incident.	Existing

9.6 Traveler Information Functional Requirements

Table 12. Traveler Information Functional Requirements

Element Name	Functional Area	Requirement	Status
Center/ 3rd Party Traveler Information Services	ISP Data Collection	The center shall collect traveler information data, such as parking lot data, rideshare data, road network use data, vehicle probe data, and other data from traveler information system operations.	Planned
Center/ 3rd Party Traveler Information Services	ISP Data Collection	The center shall receive and respond to requests from ITS Archives for either a catalog of the traveler information data or for the data itself.	Planned
Center/ 3rd Party Traveler Information Services	ISP Data Collection	The center shall be able to produce sample products of the data available.	Planned
Center/ 511 (phone and web)	Basic Information Broadcast	The center shall disseminate traffic and highway condition information to travelers, including incident information, detours and road closures, event information, recommended routes, and current speeds on specific routes.	Existing
Center/ 511 (phone and web)	Basic Information Broadcast	The center shall disseminate maintenance and construction information to travelers, including scheduled maintenance and construction work activities and work zone activities.	Existing
Center/ 511 (phone and web)	Basic Information Broadcast	The center shall disseminate weather information to travelers.	Existing
Center/ 511 (phone and web)	Basic Information Broadcast	The center shall disseminate event information to travelers.	Existing
Center/ 511 (phone and web)	Basic Information Broadcast	The center shall disseminate transit routes and schedules, transit transfer options, transit fares, and real-time schedule adherence information to travelers.	Planned
Center/ 511 (phone and web)	Basic Information Broadcast	The center shall provide the capability to support requests from the media for traffic and incident data.	Planned
Center/ 511 (phone and web)	ISP Data Collection	The center shall collect traveler information data, such as parking lot data, rideshare data, road network use data, vehicle probe data, and other data from traveler information system operations.	Planned
Center/ 511 (phone and web)	ISP Data Collection	The center shall be able to produce sample products of the data available.	Planned
Center/ 511 (phone and web)	ISP Operational Data Repository	The center shall provide a web site that provides real-time transportation data to transportation system operators in the region.	Existing
Center/ 511 (phone and web)	ISP Operational Data Repository	The center shall select real-time information on the state of the regional transportation system including current traffic and road conditions, weather conditions, transit information, parking information, special event and incident information.	Planned

Element Name	Functional Area	Requirement	Status
Center/ 511 (phone and web)	ISP Operational Data Repository	The center shall distribute real-time transportation operations data to centers in the region. The data may be broadcast or customized based on the receiving center's specified requests or subscriptions.	Planned
Center/ 511 (phone and web)	ISP Traveler Data Collection	The center shall collect, process, and store traffic and highway condition information, including incident information, detours and road closures, event information, recommended routes, and current speeds on specific routes.	Existing
Center/ 511 (phone and web)	ISP Traveler Data Collection	The center shall collect, process, and store maintenance and construction information, including scheduled maintenance and construction work activities and work zone activities.	Existing
Center/ 511 (phone and web)	ISP Traveler Data Collection	The center shall collect, process, and store current and forecast road conditions and surface weather conditions.	Existing
Center/ 511 (phone and web)	Traveler Telephone Information	The center shall provide the capability to process voice-formatted requests for traveler information from a traveler telephone information system, and return the information in the requested format.	Existing
Center/ 511 (phone and web)	Traveler Telephone Information	The center shall provide the capability to process dual-tone multifrequency (DTMF)-based requests (touch-tone) for traveler information from a traveler telephone information system.	Existing
Center/ 511 (phone and web)	Traveler Telephone Information	The center shall provide the capability to process traveler information requests from a traveler telephone information system.	Existing
Center/ 511 (phone and web)	Traveler Telephone Information	The center shall provide information on traffic conditions in the requested voice format and for the requested location.	Existing
Center/ 511 (phone and web)	Traveler Telephone Information	The center shall provide work zone and roadway maintenance information in the requested voice format and for the requested location.	Existing
Center/ 511 (phone and web)	Traveler Telephone Information	The center shall provide weather and event information in the requested voice format and for the requested location.	Existing
Center/ 511 (phone and web)	Traveler Telephone Information	The center shall provide current ferry and rail schedule and airport status information in the requested voice format and for the requested location.	Existing
Center/ 511 (phone and web)	Traveler Telephone Information	The center shall provide transit service information in the requested voice format and for the requested location.	Planned
Center/ 511 (phone and web)	Traveler Telephone Information	The center shall provide yellow pages services information in the requested voice format and for the requested location.	Planned
Center/ 511 Internal Reporting			
Center/ 511 Internal Reporting	ISP Data Collection	The center shall collect traveler information data, such as parking lot data, rideshare data, road network use data, vehicle probe data, and other data from traveler information system operations.	Planned

Element Name	Functional Area	Requirement	Status
Center/ 511 Internal Reporting	ISP Operational Data Repository	The center shall select real-time information on the state of the regional transportation system including current traffic and road conditions, weather conditions, transit information, parking information, special event and incident information.	Planned
Center/ 511 Internal Reporting	ITS Data Repository	The center shall collect data to be archived from one or more data sources.	Planned
Center/ 511 Internal Reporting	ITS Data Repository	The center shall collect data catalogs from one or more data sources. A catalog describes the data contained in the collection of archived data and may include descriptions of the schema or structure of the data, a description of the contents of the data; e.g., time range of entries, number of entries; or a sample of the data (e. g. a thumbnail).	Planned
Center/ 511 Internal Reporting	ITS Data Repository	The center shall store the archived data in a focused repository that is suited to a particular set of ITS data users.	Planned
Center/ AMHS Dispatch and Communications			
Center/ AMHS Dispatch and Communications	Transit Center Fixed-Route Operations	The center shall generate transit routes and schedules based on such factors as parameters input by the system operator, road network conditions, incident information, operational data on current routes and schedules, and digitized map data.	Existing
Center/ AMHS Dispatch and Communications	Transit Center Fixed-Route Operations	The center shall collect transit operational data for use in the generation of routes and schedules.	Existing
Center/ AMHS Dispatch and Communications	Transit Center Fixed-Route Operations	The center shall disseminate up-to-date schedules and route information to other centers for fixed and flexible route services.	Existing
Center/ AMHS Dispatch and Communications	Transit Center Vehicle Tracking	The center shall support an interface with a map update provider, or other appropriate data sources, through which updates of digitized map data can be obtained and used as a background for transit tracking and dispatch.	Existing
Center/ AMHS Dispatch and Communications	Transit Center Vehicle Tracking	The center shall provide transit operational data to traveler information service providers.	Existing
Center/ AMHS Website	Basic Information Broadcast	The center shall disseminate transit routes and schedules, transit transfer options, transit fares, and real-time schedule adherence information to travelers.	Existing
Center/ AMHS Website	ISP Traveler Data Collection	The center shall collect, process, and store transit routes and schedules, transit transfer options, transit fares, and real-time schedule adherence information.	Existing
Center/ Central RWIS Server	MCM Environmental Information Processing	The center shall assimilate current and forecast road conditions and surface weather information using a combination of weather service provider information (such as the National Weather Service and value-added sector specific meteorological services) and local environmental sensor data.	Existing

Element Name	Functional Area	Requirement	Status
Center/ Central RWIS Server	MCM Environmental Information Processing	The center shall use the various data inputs of environmental sensors and road weather data to develop a view of current and predicted road weather and road conditions.	Existing
Center/ Construction Offices	MCM Work Activity Coordination	The center shall provide work zone activities affecting the road network including the nature of the maintenance or construction activity, location, impact to the roadway, expected time(s) and duration of impact, anticipated delays, alternate routes, and suggested speed limits. This information may be augmented with images that provide a visual indication of current work zone status and traffic impacts.	Existing
Center/ Construction Offices	MCM Work Activity Coordination	The center shall provide status information about scheduled maintenance and construction activities including anticipated closures and impact to the roadway, alternate routes, anticipated delays, closure times, and durations. The information is provided to other management centers such as traffic, emergency, transit, traveler information providers, other maintenance centers, multimodal transportation providers, rail operations, and the media.	Existing
Center/ Information Systems and Services Division	TMC Regional Traffic Management	The center shall exchange traffic information with other traffic management centers including incident information, congestion data, traffic data, signal timing plans, and real-time signal control information.	Existing
Center/ Law Enforcement Dispatch			
Center/ Law Enforcement Dispatch	Emergency Data Collection	The center shall receive and respond to requests from ITS Archives for either a catalog of the emergency management data or for the data itself.	Existing
Center/ Law Enforcement Dispatch	Emergency Data Collection	The center shall be able to produce sample products of the data available.	Existing
Center/ Public Transit Agencies			
Center/ Public Transit Agencies	Transit Data Collection	The center shall receive and respond to requests from ITS Archives for either a catalog of the transit data or for the data itself.	Existing
Center/ Public Transit Agencies	Transit Data Collection	The center shall be able to produce sample products of the data available.	Existing
Center/ Regional Maintenance Stations			
Center/ Regional Maintenance Stations	MCM Work Activity Coordination	The center shall provide work zone activities affecting the road network including the nature of the maintenance or construction activity, location, impact to the roadway, expected time(s) and duration of impact, anticipated delays, alternate routes, and suggested speed limits. This information may be augmented with images that provide a visual indication of current work zone status and traffic impacts.	Existing

Element Name	Functional Area	Requirement	Status
Center/ Regional Maintenance Stations	MCM Work Activity Coordination	The center shall provide status information about scheduled maintenance and construction activities including anticipated closures and impact to the roadway, alternate routes, anticipated delays, closure times, and durations. The information is provided to other management centers such as traffic, emergency, transit, traveler information providers, other maintenance centers, multimodal transportation providers, rail operations, and the media.	Existing
Center/ Statewide/Regional Transportation Operations Centers	ISP Traveler Data Collection	The center shall collect, process, and store traffic and highway condition information, including incident information, detours and road closures, event information, recommended routes, and current speeds on specific routes.	Planned
Center/ Statewide/Regional Transportation Operations Centers	Traffic Data Collection	The center shall receive and respond to requests from ITS Archives for either a catalog of the traffic data or for the data itself.	Planned
Center/ Statewide/Regional Transportation Operations Centers	Traffic Data Collection	The center shall be able to produce sample products of the data available.	Planned
Center/ Traffic Control	TMC Regional Traffic Management	The center shall exchange traffic information with other traffic management centers including incident information, congestion data, traffic data, signal timing plans, and real-time signal control information.	Planned
Center/ Traffic Control	Traffic Data Collection	The center shall receive and respond to requests from ITS Archives for either a catalog of the traffic data or for the data itself.	Existing
Center/ Traffic Control	Traffic Data Collection	The center shall be able to produce sample products of the data available.	Existing
Terminator/ Media Systems (T.V. and Radio)			
Terminator/ National Weather Service Offices			
Terminator/ Other 511 Systems			
Travelers/ Personal Communications/Computing Devices (en-route)			
Travelers/ Personal Communications/Computing Devices (en-route)	Personal Basic Information Reception	The personal traveler interface shall present information to the traveler in audible or visual forms, consistent with a personal device.	Existing
Travelers/ Personal Communications/Computing Devices (en-route)	Personal Basic Information Reception	The personal traveler interface shall receive traffic information from a center and present it to the traveler.	Existing
Travelers/ Personal Communications/Computing Devices (en-route)	Personal Basic Information Reception	The personal traveler interface shall receive transit information from a center and present it to the traveler.	Existing

Element Name	Functional Area	Requirement	Status
Travelers/ Personal Communications/Computing Devices (en-route)	Personal Basic Information Reception	The personal traveler interface shall provide the capability for digitized map data to act as the background to the information presented to the traveler.	Planned
Travelers/ Personal Communications/Computing Devices (en-route)	Personal Basic Information Reception	The personal traveler interface shall receive event information from a center and present it to the traveler.	Planned
Travelers/ Personal Communications/Computing Devices (en-route)	Personal Location Determination	The personal traveler interface shall provide the traveler's current location. It is intended for use by traveler personal navigation and guidance systems, as well as emergency notification systems.	Planned
Travelers/ Personal Communications/Computing Devices (en-route)	Personal Mayday I/F	The personal traveler interface shall provide the capability for a traveler to report an emergency and summon assistance.	Planned
Travelers/ Personal Communications/Computing Devices (en-route)	Personal Mayday I/F	When initiated by a traveler, the personal traveler interface shall forward a request for assistance to the center containing the traveler's current location and identity.	Planned
Travelers/ Personal Communications/Computing Devices (en-route)	Personal Trip Planning and Route Guidance	The personal traveler interface shall provide the capability for a traveler to request and confirm multi-modal route guidance from a specified source to a destination.	Planned
Travelers/ Personal Communications/Computing Devices (pre-trip)			
Travelers/ Personal Communications/Computing Devices (pre-trip)	Personal Basic Information Reception	The personal traveler interface shall present information to the traveler in audible or visual forms, consistent with a personal device.	Existing
Travelers/ Personal Communications/Computing Devices (pre-trip)	Personal Basic Information Reception	The personal traveler interface shall receive traffic information from a center and present it to the traveler.	Existing
Travelers/ Personal Communications/Computing Devices (pre-trip)	Personal Basic Information Reception	The personal traveler interface shall receive transit information from a center and present it to the traveler.	Existing
Travelers/ Personal Communications/Computing Devices (pre-trip)	Personal Basic Information Reception	The personal traveler interface shall provide the capability for digitized map data to act as the background to the information presented to the traveler.	Planned
Travelers/ Personal Communications/Computing Devices (pre-trip)	Personal Basic Information Reception	The personal traveler interface shall receive event information from a center and present it to the traveler.	Planned

Element Name	Functional Area	Requirement	Status
Travelers/ Personal Communications/Computing Devices (pre-trip)	Personal Location Determination	The personal traveler interface shall provide the traveler's current location. It is intended for use by traveler personal navigation and guidance systems, as well as emergency notification systems.	Planned
Travelers/ Personal Communications/Computing Devices (pre-trip)	Personal Mayday I/F	The personal traveler interface shall provide the capability for a traveler to report an emergency and summon assistance.	Existing
Travelers/ Personal Communications/Computing Devices (pre-trip)	Personal Mayday I/F	When initiated by a traveler, the personal traveler interface shall forward a request for assistance to the center containing the traveler's current location and identity.	Existing
Travelers/ Personal Communications/Computing Devices (pre-trip)	Personal Trip Planning and Route Guidance	The personal traveler interface shall provide the capability for a traveler to request and confirm multi-modal route guidance from a specified source to a destination.	Planned

9.7 Data Archive Functional Requirements

Table 13. Data Archive Functional Requirements

Element Name	Functional Area	Requirement	Status
Center/ 511 Internal Reporting			
Center/ 511 Internal Reporting	ITS Data Repository	The center shall collect data to be archived from one or more data sources.	Planned
Center/ 511 Internal Reporting	ITS Data Repository	The center shall collect data catalogs from one or more data sources. A catalog describes the data contained in the collection of archived data and may include descriptions of the schema or structure of the data, a description of the contents of the data; e.g., time range of entries, number of entries; or a sample of the data (e. g. a thumbnail).	Planned
Center/ 511 Internal Reporting	ITS Data Repository	The center shall store the archived data in a focused repository that is suited to a particular set of ITS data users.	Planned
Center/ 511 Internal Reporting	ITS Data Repository	The center shall include capabilities for archive to archive coordination.	Planned
Center/ Bridge Management System	ITS Data Repository	The center shall collect data to be archived from one or more data sources.	Planned
Center/ Bridge Management System	ITS Data Repository	The center shall collect data catalogs from one or more data sources. A catalog describes the data contained in the collection of archived data and may include descriptions of the schema or structure of the data, a description of the contents of the data; e.g., time range of entries, number of entries; or a sample of the data (e. g. a thumbnail).	Planned
Center/ Bridge Management System	ITS Data Repository	The center shall store the archived data in a focused repository that is suited to a particular set of ITS data users.	Planned
Center/ Bridge Management System	ITS Data Repository	The center shall include capabilities for archive to archive coordination.	Planned
Center/ Crash Database	ITS Data Repository	The center shall collect data to be archived from one or more data sources.	Planned
Center/ Crash Database	ITS Data Repository	The center shall collect data catalogs from one or more data sources. A catalog describes the data contained in the collection of archived data and may include descriptions of the schema or structure of the data, a description of the contents of the data; e.g., time range of entries, number of entries; or a sample of the data (e. g. a thumbnail).	Planned
Center/ Crash Database	ITS Data Repository	The center shall store the archived data in a focused repository that is suited to a particular set of ITS data users.	Planned

Element Name	Functional Area	Requirement	Status
Center/ Crash Database	ITS Data Repository	The center shall include capabilities for archive to archive coordination.	Planned
Center/ Law Enforcement Dispatch			
Center/ Law Enforcement Dispatch	Emergency Data Collection	The center shall collect emergency service data, emergency vehicle management data, emergency vehicle data, sensor and surveillance data, threat data, and incident data.	Planned
Center/ Law Enforcement Dispatch	Emergency Data Collection	The center shall receive and respond to requests from ITS Archives for either a catalog of the emergency management data or for the data itself.	Planned
Center/ Law Enforcement Dispatch	Emergency Data Collection	The center shall be able to produce sample products of the data available.	Planned
Center/ Maintenance Management System			
Center/ Maintenance Management System	ITS Data Repository	The center shall collect data to be archived from one or more data sources.	Planned
Center/ Maintenance Management System	ITS Data Repository	The center shall collect data catalogs from one or more data sources. A catalog describes the data contained in the collection of archived data and may include descriptions of the schema or structure of the data, a description of the contents of the data; e.g., time range of entries, number of entries; or a sample of the data (e. g. a thumbnail).	Planned
Center/ Maintenance Management System	ITS Data Repository	The center shall store the archived data in a focused repository that is suited to a particular set of ITS data users.	Planned
Center/ Maintenance Management System	ITS Data Repository	The center shall include capabilities for archive to archive coordination.	Planned
Center/ Pavement Management System	ITS Data Repository	The center shall collect data to be archived from one or more data sources.	Planned
Center/ Pavement Management System	ITS Data Repository	The center shall collect data catalogs from one or more data sources. A catalog describes the data contained in the collection of archived data and may include descriptions of the schema or structure of the data, a description of the contents of the data; e.g., time range of entries, number of entries; or a sample of the data (e. g. a thumbnail).	Planned
Center/ Pavement Management System	ITS Data Repository	The center shall store the archived data in a focused repository that is suited to a particular set of ITS data users.	Planned
Center/ Pavement Management System	ITS Data Repository	The center shall include capabilities for archive to archive coordination.	Planned
Center/ Public Transit Agencies			
Center/ Public Transit Agencies	ITS Data Repository	The center shall collect data to be archived from one or more data sources.	Planned

Element Name	Functional Area	Requirement	Status
Center/ Public Transit Agencies	ITS Data Repository	The center shall collect data catalogs from one or more data sources. A catalog describes the data contained in the collection of archived data and may include descriptions of the schema or structure of the data, a description of the contents of the data; e.g., time range of entries, number of entries; or a sample of the data (e. g. a thumbnail).	Planned
Center/ Public Transit Agencies	ITS Data Repository	The center shall store the archived data in a focused repository that is suited to a particular set of ITS data users.	Planned
Center/ Public Transit Agencies	ITS Data Repository	The center shall include capabilities for archive to archive coordination.	Planned
Center/ Road Weather Data			
Center/ Road Weather Data	ITS Data Repository	The center shall collect data to be archived from one or more data sources.	Planned
Center/ Road Weather Data	ITS Data Repository	The center shall collect data catalogs from one or more data sources. A catalog describes the data contained in the collection of archived data and may include descriptions of the schema or structure of the data, a description of the contents of the data; e.g., time range of entries, number of entries; or a sample of the data (e. g. a thumbnail).	Planned
Center/ Road Weather Data	ITS Data Repository	The center shall store the archived data in a focused repository that is suited to a particular set of ITS data users.	Planned
Center/ Road Weather Data	ITS Data Repository	The center shall include capabilities for archive to archive coordination.	Planned
Center/ Traffic Data System	ITS Data Repository	The center shall collect data to be archived from one or more data sources.	Planned
Center/ Traffic Data System	ITS Data Repository	The center shall collect data catalogs from one or more data sources. A catalog describes the data contained in the collection of archived data and may include descriptions of the schema or structure of the data, a description of the contents of the data; e.g., time range of entries, number of entries; or a sample of the data (e. g. a thumbnail).	Planned
Center/ Traffic Data System	ITS Data Repository	The center shall store the archived data in a focused repository that is suited to a particular set of ITS data users.	Planned
Center/ Traffic Data System	ITS Data Repository	The center shall include capabilities for archive to archive coordination.	Planned
Center/ Transportation Asset Management System	ITS Data Repository	The center shall collect data to be archived from one or more data sources.	Planned
Center/ Transportation Asset Management System	ITS Data Repository	The center shall collect data catalogs from one or more data sources. A catalog describes the data contained in the collection of archived data and may include descriptions of the schema or structure of the data, a description of the contents of the data; e.g., time range of entries, number of entries; or a sample of the data (e. g. a thumbnail).	Planned

Element Name	Functional Area	Requirement	Status
Center/ Transportation Asset Management System	ITS Data Repository	The center shall store the archived data in a focused repository that is suited to a particular set of ITS data users.	Planned
Center/ Transportation Asset Management System	ITS Data Repository	The center shall include capabilities for archive to archive coordination.	Planned
Center/ Transportation Data Archive System	ITS Data Repository	The center shall collect data to be archived from one or more data sources.	Planned
Center/ Transportation Data Archive System	ITS Data Repository	The center shall collect data catalogs from one or more data sources. A catalog describes the data contained in the collection of archived data and may include descriptions of the schema or structure of the data, a description of the contents of the data; e.g., time range of entries, number of entries; or a sample of the data (e. g. a thumbnail).	Planned
Center/ Transportation Data Archive System	ITS Data Repository	The center shall store the archived data in a focused repository that is suited to a particular set of ITS data users.	Planned
Center/ Transportation Data Archive System	ITS Data Repository	The center shall include capabilities for archive to archive coordination.	Planned
Center/ Transportation Data Archive System	ITS Data Repository	The center shall perform quality checks on received data.	Planned
Center/ Transportation Data Archive System	ITS Data Repository	The center shall respond to requests from the administrator interface function to maintain the archive data.	Planned
Center/ Transportation Data Archive System	ITS Data Repository	When data or a catalog of data is received from the archive, the center shall generate the requested data product for the users systems.	Planned
Terminator/ General Agency Archive Administrator or User			

10 Appendix C: Architecture (Data) Flow Definitions

This list of architecture flow definitions is compiled from the National ITS Architecture website: http://www.iteris.com/itsarch/. For more flow definitions, please review the National ITS Architecture website. “User-defined” flows, or flows that were tailored for the AKIA update, are identified as such.

10.1 User-Defined Flows

User-defined flows created in the AKIA update are identified with a period at the beginning and end of each flow name. This makes it easier to find user-defined flows in the Turbo Architecture database because flow names beginning with the period appear at the top when sorted in alphabetical order.

Table 14. User Defined Flows

Flow Name	Flow Description	Service Area
.environmental sensor data.	Current road conditions and surface weather conditions as measured by environmental sensors.	Winter Maintenance
.fleet and freight information.	Information about commercial fleet and freight daily activities.	CVO & Freight
.freight equipment information.	Information regarding container, trailer, or chassis of a commercial vehicle. Information could include identity, type, location, mileage, and others.	CVO & Freight
.traveler provided road network conditions.	User provided information regarding the road conditions to services such as social media and Waze.	Traveler Information
.treatment recommendations.	Options for treating pavement based on pavement temperature forecasting.	Winter Maintenance

10.2 National ITS Architecture Flows

10.2.1 Traffic Management Architecture Flows

Table 15. Traffic Management Architecture Flows

Flow Name	Flow Description
device status	Status information from devices
driver information	Regulatory, warning, and guidance information provided to the driver while en route to support safe and efficient vehicle operation.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident. As additional information is gathered and the incident evolves, updated incident information is provided. Incidents include any event that impacts transportation system operation ranging from routine incidents (e.g., disabled vehicle at the side of the road) through large-scale natural or human-caused disasters that involve loss of life, injuries, extensive property damage, and multi-jurisdictional response. This also includes special events, closures, and other planned events that may impact the transportation system.
lighting system control data	Information used to configure and control roadside lighting systems.
lighting system status	Status of roadside lighting controls including operating condition and current operational state.
right-of-way request notification	Notice that a request has occurred for signal prioritization, signal preemption, pedestrian call, multi-modal crossing activation, or other source for right-of-way.
road network conditions	Current and forecasted traffic information, road and weather conditions, and other road network status. Either raw data, processed data, or some combination of both may be provided by this architecture flow. Information on diversions and alternate routes, closures, and special traffic restrictions (lane/shoulder use, weight restrictions, width restrictions, HOV requirements) in effect is included along with a definition of the links, nodes, and routes that make up the road network.
roadway equipment coordination	The direct flow of information between field equipment. This includes transfer of information between sensors and driver information systems (e.g., DMS, HAR, variable speed limit signs, dynamic lane signs) or control devices (e.g., traffic signals, ramp meters), direct coordination between adjacent control devices, interfaces between detection and warning or alarm systems, and any other direct communications between field equipment.
roadway information system data	Information used to initialize, configure, and control roadside systems that provide driver information (e.g., dynamic message signs, highway advisory radio, beacon systems). This flow can provide message content and delivery attributes, local message store maintenance requests, control mode commands, status queries, and all other commands and associated parameters that support remote management of these systems.
roadway information system status	Current operating status of dynamic message signs, highway advisory radios, beacon systems, or other configurable field equipment that provides dynamic information to the driver.

Flow Name	Flow Description
signal control commands	Control of traffic signal controllers or field masters including clock synchronization.
signal control data	Information used to configure local traffic signal controllers.
signal control device configuration	Data used to configure traffic signal control equipment including local controllers and system masters.
signal control plans	Traffic signal timing parameters including minimum green time and interval durations for basic operation and cycle length, splits, offset, phase sequence, etc. for coordinated systems.
signal control status	Operational and status data of traffic signal control equipment including operating condition and current indications.
signal fault data	Faults from traffic signal control equipment.
signal system configuration	Data used to configure traffic signal systems including configuring control sections and mode of operation (time based or traffic responsive).
traffic flow	Raw and/or processed traffic detector data which allows derivation of traffic flow variables (e.g., speed, volume, and density measures) and associated information (e.g., congestion, potential incidents). This flow includes the traffic data and the operational status of the traffic detectors.
traffic images	High fidelity, real-time traffic images suitable for surveillance monitoring by the operator or for use in machine vision applications.
traffic probe data	Vehicle data that is used to determine traffic conditions. In a basic implementation, the data could be limited to time stamped unique identifiers that can be used to measure a vehicle's progress through the network. In more advanced implementations, the vehicle may report current position, speed, and heading and snapshots of recent events including route information, starts and stops, speed changes, and other information that can be used to estimate traffic conditions.
traffic sensor control	Information used to configure and control traffic sensor systems.
video surveillance control	Information used to configure and control video surveillance systems.

10.2.2 Winter Maintenance Architecture Flows

Table 16. Winter Maintenance Architecture Flows

Flow Name	Flow Description
asset inventory	Information on pavement, bridges, signs and other assets. This includes asset location, installation information, materials information, vendor/contractor information, current maintenance status, and a variety of other information (e.g., video logs) that define the transportation infrastructure.
asset restrictions	Restrictions levied on transportation asset usage based on infrastructure design, surveys, tests, or analyses. This includes standard height, width, and weight restrictions by facility as well as special restrictions such as spring weight restrictions and temporary bridge weight restrictions.
asset status update	Changes to status of pavement, bridges, signs and other assets resulting from maintenance or construction activities or infrastructure monitoring. The updates may include changes in installation information, materials information, vendor/contractor information, condition, and current maintenance status. In addition to infrastructure asset updates, the information provided may also include status of the maintenance and construction support assets, including vehicle and equipment utilization and repair records.
current asset restrictions	Restrictions levied on transportation asset usage based on infrastructure design, surveys, tests, or analyses. This includes standard facility design height, width, and weight restrictions, special restrictions such as spring weight restrictions, and temporary facility restrictions that are imposed during maintenance and construction.
environmental conditions data	Current road conditions (e.g., surface temperature, subsurface temperature, moisture, icing, treatment status) and surface weather conditions (e.g., air temperature, wind speed, precipitation, visibility) as measured and reported by fixed and/or mobile environmental sensors and aggregated by the data collector. Attributes relating to the data collection (and aggregation) are also included.
environmental sensor data	Current road conditions (e.g., surface temperature, subsurface temperature, moisture, icing, treatment status) and surface weather conditions (e.g., air temperature, wind speed, precipitation, visibility) as measured and reported by fixed and/or mobile environmental sensors. Operational status of the sensors is also included.
environmental sensors control	Data used to configure and control environmental sensors.
equipment maintenance status	Current status of field equipment maintenance actions.
field device status	Reports from field equipment (sensors, signals, signs, controllers, etc.) which indicate current operational status.
field equipment status	Identification of field equipment requiring repair and known information about the associated faults.
infrastructure monitoring sensor data	Data read from infrastructure-based sensors that monitor the condition or integrity of transportation infrastructure including bridges, tunnels, interchanges, pavement, culverts, signs, transit rail or guideway, and other roadway infrastructure. Includes sensor data and the operational status of the sensors.

Flow Name	Flow Description
maint and constr administrative information	Administrative information that is provided to support maintenance and construction operations. This information includes: equipment and consumables resupply purchase request status, personnel qualifications including training and special certifications, environmental regulations and rules that may impact maintenance activities, and requests and project requirements from contract administration.
maint and constr administrative request	Requests for maintenance and construction administrative information or services. Requests include: requests to purchasing for equipment and consumables resupply and requests to human resources that manage training and special certification for field crews and other personnel.
maint and constr dispatch information	Information used to dispatch maintenance and construction vehicles, equipment, and crews and information used to keep work zone crews informed. This information includes routing information, traffic information, road restrictions, incident information, environmental information, decision support information, maintenance schedule data, dispatch instructions, personnel assignments, alert notifications, and corrective actions.
maint and constr dispatch status	Current maintenance and construction status including work data, operator status, crew status, and equipment status.
maint and constr resource coordination	Request for road maintenance and construction resources that can be used in the diversion of traffic (cones, portable signs), clearance of a road hazard, repair of ancillary damage, or any other incident response.
maint and constr resource request	Request for road maintenance and construction resources that can be used in the diversion of traffic (cones, portable signs), clearance of a road hazard, repair of ancillary damage, or any other incident response. The request may poll for resource availability or request pre-staging, staging, or immediate dispatch of resources.
maint and constr resource response	Current status of maintenance and construction resources including availability and deployment status. General resource inventory information covering vehicles, equipment, materials, and people and specific resource deployment status may be included.
maint and constr vehicle location data	The current location and related status (e.g., direction and speed) of the maintenance/construction vehicle.
maint and constr work performance	Overall project status and work performance information provided to support contract administration.
maint and constr work plans	Future construction and maintenance work schedules and activities including anticipated closures with anticipated impact to the roadway, alternate routes, anticipated delays, closure times, and durations.
maintenance and repair needs	Recommended strategies and schedules for maintenance of the transportation infrastructure.
position fix	Information which provides a traveler's or vehicle's geographical position.
railroad schedules	Train schedules, maintenance schedules, and other information from the railroad that supports forecast of HRI closures.
road weather information	Road conditions and weather information that are made available by road maintenance operations to other transportation system operators.
roadway maintenance status	Summary of maintenance fleet operations affecting the road network. This includes the status of winter maintenance (snow plow schedule and current status).
roadway treatment system control	Control data for remotely located, automated devices, that affect the roadway surface (e.g. de-icing applications).

Flow Name	Flow Description
roadway treatment system status	Current operational status of automated roadway treatment devices (e.g., anti-icing systems).
safety system status	Current vehicle safety system status indicating the operating condition of these systems and the safety status of the vehicle and driver.
security field equipment status	Identification of security sensors and surveillance equipment requiring repair and known information about the associated faults.
traffic images	High fidelity, real-time traffic images suitable for surveillance monitoring by the operator or for use in machine vision applications.
weather information	Accumulated forecasted and current weather data (e.g., temperature, pressure, wind speed, wind direction, humidity, precipitation, visibility, light conditions, etc.).
work plan coordination	Coordination of work plan schedules and activities between maintenance and construction organizations or systems. This information includes the work plan schedules and comments and suggested changes that are exchanged as work plans are coordinated and finalized.
work plan feedback	Comments and suggested changes to proposed construction and maintenance work schedules and activities. This information influences work plan schedules so that they minimize impact to other system operations and the overall transportation system.

10.2.3 CVO and Freight Architecture Flows

Table 17. CVO and Freight Architecture Flows

Flow Name	Flow Description
accident report	Report of commercial vehicle safety accident. The information may be provided as a response to a real-time query or proactively by the source. The query flow is not explicitly shown.
alerts and advisories	Assessments (general incident and vulnerability awareness information), advisories (identification of threats or recommendations to increase preparedness levels), and alerts (information on imminent or in-progress emergencies). This flow also provides supporting descriptive detail on incidents, threats, and vulnerabilities to increase preparedness and support effective response to threats against the surface transportation system.
border agency clearance results	Notification regarding the granting of permission for commercial freight shipment to enter the U.S.
citation	Report of commercial vehicle citation. The citation includes references to the statute(s) that was (were) violated. It includes information on the violator and the officer issuing the citation. A citation differs from a violation because it is adjudicated by the courts. The information may be provided as a response to a real-time query or proactively by the source. The query flow is not explicitly shown.
compliance review report	Report containing results of carrier compliance review, including concomitant out-of-service notifications, carrier warnings/notifications. The information may be provided as a response to a real-time query of proactively by the source. The query flow is not explicitly shown.
credential application	Application for commercial vehicle credentials. Authorization for payment is included.
credential fee coordination	Jurisdiction's rates for various credentials (IRP, IFTA, etc.) that are exchanged between agencies.
credentials information	Response containing full vehicle fuel tax and registration credentials information. "Response" may be provided in reaction to a real-time query or a standing request for updated information. The query flow is not explicitly shown.
credentials status information	Credentials information such as registration, licensing, insurance, check flags, and electronic screening enrollment data. A unique identifier is included. Corresponds to the credentials portion of CVISN "snapshots." The status information may be provided as a response to a real-time query or as a result of a standing request for updated information (subscription). This may also include information about non-U.S. fleets for use by U.S. authorities, and information regarding U.S. fleets made available to Mexican and Canadian authorities. The query flow is not explicitly shown.
current asset restrictions	Restrictions levied on transportation asset usage based on infrastructure design, surveys, tests, or analyses. This includes standard facility design height, width, and weight restrictions, special restrictions such as spring weight restrictions, and temporary facility restrictions that are imposed during maintenance and construction.
CVO inspector information	This flow represents the visual or auditory interface with ITS equipment containing credential, safety, and preclearance information and instructions to the commercial vehicle inspector.

Flow Name	Flow Description
CVO inspector input	This flow represents the tactile or auditory interface with ITS equipment containing requests from the commercial vehicle inspector to operate the commercial vehicle inspection station.
CVO pass/pull-in message	This flow represents the visual or auditory interface with ITS equipment containing a message sent to commercial vehicle driver indicating whether to bypass or requesting pull in to inspection/verification stop along with inspection results (e. g., LED indicator on transponder or variable message sign).
CVO weight and presence	Physical attribute of commercial vehicle that can be measured (for example, weight, number of axels, axel spacing, etc.).
daily site activity data	Record of daily activities at commercial vehicle check stations including summaries of screening events and inspections.
driver to fleet request	Requests from the driver and vehicle for routing, payment, and enrollment information.
electronic screening request	Request for identification data to support electronic screening.
fleet to driver update	Updated instructions to the driver including dispatch, routing, and special instructions.
freight equipment information	Container, trailer, or chassis information regarding identity, type, location, brake wear data, mileage, seal #, seal type, door open/close status, chassis bare/covered status, tethered / untethered status, Bill of Lading, and sensor status.
identification information	The physical characteristics of a commercial vehicle that can be used to determine a vehicle's identity, such as a license plate number, USDOT number, ICC number, bar code, etc.
information on violators	Information on violators provided by a law enforcement agency. May include information about commercial vehicle violations or other kinds of violations associated with the particular entity. The information may be provided as a response to a real-time query or proactively by the source. The query flow is not explicitly shown.
on-board vehicle data	Information about the commercial vehicle stored on-board (for maintenance purposes, gate access, cargo status, lock status, etc.).
on-board vehicle request	Request for on-board vehicle data.
pass/pull-in	Command to commercial vehicle to pull into or bypass inspection station.
request tag data	Request for tag information including credit identity, stored value card cash, etc.
route restrictions	Information about routes, road segments, and areas that do not allow the transport of security sensitive hazmat cargoes or include other restrictions (such as height or weight limits).
safety inspection record	Record containing results of commercial vehicle safety inspection.
safety inspection report	Report containing results of commercial vehicle safety inspection. The information may be provided as a response to a real-time query or proactively by the source. The query flow is not explicitly shown.
safety inspection request	Request for safety inspection record.
safety status information	Safety information such as safety ratings, security ratings or flags, inspection summaries, and violation summaries. A unique identifier is included. Corresponds to the safety and security portion of CVISN "snapshots." The status information may be provided as a response to a real-time query or as a result of a standing request for updated information (subscription). This may also include information about non-U.S. fleets for use by U.S. authorities, and information regarding U.S. fleets made available to Mexican and Canadian authorities. The query flow is not explicitly shown.

Flow Name	Flow Description
tag data	Unique tag ID and related vehicle information.
tax filing	Commercial vehicle tax filing data. Authorization for payment is included.
transportation border clearance assessment	Includes directions for commercial driver to proceed to nearest vehicle weigh and inspection station for further review if required.
trip declaration identifiers	Specific identifiers extracted from notification containing information regarding pending commercial freight shipment into the U.S. Includes carrier, vehicle, and driver identification data.
trip log	Driver's daily log, vehicle location, mileage, and trip activity (includes screening, inspection and border clearance event data as well as fare payments).
trip log request	Request for trip log.
violation notification	Notification to enforcement agency of a violation. The violation notification flow describes the statute or regulation that was violated and how it was violated (e. g., overweight on specific axle by xxx pounds or which brake was out of adjustment and how far out of adjustment it was). A violation differs from a citation because it is not adjudicated by the courts.

10.2.4 Public Transportation Architecture Flows

Table 18. Public Transportation Architecture Flows

Flow Name	Flow Description
alarm acknowledge	Confirmation that alarm was received, instructions and additional information for the alarm initiator, and requests for additional information.
alarm notification	Notification of activation of an audible or silent alarm by a traveler in a public area or by a transit vehicle operator using an on-board device.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident. As additional information is gathered and the incident evolves, updated incident information is provided. Incidents include any event that impacts transportation system operation ranging from routine incidents (e.g., disabled vehicle at the side of the road) through large-scale natural or human-caused disasters that involve loss of life, injuries, extensive property damage, and multi-jurisdictional response. This also includes special events, closures, and other planned events that may impact the transportation system.
incident response status	Status of the current incident response including a summary of incident status and its impact on the transportation system, traffic management strategies implemented at the site (e.g., closures, diversions, traffic signal control overrides), and current and planned response activities.
position fix	Information which provides a traveler's or vehicle's geographical position.
secure area surveillance control	Information used to configure and control audio and video surveillance systems used for transportation infrastructure security in secure areas. The provided information controls surveillance data collection, aggregation, filtering, and other local processing.
secure area surveillance data	Data collected from surveillance systems used to monitor secure areas. Includes video, audio, processed surveillance data, equipment operational status, and alarm indicators when a threat has been detected.
selected routes	Routes selected based on route request criteria.
traffic images	High fidelity, real-time traffic images suitable for surveillance monitoring by the operator or for use in machine vision applications.
transit and fare schedules	Transit service information including routes, schedules, and fare information.
transit emergency data	Initial notification of transit emergency at a transit stop or on transit vehicles and further coordination as additional details become available and the response is coordinated.
transit incident information	Information on transit incidents that impact transit services for public dissemination.
transit information request	Request for transit operations information including schedule and fare information. The request can be a subscription that initiates as-needed information updates as well as a one-time request for information.
transit probe data	Aggregate probe data derived from tracking transit vehicles. Data collected could include transit vehicle speeds and travel times for a given link or collection of links.

Flow Name	Flow Description
transit schedule adherence information	Dynamic transit schedule adherence and transit vehicle location information.
transit schedule information	Current and projected transit schedule information used to initialize the transit vehicle with a vehicle assignment, monitor schedule performance, and develop corrective actions on-board.
transit service information	Transit service information including routes, schedules, and fare information as well as dynamic transit schedule adherence and transit vehicle location information.
transit traveler information	Transit information prepared to support transit users and other travelers. It contains transit schedules, real-time arrival information, fare schedules, alerts and advisories, and general transit service information.
transit vehicle location data	Current transit vehicle location and related operational conditions data provided by a transit vehicle.
transit vehicle operator authentication information	Information regarding on-board transit operator authentication
transit vehicle operator authentication update	Results of authentication process or update of on-board authentication database.
transit vehicle operator information	Transit service instructions, wide area alerts, traffic information, road conditions, and other information for both transit and paratransit operators.
transit vehicle schedule performance	Estimated times of arrival and anticipated schedule deviations reported by a transit vehicle.

10.2.5 Incident and Emergency Management Architecture Flows

Table 19. Incident and Emergency Management Architecture Flows

Flow Name	Flow Description
alert notification	Notification of a major emergency such as a natural or man-made disaster, civil emergency, or child abduction for distribution to the public. The flow identifies the alert originator, the nature of the emergency, the geographic area affected by the emergency, the effective time period, and information and instructions necessary for the public to respond to the alert. This flow may also identify specific information that should not be released to the public.
alert status	Information indicating the current status of the emergency alert including identification of the traveler and driver information systems that are being used to provide the alert.
alerts and advisories	Assessments (general incident and vulnerability awareness information), advisories (identification of threats or recommendations to increase preparedness levels), and alerts (information on imminent or in-progress emergencies). This flow also provides supporting descriptive detail on incidents, threats, and vulnerabilities to increase preparedness and support effective response to threats against the surface transportation system.
current asset restrictions	Restrictions levied on transportation asset usage based on infrastructure design, surveys, tests, or analyses. This includes standard facility design height, width, and weight restrictions, special restrictions such as spring weight restrictions, and temporary facility restrictions that are imposed during maintenance and construction.
decision support information	Information provided to support effective and safe incident response, including local traffic, road, and weather conditions, hazardous material information, and the current status of resources that have been allocated to an incident.
emergency acknowledge	Acknowledge request for emergency assistance and provide additional details regarding actions and verification requirements.
emergency dispatch requests	Emergency vehicle dispatch instructions including incident location and available information concerning the incident.
emergency dispatch response	Request for additional emergency dispatch information and provision of en route status.
emergency notification	An emergency request for assistance automatically initiated by a vehicle or originated by a traveler using an in-vehicle or personal device.
emergency route request	Request for access routes for emergency response vehicles and equipment. This may be a request for ingress or egress routes or other emergency routes.
emergency routes	Suggested ingress and egress routes for access to and between the scene and staging areas or other specialized emergency access routes.
emergency traffic control information	Status of a special traffic control strategy or system activation implemented in response to an emergency traffic control request, a request for emergency access routes, a request for evacuation, a request to activate closure systems, a request to employ driver information systems to support public safety objectives, or other special requests. Identifies the selected traffic control strategy and system control status.

Flow Name	Flow Description
emergency traffic control request	Special request to preempt the current traffic control strategy in effect at one or more signalized intersections or highway segments, activate traffic control and closure systems such as gates and barriers, activate safeguard systems, or use driver information systems. For example, this flow can request all signals to red-flash, request a progression of traffic control preemptions along an emergency vehicle route, request a specific evacuation traffic control plan, request activation of a road closure barrier system, or place a public safety or emergency-related message on a dynamic message sign.
emergency traveler information	Public notification of an emergency such as a natural or man-made disaster, civil emergency, or child abduction. This flow also includes evacuation information including evacuation instructions, evacuation zones, recommended evacuation times, tailored evacuation routes and destinations, traffic and road conditions along the evacuation routes, traveler services and shelter information, and reentry times and instructions.
emergency vehicle alert	Notification to vehicles in the area that an emergency vehicle is in the vicinity. The number of responding vehicles, their status, location, speed, and direction are provided.
emergency vehicle tracking data	The current location and operating status of the emergency vehicle.
incident command information coordination	Information that supports local management of an incident. It includes resource deployment status, hazardous material information, traffic, road, and weather conditions, evacuation advice, and other information that enables emergency or maintenance personnel in the field to implement an effective, safe incident response.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident. As additional information is gathered and the incident evolves, updated incident information is provided. Incidents include any event that impacts transportation system operation ranging from routine incidents (e.g., disabled vehicle at the side of the road) through large-scale natural or human-caused disasters that involve loss of life, injuries, extensive property damage, and multi-jurisdictional response. This also includes special events, closures, and other planned events that may impact the transportation system.
incident notification	The notification of an incident including its nature, severity, and location.
incident notification response	Interactive acknowledgement and verification of the incident information received, requests for additional information, and general information on incident response status.
incident report	Report of an identified incident including incident location, type, severity and other information necessary to initiate an appropriate incident response.
incident response coordination	Incident response procedures and current incident response status that are shared between allied response agencies to support a coordinated response to incidents. This flow provides current situation information, including a summary of incident status and its impact on the transportation system and other infrastructure, and current and planned response activities. This flow also coordinates a positive hand off of responsibility for all or part of an incident response between agencies.
incident response status	Status of the current incident response including a summary of incident status and its impact on the transportation system, traffic management strategies implemented at the site (e.g., closures, diversions, traffic signal control overrides), and current and planned response activities.
incident status	Information gathered at the incident site that more completely characterizes the incident and provides current incident response status.
infrastructure monitoring sensor control	Data used to configure and control infrastructure monitoring sensors.

Flow Name	Flow Description
infrastructure monitoring sensor data	Data read from infrastructure-based sensors that monitor the condition or integrity of transportation infrastructure including bridges, tunnels, interchanges, pavement, culverts, signs, transit rail or guideway, and other roadway infrastructure. Includes sensor data and the operational status of the sensors.
local signal preemption request	Direct control signal or message to a signalized intersection that results in preemption of the current control plan and grants right-of-way to the requesting vehicle.
position fix	Information which provides a traveler's or vehicle's geographical position.
remote surveillance control	The control commands used to remotely operate another center's sensors or surveillance equipment so that roadside surveillance assets can be shared by more than one agency.
resource deployment status	Status of resource deployment identifying the resources (vehicles, equipment, materials, and personnel) available and their current status. General resource inventory information and specific status of deployed resources may be included.
resource request	A request for resources to implement special traffic control measures, assist in clean up, verify an incident, etc. The request may poll for resource availability or request pre-staging, staging, or immediate deployment of resources. Resources may be explicitly requested or a service may be requested and the specific resource deployment may be determined by the responding agency.
road weather information	Road conditions and weather information that are made available by road maintenance operations to other transportation system operators.
roadway maintenance status	Summary of maintenance fleet operations affecting the road network. This includes the status of winter maintenance (snow plow schedule and current status).
suggested route	Suggested route for a dispatched emergency or maintenance vehicle that may reflect current network conditions and the additional routing options available to en route emergency or maintenance vehicles that are not available to the general public.
threat information	Threats regarding transportation infrastructure, facilities, or systems detected by a variety of methods (sensors, surveillance, threat analysis of advisories from outside agencies, etc.
threat information coordination	Sensor, surveillance, and threat data including raw and processed data that is collected by sensor and surveillance equipment located in secure areas.
traffic images	High fidelity, real-time traffic images suitable for surveillance monitoring by the operator or for use in machine vision applications.
transit emergency data	Initial notification of transit emergency at a transit stop or on transit vehicles and further coordination as additional details become available and the response is coordinated.
transportation system status	Current status and condition of transportation infrastructure (e.g., tunnels, bridges, interchanges, TMC offices, maintenance facilities). In case of disaster or major incident, this flow provides an assessment of damage sustained by the surface transportation system including location and extent of the damage, estimate of remaining capacity and necessary restrictions, and time frame for repair and recovery.
weather information	Accumulated forecasted and current weather data (e.g., temperature, pressure, wind speed, wind direction, humidity, precipitation, visibility, light conditions, etc.).
work zone information	Summary of maintenance and construction work zone activities affecting the road network including the nature of the maintenance or construction activity, location, impact to the roadway, expected time(s) and duration of impact, anticipated delays, alternate routes, and suggested speed limits. This information may be augmented with images that provide a visual indication of current work zone status and traffic impacts.

10.2.6 Traveler Information Architecture Flows

Table 20. Traveler Information Architecture Flows

Flow Name	Flow Description
broadcast traveler information	General traveler information that contains traffic and road conditions, link travel times, incidents, advisories, restrictions, transit service information, weather information, parking information, and other related traveler information.
incident information	Notification of existence of incident and expected severity, location, time and nature of incident. As additional information is gathered and the incident evolves, updated incident information is provided. Incidents include any event that impacts transportation system operation ranging from routine incidents (e.g., disabled vehicle at the side of the road) through large-scale natural or human-caused disasters that involve loss of life, injuries, extensive property damage, and multi-jurisdictional response. This also includes special events, closures, and other planned events that may impact the transportation system.
maint and constr work plans	Future construction and maintenance work schedules and activities including anticipated closures with anticipated impact to the roadway, alternate routes, anticipated delays, closure times, and durations.
multimodal information	Schedule information for alternate mode transportation providers such as train, ferry, air and bus.
road network conditions	Current and forecasted traffic information, road and weather conditions, and other road network status. Either raw data, processed data, or some combination of both may be provided by this architecture flow. Information on diversions and alternate routes, closures, and special traffic restrictions (lane/shoulder use, weight restrictions, width restrictions, HOV requirements) in effect is included along with a definition of the links, nodes, and routes that make up the road network.
road weather information	Road conditions and weather information that are made available by road maintenance operations to other transportation system operators.
roadway maintenance status	Summary of maintenance fleet operations affecting the road network. This includes the status of winter maintenance (snow plow schedule and current status).
traffic images	High fidelity, real-time traffic images suitable for surveillance monitoring by the operator or for use in machine vision applications.
transit and fare schedules	Transit service information including routes, schedules, and fare information.
transit incident information	Information on transit incidents that impact transit services for public dissemination.
transit information request	Request for transit operations information including schedule and fare information. The request can be a subscription that initiates as-needed information updates as well as a one-time request for information.
transit schedule adherence information	Dynamic transit schedule adherence and transit vehicle location information.
transit service information	Transit service information including routes, schedules, and fare information as well as dynamic transit schedule adherence and transit vehicle location information.

Flow Name	Flow Description
travel services information	Travel service information and reservations for tourist attractions, lodging, dining, service stations, emergency services, and other services and businesses of interest to the traveler.
travel services request	Request for travel service information including tourist attractions, lodging, restaurants, service stations, and emergency services. The request identifies the type of service, the area of interest, optional reservation request information, parameters that are used to prioritize or filter the returned information, and sorting preferences.
traveler information for media	General traveler information regarding incidents, unusual traffic conditions, transit issues, or other advisory information that has been desensitized and provided to the media.
traveler profile	Information about a traveler including equipment capabilities, personal preferences, and traveler alert subscriptions.
weather information	Accumulated forecasted and current weather data (e.g., temperature, pressure, wind speed, wind direction, humidity, precipitation, visibility, light conditions, etc.).
work zone information	Summary of maintenance and construction work zone activities affecting the road network including the nature of the maintenance or construction activity, location, impact to the roadway, expected time(s) and duration of impact, anticipated delays, alternate routes, and suggested speed limits. This information may be augmented with images that provide a visual indication of current work zone status and traffic impacts.

10.2.7 Data Archive Architecture Flows

Table 21. Data Archive Architecture Flows

Flow Name	Flow Description
archive coordination	Catalog data, meta data, published data, and other information exchanged between archives to support data synchronization and satisfy user data requests.
archive management data	Presentation of information to the administrator to support the management of an ITS archive including database reports on the condition and quality of the archived data, status of the import and collection process, reports that monitor archive usage, and any special requests that require direct action by the administrator (e.g., requests for access to new data sources).
archive management requests	User input from the administrator including commands, requests, and queries that support data collection, administration, and management of an ITS data archive.

11 Appendix D: Architecture (Data) Flows & Flow Diagrams

This appendix displays the architecture flows used in the AKIA update. The flows are defined by a source element and a destination element in which information is transferred. The high-level status (e.g. existing or planned) is also documented. The information presented in these tables can also be found in the AKIA update Turbo Architecture™ database.

This appendix also shows the flow diagrams of each service area. The diagrams are shown here in landscape to improve readability. They can also be used to support the interpretation of the architecture flow tables that follow.

11.1 Traffic Management Flows & Flow Diagram

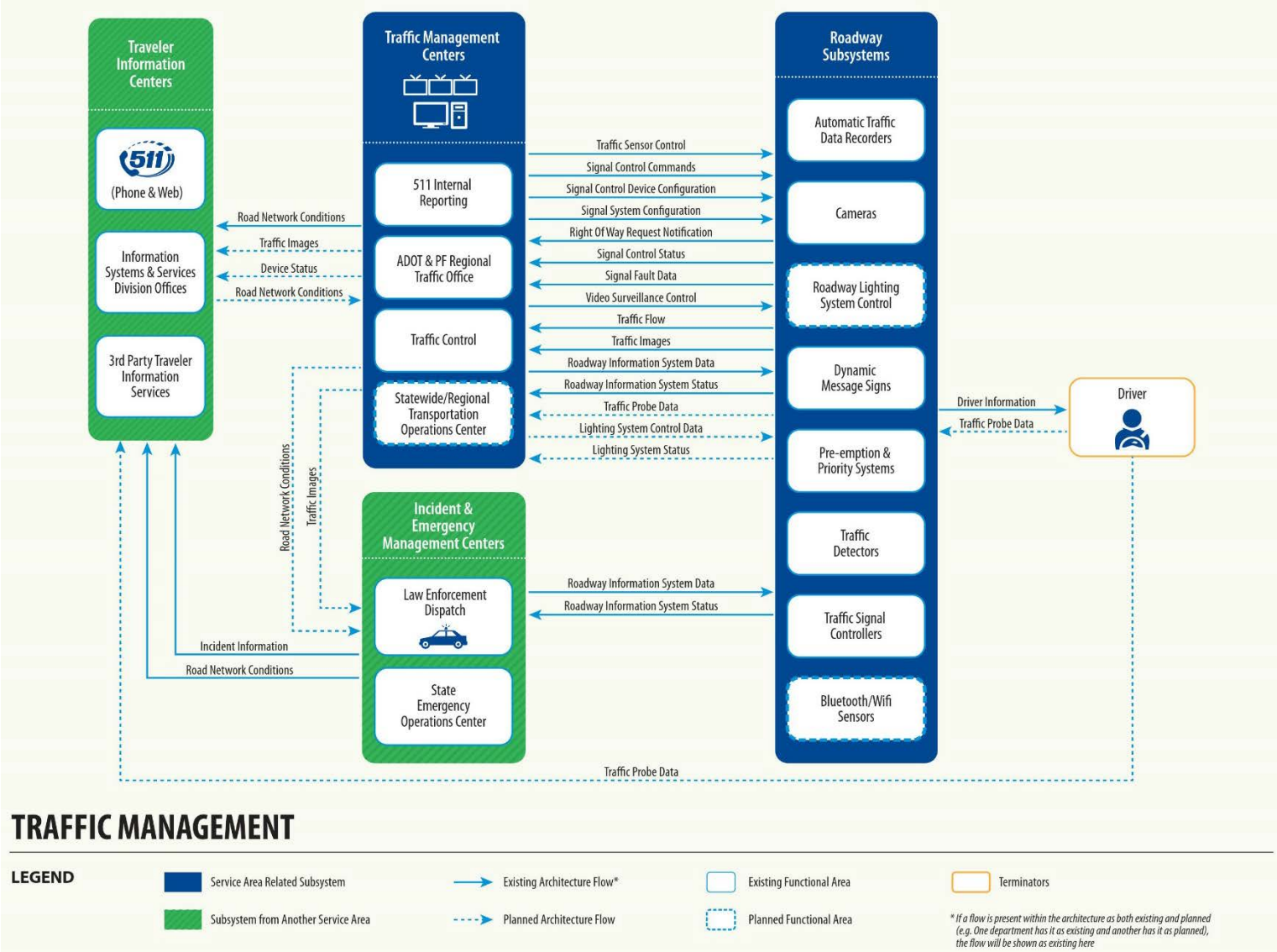


Figure 11. Large Traffic Management Flow Diagram

Table 22. Traffic Management Architecture Flows

Source Element	Flow Name	Destination Element	Project Flow Status
Center/ 3rd Party Traveler Information Services	road network conditions	Center/ ADOTPF Regional Traffic Office	Planned
Center/ 3rd Party Traveler Information Services	road network conditions	Center/ Statewide/Regional Transportation Operations Centers	Planned
Center/ 3rd Party Traveler Information Services	road network conditions	Center/ Traffic Control	Planned
Center/ 511 Internal Reporting	road network conditions	Center/ Information Systems and Services Division	Existing
Center/ 511 Internal Reporting	road network conditions	Center/ Law Enforcement Dispatch	Planned
Center/ ADOTPF Regional Traffic Office	device status	Center/ 3rd Party Traveler Information Services	Planned
Center/ ADOTPF Regional Traffic Office	road network conditions	Center/ 3rd Party Traveler Information Services	Planned
Center/ ADOTPF Regional Traffic Office	road network conditions	Center/ 511 (phone and web)	Existing
Center/ ADOTPF Regional Traffic Office	road network conditions	Center/ State Emergency Operations Center (SEOC)	Existing
Center/ ADOTPF Regional Traffic Office	traffic sensor control	Field/ Traffic Detectors	Existing
Center/ Information Systems and Services Division	road network conditions	Center/ Statewide/Regional Transportation Operations Centers	Planned
Center/ Information Systems and Services Division	traffic images	Center/ Statewide/Regional Transportation Operations Centers	Planned
Center/ Law Enforcement Dispatch	incident information	Center/ 511 (phone and web)	Existing
Center/ Law Enforcement Dispatch	road network conditions	Center/ 3rd Party Traveler Information Services	Existing
Center/ Law Enforcement Dispatch	road network conditions	Center/ State Emergency Operations Center (SEOC)	Existing
Center/ Law Enforcement Dispatch	roadway information system data	Field/ Dynamic Message Signs	Existing
Center/ State Emergency Operations Center (SEOC)	incident information	Center/ 3rd Party Traveler Information Services	Existing
Center/ State Emergency Operations Center (SEOC)	incident information	Center/ 511 (phone and web)	Existing
Center/ Statewide/Regional Transportation Operations Centers	road network conditions	Center/ Law Enforcement Dispatch	Planned
Center/ Statewide/Regional Transportation Operations Centers	road network conditions	Center/ State Emergency Operations Center (SEOC)	Planned

Source Element	Flow Name	Destination Element	Project Flow Status
Center/ Statewide/Regional Transportation Operations Centers	traffic images	Center/ 511 (phone and web)	Planned
Center/ Statewide/Regional Transportation Operations Centers	traffic images	Center/ Information Systems and Services Division	Planned
Center/ Statewide/Regional Transportation Operations Centers	traffic images	Center/ Law Enforcement Dispatch	Planned
Center/ Statewide/Regional Transportation Operations Centers	video surveillance control	Field/ Cameras	Planned
Center/ Traffic Control	device status	Center/ 3rd Party Traveler Information Services	Planned
Center/ Traffic Control	lighting system control data	Field/ Roadway Lighting System Control	Planned
Center/ Traffic Control	road network conditions	Center/ 3rd Party Traveler Information Services	Planned
Center/ Traffic Control	road network conditions	Center/ 511 (phone and web)	Existing
Center/ Traffic Control	road network conditions	Center/ Statewide/Regional Transportation Operations Centers	Planned
Center/ Traffic Control	roadway information system data	Field/ Cameras	Planned
Center/ Traffic Control	roadway information system data	Field/ Pre-emption and Priority Systems	Existing
Center/ Traffic Control	signal control commands	Field/ Traffic Signal Controllers	Existing
Center/ Traffic Control	signal control device configuration	Field/ Traffic Detectors	Existing
Center/ Traffic Control	signal control device configuration	Field/ Traffic Signal Controllers	Existing
Center/ Traffic Control	signal control plans	Field/ Traffic Signal Controllers	Existing
Center/ Traffic Control	signal system configuration	Field/ Traffic Detectors	Existing
Center/ Traffic Control	signal system configuration	Field/ Traffic Signal Controllers	Existing
Center/ Traffic Control	traffic sensor control	Field/ Automatic Traffic Data Recorders	Existing
Center/ Traffic Control	traffic sensor control	Field/ Traffic Detectors	Existing
Field/ Automatic Traffic Data Recorders	roadway equipment coordination	Field/ Cameras	Existing
Field/ Automatic Traffic Data Recorders	roadway equipment coordination	Field/ Traffic Detectors	Existing
Field/ Automatic Traffic Data Recorders	roadway equipment coordination	Field/ Traffic Signal Controllers	Existing
Field/ Automatic Traffic Data Recorders	traffic flow	Center/ 511 Internal Reporting	Existing

Source Element	Flow Name	Destination Element	Project Flow Status
Field/ Automatic Traffic Data Recorders	traffic flow	Center/ Traffic Control	Existing
Field/ Bluetooth and WiFi Sensors	traffic probe data	Center/ 511 Internal Reporting	Planned
Field/ Bluetooth and WiFi Sensors	traffic probe data	Center/ ADOTPF Regional Traffic Office	Planned
Field/ Bluetooth and WiFi Sensors	traffic probe data	Center/ Statewide/Regional Transportation Operations Centers	Planned
Field/ Bluetooth and WiFi Sensors	traffic probe data	Center/ Traffic Control	Planned
Field/ Cameras	roadway equipment coordination	Field/ Automatic Traffic Data Recorders	Existing
Field/ Cameras	roadway equipment coordination	Field/ Traffic Detectors	Planned
Field/ Cameras	roadway equipment coordination	Field/ Traffic Signal Controllers	Planned
Field/ Cameras	roadway information system status	Center/ Traffic Control	Planned
Field/ Cameras	traffic flow	Center/ Statewide/Regional Transportation Operations Centers	Planned
Field/ Cameras	traffic images	Center/ Statewide/Regional Transportation Operations Centers	Planned
Field/ Dynamic Message Signs	driver information	Terminator/ Driver	Existing
Field/ Dynamic Message Signs	roadway information system status	Center/ Law Enforcement Dispatch	Existing
Field/ Pre-emption and Priority Systems	roadway information system status	Center/ Traffic Control	Existing
Field/ Roadway Lighting System Control	lighting system status	Center/ Traffic Control	Planned
Field/ Traffic Detectors	right-of-way request notification	Center/ Traffic Control	Existing
Field/ Traffic Detectors	roadway equipment coordination	Field/ Automatic Traffic Data Recorders	Existing
Field/ Traffic Detectors	roadway equipment coordination	Field/ Cameras	Planned
Field/ Traffic Detectors	roadway equipment coordination	Field/ Traffic Signal Controllers	Existing
Field/ Traffic Detectors	signal control data	Field/ Traffic Signal Controllers	Existing
Field/ Traffic Detectors	signal control status	Center/ Traffic Control	Existing
Field/ Traffic Detectors	signal fault data	Center/ Traffic Control	Existing
Field/ Traffic Detectors	traffic flow	Center/ 511 Internal Reporting	Existing
Field/ Traffic Detectors	traffic flow	Center/ ADOTPF Regional Traffic Office	Existing

Source Element	Flow Name	Destination Element	Project Flow Status
Field/ Traffic Detectors	traffic flow	Center/ Statewide/Regional Transportation Operations Centers	Planned
Field/ Traffic Detectors	traffic flow	Center/ Traffic Control	Existing
Field/ Traffic Signal Controllers	right-of-way request notification	Center/ Traffic Control	Existing
Field/ Traffic Signal Controllers	roadway equipment coordination	Field/ Automatic Traffic Data Recorders	Existing
Field/ Traffic Signal Controllers	roadway equipment coordination	Field/ Cameras	Planned
Field/ Traffic Signal Controllers	roadway equipment coordination	Field/ Traffic Detectors	Existing
Field/ Traffic Signal Controllers	signal control data	Field/ Traffic Detectors	Existing
Field/ Traffic Signal Controllers	signal control status	Center/ Traffic Control	Existing
Field/ Traffic Signal Controllers	signal fault data	Center/ Traffic Control	Existing
Vehicle/ General Public Vehicle	traffic probe data	Center/ 3rd Party Traveler Information Services	Planned
Vehicle/ General Public Vehicle	traffic probe data	Field/ Bluetooth and WiFi Sensors	Planned

11.2 Winter Maintenance Flows & Flow Diagram

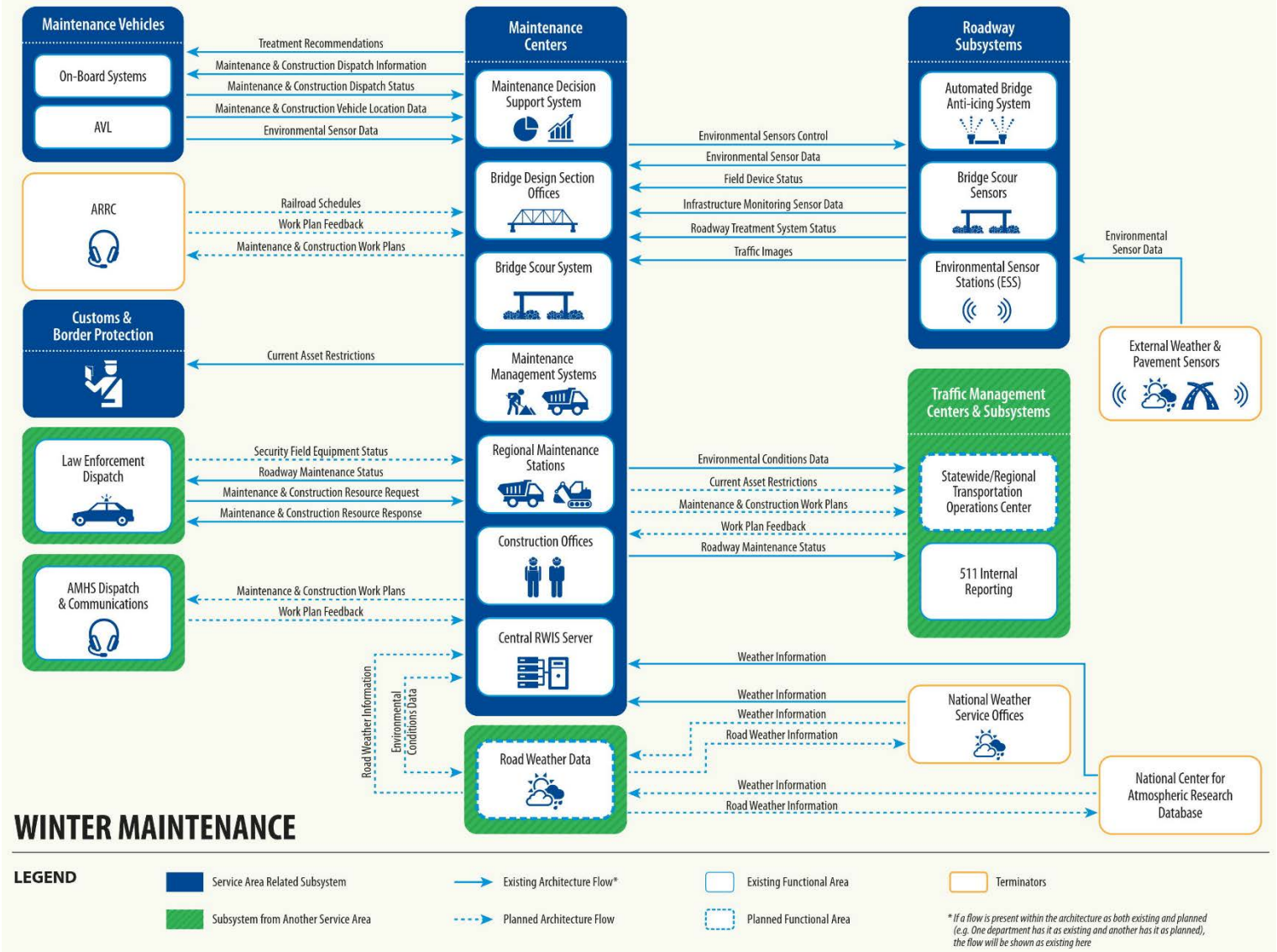


Figure 12. Large Winter Maintenance Flow Diagram

Table 23. Winter Maintenance Architecture Flows

Source Element	Flow Name	Destination Element	Project Flow Status
Center/ AMHS Dispatch and Communications	work plan feedback	Center/ Regional Maintenance Stations	Planned
Center/ Bridge Design Section Offices	equipment maintenance status	Center/ Regional Maintenance Stations	Existing
Center/ Bridge Design Section Offices	maint and constr administrative request	Center/ Maintenance Management Systems	Existing
Center/ Bridge Design Section Offices	maint and constr work performance	Center/ Maintenance Management Systems	Existing
Center/ Bridge Scour System	equipment maintenance status	Center/ Regional Maintenance Stations	Existing
Center/ Bridge Scour System	maint and constr administrative request	Center/ Maintenance Management Systems	Existing
Center/ Bridge Scour System	maint and constr work performance	Center/ Maintenance Management Systems	Existing
Center/ Central RWIS Server	environmental conditions data	Center/ Regional Maintenance Stations	Existing
Center/ Central RWIS Server	environmental sensors control	Field/ Environmental Sensor Stations (ESS)	Existing
Center/ Central RWIS Server	road weather information	Center/ Regional Maintenance Stations	Existing
Center/ Construction Offices	asset status update	Center/ Maintenance Management Systems	Existing
Center/ Construction Offices	current asset restrictions	Center/ 511 Internal Reporting	Existing
Center/ Construction Offices	current asset restrictions	Center/ Customs and Border Protection	Existing
Center/ Construction Offices	maint and constr resource coordination	Center/ Regional Maintenance Stations	Existing
Center/ Construction Offices	maint and constr work plans	Center/ 511 Internal Reporting	Existing
Center/ Construction Offices	maint and constr work plans	Center/ Regional Maintenance Stations	Existing
Center/ Construction Offices	work plan coordination	Center/ Regional Maintenance Stations	Existing
Center/ Law Enforcement Dispatch	maint and constr resource request	Center/ Regional Maintenance Stations	Existing
Center/ Law Enforcement Dispatch	security field equipment status	Center/ Regional Maintenance Stations	Planned
Center/ Maintenance Decision Support System	.treatment recommendations.	Vehicle/ Maintenance Vehicle On-board Systems (State)	Existing
Center/ Maintenance Decision Support System	environmental conditions data	Center/ 511 Internal Reporting	Existing
Center/ Maintenance Management Systems	asset inventory	Center/ Regional Maintenance Stations	Existing
Center/ Maintenance Management Systems	asset restrictions	Center/ Regional Maintenance Stations	Existing
Center/ Maintenance Management Systems	current asset restrictions	Center/ 511 Internal Reporting	Existing
Center/ Maintenance Management Systems	current asset restrictions	Center/ Customs and Border Protection	Existing
Center/ Maintenance Management Systems	current asset restrictions	Center/ Statewide/Regional Transportation Operations Centers	Planned

Source Element	Flow Name	Destination Element	Project Flow Status
Center/ Maintenance Management Systems	equipment maintenance status	Center/ Regional Maintenance Stations	Existing
Center/ Maintenance Management Systems	maint and constr administrative information	Center/ Bridge Design Section Offices	Existing
Center/ Maintenance Management Systems	maint and constr administrative information	Center/ Regional Maintenance Stations	Existing
Center/ Maintenance Management Systems	maintenance and repair needs	Center/ Regional Maintenance Stations	Existing
Center/ Regional Maintenance Stations	current asset restrictions	Center/ 511 Internal Reporting	Existing
Center/ Regional Maintenance Stations	current asset restrictions	Center/ Customs and Border Protection	Planned
Center/ Regional Maintenance Stations	current asset restrictions	Center/ Statewide/Regional Transportation Operations Centers	Planned
Center/ Regional Maintenance Stations	field equipment status	Center/ Bridge Design Section Offices	Existing
Center/ Regional Maintenance Stations	field equipment status	Center/ Bridge Scour System	Existing
Center/ Regional Maintenance Stations	field equipment status	Center/ Maintenance Management Systems	Existing
Center/ Regional Maintenance Stations	maint and constr administrative request	Center/ Maintenance Management Systems	Existing
Center/ Regional Maintenance Stations	maint and constr dispatch information	Vehicle/ Maintenance Vehicle On-board Systems (State)	Existing
Center/ Regional Maintenance Stations	maint and constr resource coordination	Center/ Construction Offices	Existing
Center/ Regional Maintenance Stations	maint and constr resource response	Center/ Law Enforcement Dispatch	Existing
Center/ Regional Maintenance Stations	maint and constr work performance	Center/ Maintenance Management Systems	Existing
Center/ Regional Maintenance Stations	maint and constr work plans	Center/ 511 Internal Reporting	Planned
Center/ Regional Maintenance Stations	maint and constr work plans	Center/ AMHS Dispatch and Communications	Planned
Center/ Regional Maintenance Stations	maint and constr work plans	Center/ Statewide/Regional Transportation Operations Centers	Planned
Center/ Regional Maintenance Stations	maint and constr work plans	Terminator/ ARRC	Planned
Center/ Regional Maintenance Stations	roadway maintenance status	Center/ 511 Internal Reporting	Existing
Center/ Regional Maintenance Stations	roadway maintenance status	Center/ Law Enforcement Dispatch	Existing
Center/ Regional Maintenance Stations	roadway maintenance status	Center/ Maintenance Decision Support System	Existing
Center/ Regional Maintenance Stations	roadway maintenance status	Center/ Maintenance Management Systems	Existing

Source Element	Flow Name	Destination Element	Project Flow Status
Center/ Regional Maintenance Stations	roadway treatment system control	Field/ Automated Bridge Anti-icing	Existing
Center/ Regional Maintenance Stations	work plan coordination	Center/ Construction Offices	Existing
Center/ Regional Maintenance Stations	work plan coordination	Center/ Maintenance Management Systems	Existing
Center/ Road Weather Data	environmental conditions data	Center/ Regional Maintenance Stations	Planned
Center/ Road Weather Data	road weather information	Center/ Construction Offices	Planned
Center/ Road Weather Data	road weather information	Center/ Regional Maintenance Stations	Planned
Center/ Road Weather Data	road weather information	Terminator/ National Center for Atmospheric Research Database	Planned
Center/ Road Weather Data	road weather information	Terminator/ National Weather Service Offices	Planned
Center/ Statewide/Regional Transportation Operations Centers	work plan feedback	Center/ Regional Maintenance Stations	Planned
Field/ Automated Bridge Anti-icing	field device status	Center/ Bridge Design Section Offices	Existing
Field/ Automated Bridge Anti-icing	field device status	Center/ Maintenance Management Systems	Existing
Field/ Automated Bridge Anti-icing	field device status	Center/ Regional Maintenance Stations	Existing
Field/ Automated Bridge Anti-icing	roadway treatment system status	Center/ Regional Maintenance Stations	Existing
Field/ Bridge Scour Sensors	field device status	Center/ Bridge Design Section Offices	Existing
Field/ Bridge Scour Sensors	field device status	Center/ Bridge Scour System	Existing
Field/ Bridge Scour Sensors	field device status	Center/ Regional Maintenance Stations	Existing
Field/ Bridge Scour Sensors	infrastructure monitoring sensor data	Center/ Bridge Design Section Offices	Existing
Field/ Bridge Scour Sensors	infrastructure monitoring sensor data	Center/ Bridge Scour System	Existing
Field/ Environmental Sensor Stations (ESS)	environmental sensor data	Center/ Central RWIS Server	Existing
Field/ Environmental Sensor Stations (ESS)	field device status	Center/ Central RWIS Server	Existing
Field/ Environmental Sensor Stations (ESS)	field device status	Center/ Maintenance Management Systems	Existing
Field/ Environmental Sensor Stations (ESS)	traffic images	Center/ Central RWIS Server	Existing
Terminator/ ARRC	railroad schedules	Center/ Regional Maintenance Stations	Planned
Terminator/ ARRC	work plan feedback	Center/ Regional Maintenance Stations	Planned
Terminator/ External Weather and Pavement Sensors	.environmental sensor data.	Field/ Environmental Sensor Stations (ESS)	Existing
Terminator/ National Center for Atmospheric Research Database	weather information	Center/ Maintenance Decision Support System	Existing

Source Element	Flow Name	Destination Element	Project Flow Status
Terminator/ National Center for Atmospheric Research Database	weather information	Center/ Road Weather Data	Planned
Terminator/ National Weather Service Offices	weather information	Center/ Regional Maintenance Stations	Existing
Terminator/ National Weather Service Offices	weather information	Center/ Road Weather Data	Planned
Vehicle/ ADOTPF Maintenance Vehicle AVL	position fix	Vehicle/ Maintenance Vehicle On-board Systems (State)	Existing
Vehicle/ ADOTPF Maintenance Vehicle AVL	safety system status	Vehicle/ Maintenance Vehicle On-board Systems (State)	Existing
Vehicle/ Maintenance Vehicle On-board Systems (State)	environmental sensor data	Center/ Regional Maintenance Stations	Existing
Vehicle/ Maintenance Vehicle On-board Systems (State)	maint and constr dispatch status	Center/ Regional Maintenance Stations	Existing
Vehicle/ Maintenance Vehicle On-board Systems (State)	maint and constr vehicle location data	Center/ Regional Maintenance Stations	Existing

11.3 CVO and Freight Flows & Flow Diagram

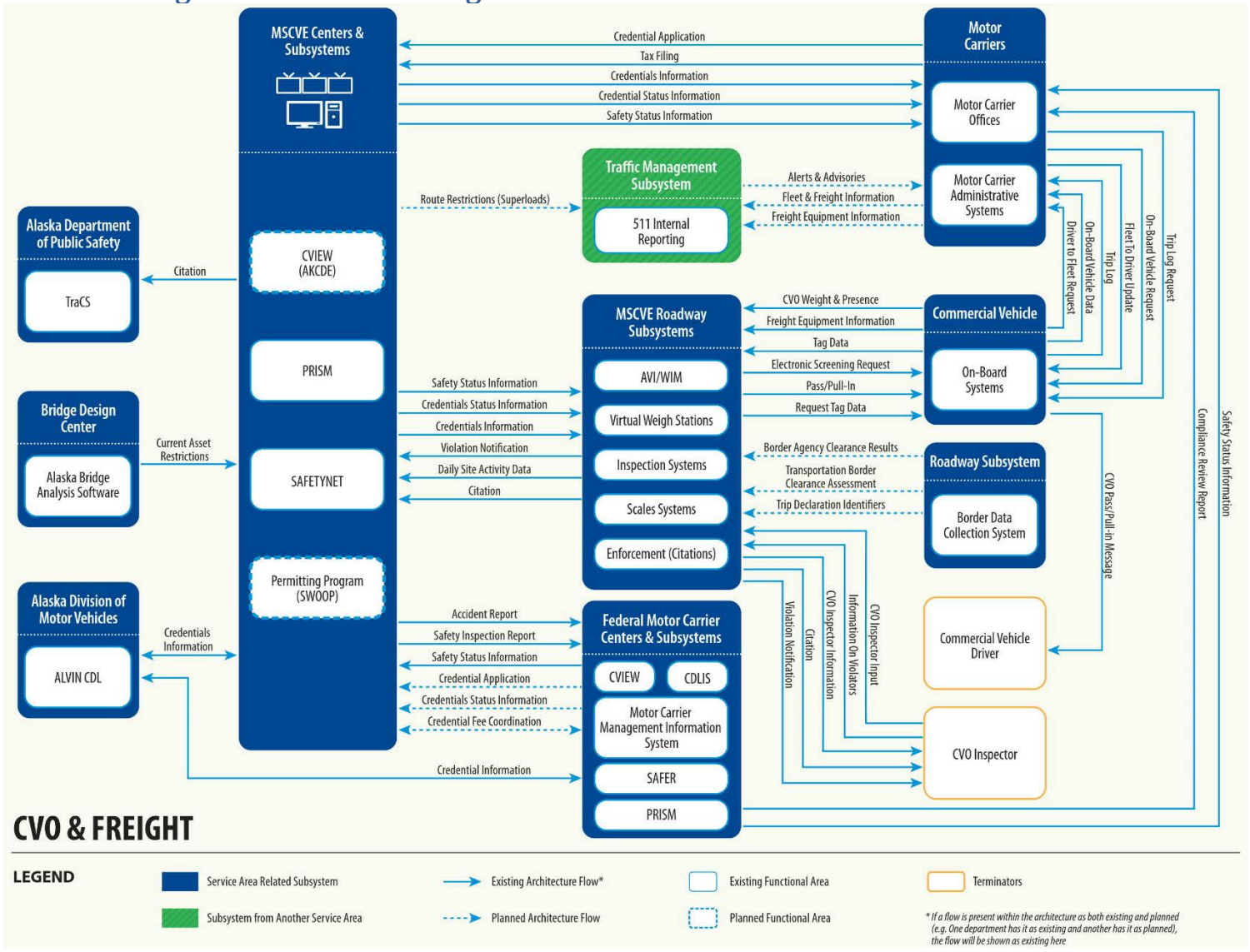


Figure 13. Large CVO and Freight Flow Diagram

Table 24. CVO and Freight Architecture Flows

Source Element	Flow Name	Destination Element	Project Flow Status
Center/ 511 Internal Reporting	alerts and advisories	Center/ Motor Carrier Offices	Planned
Center/ Alaska Bridge Analysis Software	current asset restrictions	Center/ Permitting Program (SWOOP)	Existing
Center/ ALVIN CDL	credentials information	Center/ CVIEW (MSCVE) AKCDE	Existing
Center/ ALVIN CDL	credentials information	Center/ SAFER	Existing
Center/ CDLIS	credentials status information	Center/ CVIEW (MSCVE) AKCDE	Planned
Center/ CDLIS	safety status information	Center/ CVIEW (MSCVE) AKCDE	Planned
Center/ CVIEW (Fed)	credential fee coordination	Center/ CVIEW (MSCVE) AKCDE	Planned
Center/ CVIEW (Fed)	credentials status information	Center/ CVIEW (MSCVE) AKCDE	Planned
Center/ CVIEW (MSCVE) AKCDE	accident report	Center/ CVIEW (Fed)	Existing
Center/ CVIEW (MSCVE) AKCDE	credential fee coordination	Center/ CDLIS	Planned
Center/ CVIEW (MSCVE) AKCDE	credential fee coordination	Center/ CVIEW (Fed)	Planned
Center/ CVIEW (MSCVE) AKCDE	credentials information	Center/ ALVIN CDL	Existing
Center/ CVIEW (MSCVE) AKCDE	credentials information	Center/ Motor Carrier Offices	Planned
Center/ CVIEW (MSCVE) AKCDE	credentials information	Center/ Permitting Program (SWOOP)	Planned
Center/ CVIEW (MSCVE) AKCDE	credentials information	Field/ Enforcement (Citations)	Existing
Center/ CVIEW (MSCVE) AKCDE	credentials information	Field/ Inspection System	Planned
Center/ CVIEW (MSCVE) AKCDE	credentials information	Field/ Virtual Weigh Station	Planned
Center/ CVIEW (MSCVE) AKCDE	credentials status information	Center/ PRISM (MSCVE)	Planned
Center/ CVIEW (MSCVE) AKCDE	credentials status information	Center/ SAFETYNET	Planned
Center/ CVIEW (MSCVE) AKCDE	credentials status information	Field/ Enforcement (Citations)	Existing
Center/ CVIEW (MSCVE) AKCDE	credentials status information	Field/ Inspection System	Planned
Center/ CVIEW (MSCVE) AKCDE	credentials status information	Field/ Virtual Weigh Station	Planned
Center/ CVIEW (MSCVE) AKCDE	safety inspection report	Center/ CDLIS	Planned
Center/ CVIEW (MSCVE) AKCDE	safety inspection report	Center/ CVIEW (Fed)	Existing
Center/ CVIEW (MSCVE) AKCDE	safety inspection report	Center/ SAFER	Existing
Center/ Motor Carrier Administrative Systems	.fleet and freight information.	Center/ 511 Internal Reporting	Planned
Center/ Motor Carrier Administrative Systems	.freight equipment information.	Center/ 511 Internal Reporting	Planned
Center/ Motor Carrier Administrative Systems	credential application	Center/ Permitting Program (SWOOP)	Planned
Center/ Motor Carrier Administrative Systems	credential application	Center/ PRISM (MSCVE)	Planned
Center/ Motor Carrier Offices	.fleet and freight information.	Center/ 511 Internal Reporting	Planned

Source Element	Flow Name	Destination Element	Project Flow Status
Center/ Motor Carrier Offices	.freight equipment information.	Center/ 511 Internal Reporting	Planned
Center/ Motor Carrier Offices	fleet to driver update	Vehicle/ Commercial Vehicle On-Board Systems	Existing
Center/ Motor Carrier Offices	on-board vehicle request	Vehicle/ Commercial Vehicle On-Board Systems	Existing
Center/ Motor Carrier Offices	tax filing	Center/ CVIEW (MSCVE) AKCDE	Planned
Center/ Motor Carrier Offices	tax filing	Center/ PRISM (MSCVE)	Existing
Center/ Motor Carrier Offices	trip log request	Vehicle/ Commercial Vehicle On-Board Systems	Existing
Center/ Permitting Program (SWOOP)	accident report	Center/ Motor Carrier Management Information System	Planned
Center/ Permitting Program (SWOOP)	accident report	Center/ SAFER	Planned
Center/ Permitting Program (SWOOP)	citation	Center/ Traffic and Criminal Software	Existing
Center/ Permitting Program (SWOOP)	credential fee coordination	Center/ CDLIS	Planned
Center/ Permitting Program (SWOOP)	credentials information	Center/ Motor Carrier Management Information System	Planned
Center/ Permitting Program (SWOOP)	credentials information	Center/ Motor Carrier Offices	Existing
Center/ Permitting Program (SWOOP)	credentials information	Field/ Enforcement (Citations)	Existing
Center/ Permitting Program (SWOOP)	credentials status information	Center/ CVIEW (MSCVE) AKCDE	Planned
Center/ Permitting Program (SWOOP)	route restrictions	Center/ 511 Internal Reporting	Planned
Center/ PRISM (Fed)	safety status information	Center/ PRISM (MSCVE)	Existing
Center/ PRISM (MSCVE)	accident report	Center/ PRISM (Fed)	Existing
Center/ PRISM (MSCVE)	compliance review report	Center/ Motor Carrier Offices	Existing
Center/ PRISM (MSCVE)	credential fee coordination	Center/ CVIEW (MSCVE) AKCDE	Planned
Center/ PRISM (MSCVE)	credentials information	Center/ CVIEW (MSCVE) AKCDE	Planned
Center/ PRISM (MSCVE)	credentials information	Center/ Motor Carrier Management Information System	Existing
Center/ PRISM (MSCVE)	safety inspection report	Center/ CDLIS	Existing
Center/ PRISM (MSCVE)	safety status information	Center/ Motor Carrier Offices	Existing
Center/ PRISM (MSCVE)	safety status information	Center/ PRISM (Fed)	Existing
Center/ SAFER	compliance review report	Center/ Motor Carrier Offices	Existing
Center/ SAFER	credentials information	Center/ ALVIN CDL	Existing
Center/ SAFER	credentials status information	Center/ CVIEW (MSCVE) AKCDE	Planned
Center/ SAFER	safety status information	Center/ CVIEW (MSCVE) AKCDE	Planned
Center/ SAFER	safety status information	Center/ Motor Carrier Management Information System	Existing

Source Element	Flow Name	Destination Element	Project Flow Status
Center/ SAFER	safety status information	Center/ Motor Carrier Offices	Planned
Center/ SAFETYNET	credentials information	Center/ CVIEW (MSCVE) AKCDE	Planned
Center/ SAFETYNET	safety inspection report	Center/ CDLIS	Existing
Center/ SAFETYNET	safety inspection report	Center/ SAFER	Existing
Center/ SAFETYNET	safety status information	Center/ Motor Carrier Management Information System	Existing
Center/ SAFETYNET	safety status information	Center/ Motor Carrier Offices	Existing
Center/ SAFETYNET	safety status information	Field/ Inspection System	Existing
Field/ AVI/WIM	electronic screening request	Vehicle/ Commercial Vehicle On-Board Systems	Existing
Field/ AVI/WIM	pass/pull-in	Vehicle/ Commercial Vehicle On-Board Systems	Existing
Field/ AVI/WIM	request tag data	Vehicle/ Commercial Vehicle On-Board Systems	Existing
Field/ Border Data Collection System	border agency clearance results	Field/ Enforcement (Citations)	Planned
Field/ Border Data Collection System	border agency clearance results	Field/ Inspection System	Planned
Field/ Border Data Collection System	transportation border clearance assessment	Field/ Enforcement (Citations)	Planned
Field/ Border Data Collection System	transportation border clearance assessment	Field/ Inspection System	Planned
Field/ Border Data Collection System	trip declaration identifiers	Field/ Enforcement (Citations)	Planned
Field/ Border Data Collection System	trip declaration identifiers	Field/ Inspection System	Planned
Field/ Enforcement (Citations)	citation	Center/ CVIEW (MSCVE) AKCDE	Existing
Field/ Enforcement (Citations)	citation	Center/ Permitting Program (SWOOP)	Existing
Field/ Enforcement (Citations)	daily site activity data	Center/ CVIEW (MSCVE) AKCDE	Existing
Field/ Enforcement (Citations)	daily site activity data	Center/ Permitting Program (SWOOP)	Existing
Field/ Enforcement (Citations)	electronic screening request	Vehicle/ Commercial Vehicle On-Board Systems	Existing
Field/ Enforcement (Citations)	pass/pull-in	Vehicle/ Commercial Vehicle On-Board Systems	Existing
Field/ Enforcement (Citations)	request tag data	Vehicle/ Commercial Vehicle On-Board Systems	Existing
Field/ Enforcement (Citations)	violation notification	Center/ Permitting Program (SWOOP)	Existing
Field/ Enforcement (Citations)	violation notification	Terminator/ CVO Inspector	Existing
Field/ Inspection System	citation	Center/ CVIEW (MSCVE) AKCDE	Planned
Field/ Inspection System	CVO inspector information	Terminator/ CVO Inspector	Existing

Source Element	Flow Name	Destination Element	Project Flow Status
Field/ Inspection System	daily site activity data	Center/ CVIEW (MSCVE) AKCDE	Planned
Field/ Inspection System	electronic screening request	Vehicle/ Commercial Vehicle On-Board Systems	Existing
Field/ Inspection System	pass/pull-in	Vehicle/ Commercial Vehicle On-Board Systems	Existing
Field/ Inspection System	request tag data	Vehicle/ Commercial Vehicle On-Board Systems	Existing
Field/ Inspection System	safety inspection record	Vehicle/ Commercial Vehicle On-Board Systems	Existing
Field/ Inspection System	safety inspection request	Vehicle/ Commercial Vehicle On-Board Systems	Existing
Field/ Inspection System	violation notification	Terminator/ CVO Inspector	Existing
Field/ Scale Systems	CVO inspector information	Terminator/ CVO Inspector	Existing
Field/ Scale Systems	violation notification	Center/ CVIEW (MSCVE) AKCDE	Existing
Field/ Scale Systems	violation notification	Terminator/ CVO Inspector	Existing
Field/ Virtual Weigh Station	citation	Center/ CVIEW (MSCVE) AKCDE	Planned
Field/ Virtual Weigh Station	daily site activity data	Center/ CVIEW (MSCVE) AKCDE	Planned
Field/ Virtual Weigh Station	electronic screening request	Vehicle/ Commercial Vehicle On-Board Systems	Existing
Field/ Virtual Weigh Station	pass/pull-in	Vehicle/ Commercial Vehicle On-Board Systems	Existing
Field/ Virtual Weigh Station	violation notification	Center/ CVIEW (MSCVE) AKCDE	Planned
Field/ Virtual Weigh Station	violation notification	Terminator/ CVO Inspector	Existing
Terminator/ CVO Inspector	CVO inspector input	Field/ Inspection System	Existing
Terminator/ CVO Inspector	CVO inspector input	Field/ Virtual Weigh Station	Existing
Terminator/ CVO Inspector	information on violators	Field/ Enforcement (Citations)	Existing
Terminator/ CVO Inspector	information on violators	Field/ Inspection System	Existing
Terminator/ CVO Inspector	information on violators	Field/ Virtual Weigh Station	Existing
Vehicle/ Commercial Vehicle On-Board Systems	CVO pass/pull-in message	Terminator/ Commercial Vehicle Driver	Existing
Vehicle/ Commercial Vehicle On-Board Systems	CVO weight and presence	Field/ AVI/WIM	Existing
Vehicle/ Commercial Vehicle On-Board Systems	CVO weight and presence	Field/ Inspection System	Existing
Vehicle/ Commercial Vehicle On-Board Systems	CVO weight and presence	Field/ Scale Systems	Existing

Source Element	Flow Name	Destination Element	Project Flow Status
Vehicle/ Commercial Vehicle On-Board Systems	CVO weight and presence	Field/ Virtual Weigh Station	Existing
Vehicle/ Commercial Vehicle On-Board Systems	driver to fleet request	Center/ Motor Carrier Administrative Systems	Existing
Vehicle/ Commercial Vehicle On-Board Systems	driver to fleet request	Center/ Motor Carrier Offices	Existing
Vehicle/ Commercial Vehicle On-Board Systems	freight equipment information	Field/ Enforcement (Citations)	Existing
Vehicle/ Commercial Vehicle On-Board Systems	freight equipment information	Field/ Inspection System	Existing
Vehicle/ Commercial Vehicle On-Board Systems	identification information	Field/ Inspection System	Existing
Vehicle/ Commercial Vehicle On-Board Systems	identification information	Field/ Scale Systems	Existing
Vehicle/ Commercial Vehicle On-Board Systems	on-board vehicle data	Center/ Motor Carrier Administrative Systems	Existing
Vehicle/ Commercial Vehicle On-Board Systems	on-board vehicle data	Center/ Motor Carrier Offices	Existing
Vehicle/ Commercial Vehicle On-Board Systems	tag data	Field/ Enforcement (Citations)	Existing
Vehicle/ Commercial Vehicle On-Board Systems	tag data	Field/ Inspection System	Existing
Vehicle/ Commercial Vehicle On-Board Systems	trip log	Center/ Motor Carrier Administrative Systems	Existing
Vehicle/ Commercial Vehicle On-Board Systems	trip log	Center/ Motor Carrier Offices	Existing

11.4 Public Transportation Flows & Flow Diagram

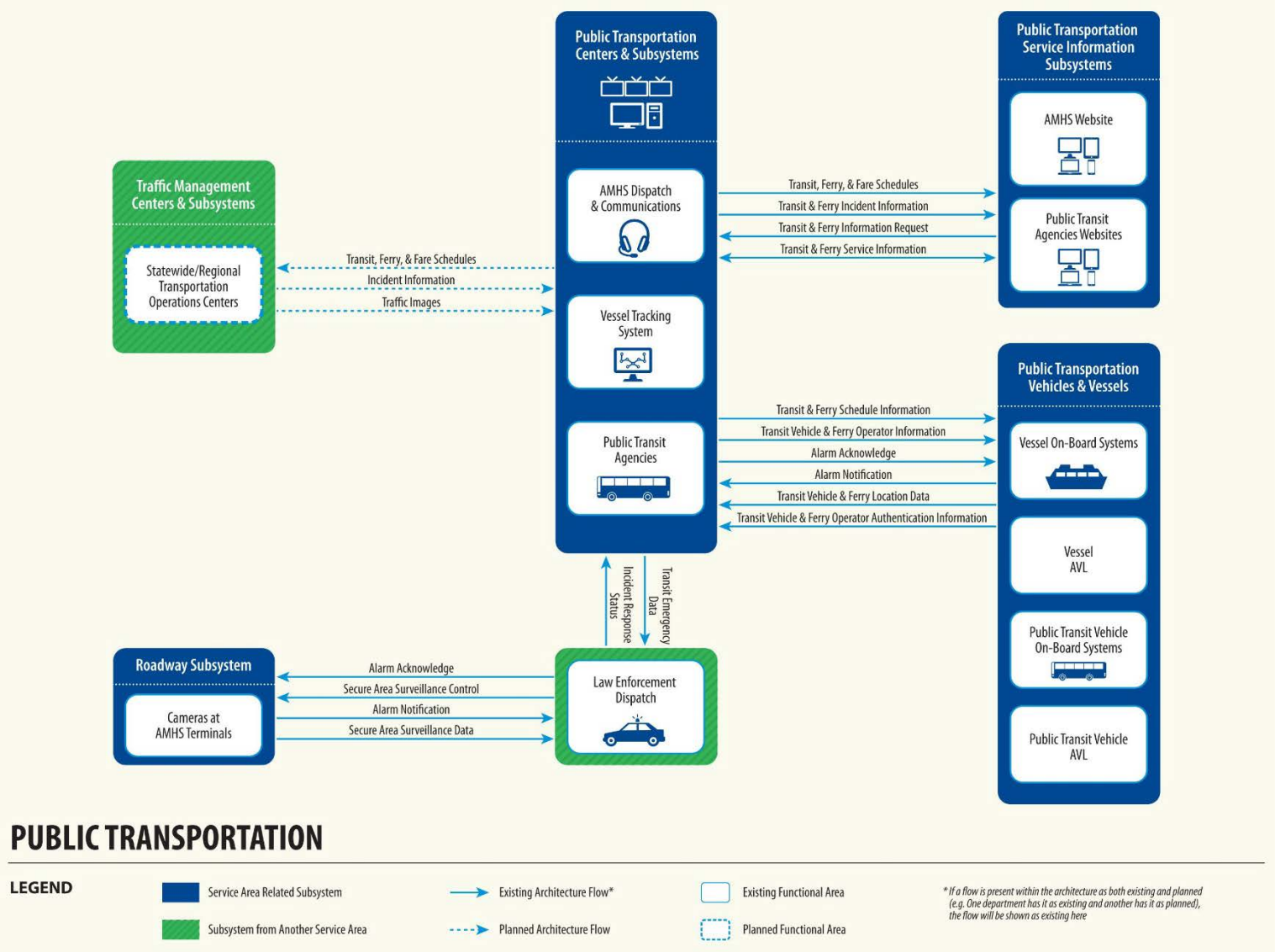


Figure 14. Large Public Transportation Flow Diagram

Table 25. Public Transportation Architecture Flows

Source Element	Flow Name	Destination Element	Project Flow Status
Center/ AMHS Dispatch and Communications	alarm acknowledge	Vehicle/ Vessels On-board Systems	Existing
Center/ AMHS Dispatch and Communications	transit and fare schedules	Center/ AMHS Website	Existing
Center/ AMHS Dispatch and Communications	transit and fare schedules	Center/ Statewide/Regional Transportation Operations Centers	Planned
Center/ AMHS Dispatch and Communications	transit emergency data	Center/ Law Enforcement Dispatch	Existing
Center/ AMHS Dispatch and Communications	transit incident information	Center/ AMHS Website	Existing
Center/ AMHS Dispatch and Communications	transit schedule information	Vehicle/ Vessels On-board Systems	Existing
Center/ AMHS Dispatch and Communications	transit service information	Center/ AMHS Website	Existing
Center/ AMHS Dispatch and Communications	transit vehicle operator authentication update	Vehicle/ Vessels On-board Systems	Existing
Center/ AMHS Dispatch and Communications	transit vehicle operator information	Vehicle/ Vessels On-board Systems	Existing
Center/ AMHS Website	selected routes	Center/ AMHS Dispatch and Communications	Existing
Center/ AMHS Website	transit information request	Center/ AMHS Dispatch and Communications	Existing
Center/ AMHS Website	transit service information	Center/ AMHS Dispatch and Communications	Existing
Center/ Law Enforcement Dispatch	alarm acknowledge	Field/ Cameras (at AMHS Terminals)	Existing
Center/ Law Enforcement Dispatch	incident response status	Center/ AMHS Dispatch and Communications	Existing
Center/ Law Enforcement Dispatch	secure area surveillance control	Field/ Cameras (at AMHS Terminals)	Existing
Center/ Public Transit Agencies	alarm acknowledge	Vehicle/ Public Transit Vehicle On-Board Systems	Existing
Center/ Public Transit Agencies	transit and fare schedules	Center/ Public Transit Agency Websites	Existing
Center/ Public Transit Agencies	transit and fare schedules	Center/ Statewide/Regional Transportation Operations Centers	Planned
Center/ Public Transit Agencies	transit incident information	Center/ Public Transit Agency Websites	Existing

Source Element	Flow Name	Destination Element	Project Flow Status
Center/ Public Transit Agencies	transit schedule information	Vehicle/ Public Transit Vehicle On-Board Systems	Existing
Center/ Public Transit Agencies	transit traveler information	Vehicle/ Public Transit Vehicle On-Board Systems	Existing
Center/ Public Transit Agencies	transit vehicle operator authentication update	Vehicle/ Public Transit Vehicle On-Board Systems	Existing
Center/ Public Transit Agencies	transit vehicle operator information	Vehicle/ Public Transit Vehicle On-Board Systems	Existing
Center/ Public Transit Agency Websites	transit information request	Center/ Public Transit Agencies	Existing
Center/ Statewide/Regional Transportation Operations Centers	incident information	Center/ AMHS Dispatch and Communications	Planned
Center/ Statewide/Regional Transportation Operations Centers	incident information	Center/ Public Transit Agencies	Planned
Center/ Statewide/Regional Transportation Operations Centers	traffic images	Center/ AMHS Dispatch and Communications	Planned
Center/ Statewide/Regional Transportation Operations Centers	traffic images	Center/ Public Transit Agencies	Planned
Center/ Vessel Tracking System	transit probe data	Center/ AMHS Dispatch and Communications	Existing
Center/ Vessel Tracking System	transit schedule adherence information	Center/ AMHS Dispatch and Communications	Existing
Center/ Vessel Tracking System	transit schedule information	Vehicle/ Vessels On-board Systems	Existing
Center/ Vessel Tracking System	transit vehicle operator information	Vehicle/ Vessels On-board Systems	Existing
Field/ Cameras (at AMHS Terminals)	alarm notification	Center/ Law Enforcement Dispatch	Existing
Field/ Cameras (at AMHS Terminals)	secure area surveillance data	Center/ Law Enforcement Dispatch	Existing
Vehicle/ Public Transit Vehicle AVL	position fix	Vehicle/ Public Transit Vehicle On-Board Systems	Existing
Vehicle/ Public Transit Vehicle On-Board Systems	alarm notification	Center/ Public Transit Agencies	Existing
Vehicle/ Public Transit Vehicle On-Board Systems	transit vehicle location data	Center/ Public Transit Agencies	Existing
Vehicle/ Public Transit Vehicle On-Board Systems	transit vehicle operator authentication information	Center/ Public Transit Agencies	Existing
Vehicle/ Public Transit Vehicle On-Board Systems	transit vehicle schedule performance	Center/ Public Transit Agencies	Existing
Vehicle/ Vessels AVL	position fix	Vehicle/ Vessels On-board Systems	Existing

Source Element	Flow Name	Destination Element	Project Flow Status
Vehicle/ Vessels On-board Systems	alarm notification	Center/ AMHS Dispatch and Communications	Existing
Vehicle/ Vessels On-board Systems	transit vehicle location data	Center/ AMHS Dispatch and Communications	Existing
Vehicle/ Vessels On-board Systems	transit vehicle location data	Center/ Vessel Tracking System	Existing
Vehicle/ Vessels On-board Systems	transit vehicle operator authentication information	Center/ AMHS Dispatch and Communications	Existing
Vehicle/ Vessels On-board Systems	transit vehicle schedule performance	Center/ AMHS Dispatch and Communications	Existing
Vehicle/ Vessels On-board Systems	transit vehicle schedule performance	Center/ Vessel Tracking System	Existing

11.5 Incident and Emergency Management Flows & Flow Diagram

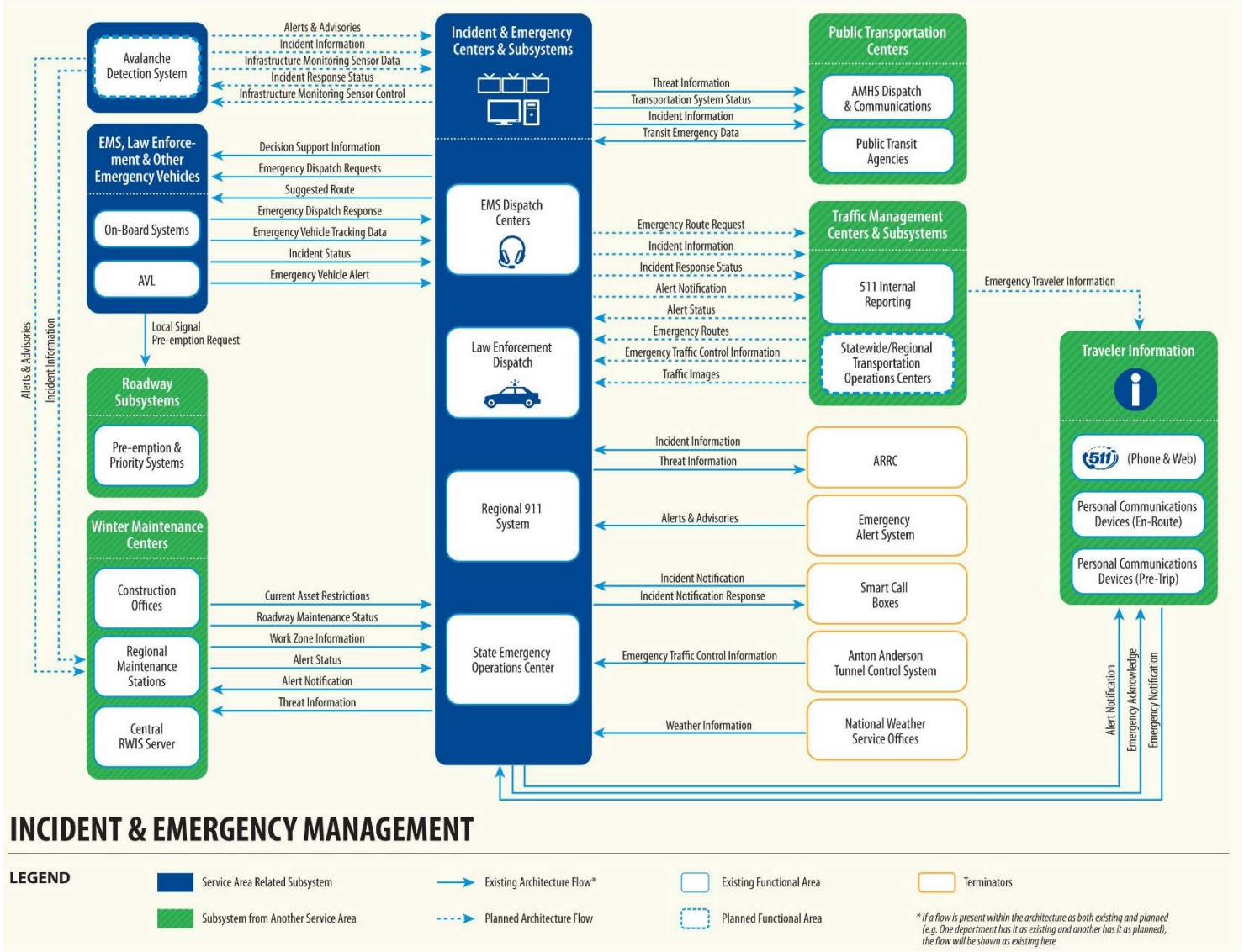


Figure 15. Large Incident and Emergency Management Flow Diagram

Table 26. Incident and Emergency Management Architecture Flows

Source Element	Flow Name	Destination Element	Project Flow Status
Center/ 511 Internal Reporting	incident command information coordination	Center/ EMS Dispatch Centers (Placeholder)	Planned
Center/ 511 Internal Reporting	incident command information coordination	Center/ State Emergency Operations Center (SEOC)	Planned
Center/ 511 Internal Reporting	traffic images	Center/ EMS Dispatch Centers (Placeholder)	Planned
Center/ 511 Internal Reporting	traffic images	Center/ State Emergency Operations Center (SEOC)	Planned
Center/ AMHS Dispatch and Communications	transit emergency data	Center/ Law Enforcement Dispatch	Existing
Center/ AMHS Dispatch and Communications	transit emergency data	Center/ State Emergency Operations Center (SEOC)	Existing
Center/ Avalanche Detection System	alerts and advisories	Center/ Regional Maintenance Stations	Planned
Center/ Avalanche Detection System	alerts and advisories	Center/ State Emergency Operations Center (SEOC)	Planned
Center/ Avalanche Detection System	incident information	Center/ Regional Maintenance Stations	Planned
Center/ Avalanche Detection System	incident information	Center/ State Emergency Operations Center (SEOC)	Planned
Center/ Avalanche Detection System	infrastructure monitoring sensor data	Center/ State Emergency Operations Center (SEOC)	Planned
Center/ Central RWIS Server	road weather information	Center/ Regional Maintenance Stations	Planned
Center/ Construction Offices	current asset restrictions	Center/ Law Enforcement Dispatch	Existing
Center/ Construction Offices	roadway maintenance status	Center/ EMS Dispatch Centers (Placeholder)	Existing
Center/ Construction Offices	roadway maintenance status	Center/ Law Enforcement Dispatch	Existing
Center/ Construction Offices	work zone information	Center/ EMS Dispatch Centers (Placeholder)	Existing
Center/ Construction Offices	work zone information	Center/ Law Enforcement Dispatch	Existing
Center/ EMS Dispatch Centers (Placeholder)	decision support information	Vehicle/ EMS Vehicle On-board Systems	Existing
Center/ EMS Dispatch Centers (Placeholder)	emergency acknowledge	Travelers/ Personal Communications/Computing Devices (en-route)	Existing
Center/ EMS Dispatch Centers (Placeholder)	emergency acknowledge	Travelers/ Personal Communications/Computing Devices (pre-trip)	Existing
Center/ EMS Dispatch Centers (Placeholder)	emergency dispatch requests	Vehicle/ EMS Vehicle On-board Systems	Existing

Source Element	Flow Name	Destination Element	Project Flow Status
Center/ EMS Dispatch Centers (Placeholder)	emergency route request	Center/ Statewide/Regional Transportation Operations Centers	Planned
Center/ EMS Dispatch Centers (Placeholder)	emergency traffic control request	Center/ Statewide/Regional Transportation Operations Centers	Planned
Center/ EMS Dispatch Centers (Placeholder)	incident command information coordination	Center/ 511 Internal Reporting	Planned
Center/ EMS Dispatch Centers (Placeholder)	incident command information coordination	Center/ Law Enforcement Dispatch	Existing
Center/ EMS Dispatch Centers (Placeholder)	incident command information coordination	Center/ State Emergency Operations Center (SEOC)	Existing
Center/ EMS Dispatch Centers (Placeholder)	incident information	Center/ 511 Internal Reporting	Planned
Center/ EMS Dispatch Centers (Placeholder)	incident information	Center/ Law Enforcement Dispatch	Existing
Center/ EMS Dispatch Centers (Placeholder)	incident information	Center/ Statewide/Regional Transportation Operations Centers	Planned
Center/ EMS Dispatch Centers (Placeholder)	incident report	Center/ Regional 911 System (Placeholder)	Existing
Center/ EMS Dispatch Centers (Placeholder)	incident response coordination	Center/ Law Enforcement Dispatch	Existing
Center/ EMS Dispatch Centers (Placeholder)	incident response coordination	Center/ Regional 911 System (Placeholder)	Existing
Center/ EMS Dispatch Centers (Placeholder)	incident response coordination	Center/ State Emergency Operations Center (SEOC)	Existing
Center/ EMS Dispatch Centers (Placeholder)	incident response status	Center/ Law Enforcement Dispatch	Existing
Center/ EMS Dispatch Centers (Placeholder)	incident response status	Center/ Statewide/Regional Transportation Operations Centers	Planned
Center/ EMS Dispatch Centers (Placeholder)	resource deployment status	Center/ Law Enforcement Dispatch	Existing
Center/ EMS Dispatch Centers (Placeholder)	resource request	Center/ Law Enforcement Dispatch	Existing
Center/ EMS Dispatch Centers (Placeholder)	suggested route	Vehicle/ EMS Vehicle On-board Systems	Existing
Center/ Law Enforcement Dispatch	alert notification	Center/ 511 (phone and web)	Existing
Center/ Law Enforcement Dispatch	alert notification	Center/ Construction Offices	Existing
Center/ Law Enforcement Dispatch	alert notification	Center/ Regional Maintenance Stations	Existing
Center/ Law Enforcement Dispatch	alert notification	Center/ Statewide/Regional Transportation Operations Centers	Planned
Center/ Law Enforcement Dispatch	decision support information	Vehicle/ Law Enforcement Vehicle On-board Systems	Existing
Center/ Law Enforcement Dispatch	emergency acknowledge	Travelers/ Personal Communications/Computing Devices (en-route)	Existing

Source Element	Flow Name	Destination Element	Project Flow Status
Center/ Law Enforcement Dispatch	emergency acknowledge	Travelers/ Personal Communications/Computing Devices (pre-trip)	Existing
Center/ Law Enforcement Dispatch	emergency dispatch requests	Vehicle/ Law Enforcement Vehicle On-board Systems	Existing
Center/ Law Enforcement Dispatch	emergency route request	Center/ Statewide/Regional Transportation Operations Centers	Planned
Center/ Law Enforcement Dispatch	emergency traffic control information	Center/ State Emergency Operations Center (SEOC)	Existing
Center/ Law Enforcement Dispatch	emergency traffic control request	Center/ Statewide/Regional Transportation Operations Centers	Planned
Center/ Law Enforcement Dispatch	incident command information coordination	Center/ EMS Dispatch Centers (Placeholder)	Existing
Center/ Law Enforcement Dispatch	incident command information coordination	Center/ State Emergency Operations Center (SEOC)	Existing
Center/ Law Enforcement Dispatch	incident information	Center/ 511 Internal Reporting	Planned
Center/ Law Enforcement Dispatch	incident information	Center/ AMHS Dispatch and Communications	Existing
Center/ Law Enforcement Dispatch	incident information	Center/ EMS Dispatch Centers (Placeholder)	Existing
Center/ Law Enforcement Dispatch	incident information	Center/ Public Transit Agencies	Existing
Center/ Law Enforcement Dispatch	incident information	Center/ State Emergency Operations Center (SEOC)	Existing
Center/ Law Enforcement Dispatch	incident information	Center/ Statewide/Regional Transportation Operations Centers	Planned
Center/ Law Enforcement Dispatch	incident report	Center/ Regional 911 System (Placeholder)	Existing
Center/ Law Enforcement Dispatch	incident report	Center/ State Emergency Operations Center (SEOC)	Existing
Center/ Law Enforcement Dispatch	incident response coordination	Center/ EMS Dispatch Centers (Placeholder)	Existing
Center/ Law Enforcement Dispatch	incident response coordination	Center/ Regional 911 System (Placeholder)	Existing
Center/ Law Enforcement Dispatch	incident response coordination	Center/ State Emergency Operations Center (SEOC)	Existing
Center/ Law Enforcement Dispatch	incident response status	Center/ EMS Dispatch Centers (Placeholder)	Existing

Source Element	Flow Name	Destination Element	Project Flow Status
Center/ Law Enforcement Dispatch	incident response status	Center/ State Emergency Operations Center (SEOC)	Existing
Center/ Law Enforcement Dispatch	incident response status	Center/ Statewide/Regional Transportation Operations Centers	Planned
Center/ Law Enforcement Dispatch	resource deployment status	Center/ EMS Dispatch Centers (Placeholder)	Planned
Center/ Law Enforcement Dispatch	resource deployment status	Center/ State Emergency Operations Center (SEOC)	Planned
Center/ Law Enforcement Dispatch	resource request	Center/ EMS Dispatch Centers (Placeholder)	Planned
Center/ Law Enforcement Dispatch	resource request	Center/ State Emergency Operations Center (SEOC)	Planned
Center/ Law Enforcement Dispatch	resource request	Center/ Statewide/Regional Transportation Operations Centers	Planned
Center/ Law Enforcement Dispatch	suggested route	Vehicle/ Law Enforcement Vehicle On-board Systems	Existing
Center/ Law Enforcement Dispatch	threat information	Center/ AMHS Dispatch and Communications	Existing
Center/ Law Enforcement Dispatch	threat information	Center/ Construction Offices	Existing
Center/ Law Enforcement Dispatch	threat information	Center/ Public Transit Agencies	Existing
Center/ Law Enforcement Dispatch	threat information	Center/ Regional Maintenance Stations	Existing
Center/ Law Enforcement Dispatch	threat information	Terminator/ ARRC	Existing
Center/ Law Enforcement Dispatch	threat information coordination	Center/ State Emergency Operations Center (SEOC)	Existing
Center/ Law Enforcement Dispatch	traffic images	Center/ Regional 911 System (Placeholder)	Existing
Center/ Law Enforcement Dispatch	traffic images	Center/ State Emergency Operations Center (SEOC)	Planned
Center/ Law Enforcement Dispatch	transportation system status	Center/ AMHS Dispatch and Communications	Existing
Center/ Law Enforcement Dispatch	transportation system status	Center/ Public Transit Agencies	Existing
Center/ Public Transit Agencies	transit emergency data	Center/ Law Enforcement Dispatch	Existing
Center/ Public Transit Agencies	transit emergency data	Center/ State Emergency Operations Center (SEOC)	Existing
Center/ Regional 911 System (Placeholder)	emergency acknowledge	Travelers/ Personal Communications/Computing Devices (en-route)	Existing

Source Element	Flow Name	Destination Element	Project Flow Status
Center/ Regional 911 System (Placeholder)	emergency acknowledge	Travelers/ Personal Communications/Computing Devices (pre-trip)	Existing
Center/ Regional 911 System (Placeholder)	incident notification response	Terminator/ Smart Call Boxes	Existing
Center/ Regional 911 System (Placeholder)	incident report	Center/ Law Enforcement Dispatch	Existing
Center/ Regional 911 System (Placeholder)	incident report	Center/ State Emergency Operations Center (SEOC)	Existing
Center/ Regional 911 System (Placeholder)	incident response coordination	Center/ EMS Dispatch Centers (Placeholder)	Existing
Center/ Regional 911 System (Placeholder)	incident response coordination	Center/ Law Enforcement Dispatch	Existing
Center/ Regional 911 System (Placeholder)	incident response coordination	Center/ State Emergency Operations Center (SEOC)	Existing
Center/ Regional 911 System (Placeholder)	remote surveillance control	Center/ Law Enforcement Dispatch	Existing
Center/ Regional Maintenance Stations	alert status	Center/ Law Enforcement Dispatch	Existing
Center/ Regional Maintenance Stations	current asset restrictions	Center/ EMS Dispatch Centers (Placeholder)	Existing
Center/ Regional Maintenance Stations	current asset restrictions	Center/ Law Enforcement Dispatch	Existing
Center/ Regional Maintenance Stations	roadway maintenance status	Center/ EMS Dispatch Centers (Placeholder)	Existing
Center/ Regional Maintenance Stations	roadway maintenance status	Center/ Law Enforcement Dispatch	Existing
Center/ Regional Maintenance Stations	work zone information	Center/ EMS Dispatch Centers (Placeholder)	Existing
Center/ Regional Maintenance Stations	work zone information	Center/ Law Enforcement Dispatch	Existing
Center/ State Emergency Operations Center (SEOC)	incident command information coordination	Center/ 511 Internal Reporting	Planned
Center/ State Emergency Operations Center (SEOC)	incident command information coordination	Center/ EMS Dispatch Centers (Placeholder)	Existing
Center/ State Emergency Operations Center (SEOC)	incident command information coordination	Center/ Law Enforcement Dispatch	Existing
Center/ State Emergency Operations Center (SEOC)	incident information	Center/ 511 Internal Reporting	Planned
Center/ State Emergency Operations Center (SEOC)	incident information	Center/ AMHS Dispatch and Communications	Existing
Center/ State Emergency Operations Center (SEOC)	incident information	Center/ Law Enforcement Dispatch	Existing

Source Element	Flow Name	Destination Element	Project Flow Status
Center/ State Emergency Operations Center (SEOC)	incident information	Center/ Public Transit Agencies	Existing
Center/ State Emergency Operations Center (SEOC)	incident information	Center/ Statewide/Regional Transportation Operations Centers	Planned
Center/ State Emergency Operations Center (SEOC)	incident report	Center/ Law Enforcement Dispatch	Existing
Center/ State Emergency Operations Center (SEOC)	incident report	Center/ Regional 911 System (Placeholder)	Existing
Center/ State Emergency Operations Center (SEOC)	incident response coordination	Center/ EMS Dispatch Centers (Placeholder)	Existing
Center/ State Emergency Operations Center (SEOC)	incident response coordination	Center/ Law Enforcement Dispatch	Existing
Center/ State Emergency Operations Center (SEOC)	incident response coordination	Center/ Regional 911 System (Placeholder)	Existing
Center/ State Emergency Operations Center (SEOC)	incident response status	Center/ Avalanche Detection System	Planned
Center/ State Emergency Operations Center (SEOC)	incident response status	Center/ Law Enforcement Dispatch	Existing
Center/ State Emergency Operations Center (SEOC)	incident response status	Center/ Statewide/Regional Transportation Operations Centers	Planned
Center/ State Emergency Operations Center (SEOC)	infrastructure monitoring sensor control	Center/ Avalanche Detection System	Planned
Center/ State Emergency Operations Center (SEOC)	remote surveillance control	Center/ Law Enforcement Dispatch	Existing
Center/ State Emergency Operations Center (SEOC)	resource deployment status	Center/ Law Enforcement Dispatch	Existing
Center/ State Emergency Operations Center (SEOC)	resource request	Center/ Law Enforcement Dispatch	Existing
Center/ State Emergency Operations Center (SEOC)	threat information	Center/ AMHS Dispatch and Communications	Existing
Center/ State Emergency Operations Center (SEOC)	threat information	Center/ Public Transit Agencies	Existing
Center/ State Emergency Operations Center (SEOC)	threat information	Terminator/ ARRC	Existing
Center/ State Emergency Operations Center (SEOC)	threat information coordination	Center/ Law Enforcement Dispatch	Existing

Source Element	Flow Name	Destination Element	Project Flow Status
Center/ State Emergency Operations Center (SEOC)	transportation system status	Center/ AMHS Dispatch and Communications	Existing
Center/ State Emergency Operations Center (SEOC)	transportation system status	Center/ Law Enforcement Dispatch	Existing
Center/ State Emergency Operations Center (SEOC)	transportation system status	Center/ Public Transit Agencies	Existing
Center/ Statewide/Regional Transportation Operations Centers	alert status	Center/ Law Enforcement Dispatch	Planned
Center/ Statewide/Regional Transportation Operations Centers	emergency routes	Center/ EMS Dispatch Centers (Placeholder)	Planned
Center/ Statewide/Regional Transportation Operations Centers	emergency routes	Center/ Law Enforcement Dispatch	Planned
Center/ Statewide/Regional Transportation Operations Centers	emergency traffic control information	Center/ EMS Dispatch Centers (Placeholder)	Planned
Center/ Statewide/Regional Transportation Operations Centers	emergency traffic control information	Center/ Law Enforcement Dispatch	Planned
Center/ Statewide/Regional Transportation Operations Centers	emergency traveler information	Center/ 511 (phone and web)	Planned
Center/ Statewide/Regional Transportation Operations Centers	emergency traveler information	Travelers/ Personal Communications/Computing Devices (pre-trip)	Planned
Center/ Statewide/Regional Transportation Operations Centers	traffic images	Center/ EMS Dispatch Centers (Placeholder)	Planned
Center/ Statewide/Regional Transportation Operations Centers	traffic images	Center/ Law Enforcement Dispatch	Planned
Center/ Statewide/Regional Transportation Operations Centers	traffic images	Center/ State Emergency Operations Center (SEOC)	Planned
Terminator/ Anton Anderson Tunnel Control System	emergency traffic control information	Center/ Law Enforcement Dispatch	Existing
Terminator/ Anton Anderson Tunnel Control System	emergency traffic control information	Center/ State Emergency Operations Center (SEOC)	Existing
Terminator/ ARRC	incident information	Center/ Law Enforcement Dispatch	Existing
Terminator/ ARRC	incident information	Center/ State Emergency Operations Center (SEOC)	Existing
Terminator/ Emergency Alert System	alerts and advisories	Center/ Law Enforcement Dispatch	Planned
Terminator/ Emergency Alert System	alerts and advisories	Center/ State Emergency Operations Center (SEOC)	Existing

Source Element	Flow Name	Destination Element	Project Flow Status
Terminator/ National Weather Service Offices	weather information	Center/ Law Enforcement Dispatch	Existing
Terminator/ National Weather Service Offices	weather information	Center/ State Emergency Operations Center (SEOC)	Existing
Terminator/ Smart Call Boxes	incident notification	Center/ Regional 911 System (Placeholder)	Existing
Travelers/ Personal Communications/Computing Devices (en-route)	emergency notification	Center/ EMS Dispatch Centers (Placeholder)	Existing
Travelers/ Personal Communications/Computing Devices (en-route)	emergency notification	Center/ Law Enforcement Dispatch	Existing
Travelers/ Personal Communications/Computing Devices (en-route)	emergency notification	Center/ Regional 911 System (Placeholder)	Existing
Travelers/ Personal Communications/Computing Devices (pre-trip)	emergency notification	Center/ EMS Dispatch Centers (Placeholder)	Existing
Travelers/ Personal Communications/Computing Devices (pre-trip)	emergency notification	Center/ Law Enforcement Dispatch	Existing
Travelers/ Personal Communications/Computing Devices (pre-trip)	emergency notification	Center/ Regional 911 System (Placeholder)	Existing
Vehicle/ EMS Vehicle AVL	position fix	Vehicle/ EMS Vehicle On-board Systems	Existing
Vehicle/ EMS Vehicle On-board Systems	emergency dispatch response	Center/ EMS Dispatch Centers (Placeholder)	Existing
Vehicle/ EMS Vehicle On-board Systems	emergency vehicle alert	Vehicle/ EMS Vehicle AVL	Existing
Vehicle/ EMS Vehicle On-board Systems	emergency vehicle tracking data	Center/ EMS Dispatch Centers (Placeholder)	Existing
Vehicle/ EMS Vehicle On-board Systems	incident status	Center/ EMS Dispatch Centers (Placeholder)	Existing
Vehicle/ EMS Vehicle On-board Systems	local signal preemption request	Field/ Pre-emption and Priority Systems	Existing
Vehicle/ Law Enforcement Vehicle AVL	position fix	Vehicle/ Law Enforcement Vehicle On-board Systems	Existing
Vehicle/ Law Enforcement Vehicle On-board Systems	emergency dispatch response	Center/ Law Enforcement Dispatch	Existing
Vehicle/ Law Enforcement Vehicle On-board Systems	emergency vehicle alert	Vehicle/ Law Enforcement Vehicle AVL	Existing
Vehicle/ Law Enforcement Vehicle On-board Systems	emergency vehicle tracking data	Center/ Law Enforcement Dispatch	Existing
Vehicle/ Law Enforcement Vehicle On-board Systems	incident status	Center/ Law Enforcement Dispatch	Existing

Source Element	Flow Name	Destination Element	Project Flow Status
Vehicle/ Law Enforcement Vehicle On-board Systems	local signal preemption request	Field/ Pre-emption and Priority Systems	Existing

11.6 Traveler Information Flows & Flow Diagram

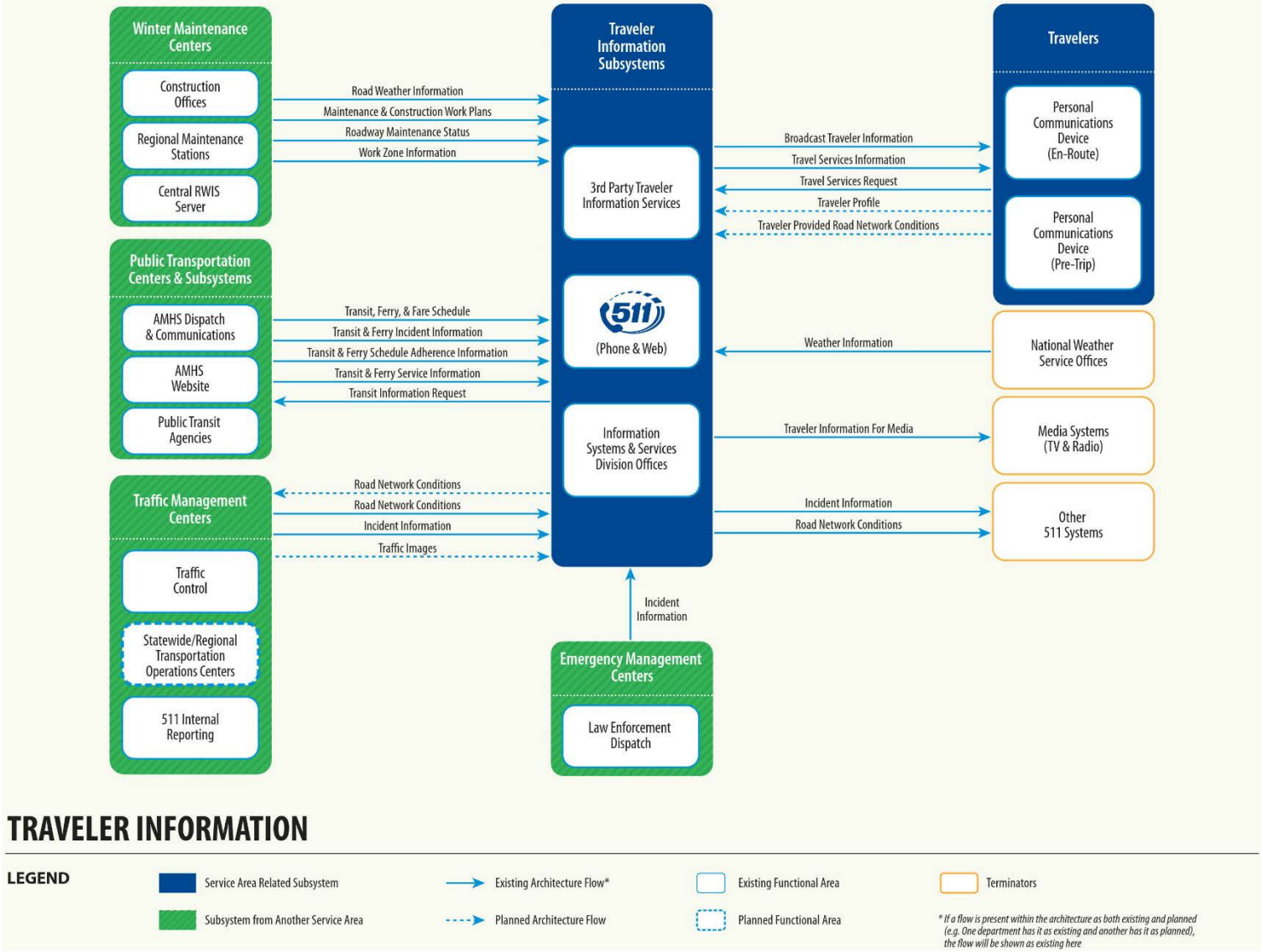


Figure 16. Large Traveler Information Flow Diagram

Table 27. Traveler Information Architecture Flows

Source Element	Flow Name	Destination Element	Project Flow Status
Center/ 3rd Party Traveler Information Services	incident information	Center/ 511 (phone and web)	Planned
Center/ 3rd Party Traveler Information Services	road network conditions	Center/ 511 (phone and web)	Planned
Center/ 3rd Party Traveler Information Services	road network conditions	Center/ 511 Internal Reporting	Planned
Center/ 3rd Party Traveler Information Services	road network conditions	Center/ Statewide/Regional Transportation Operations Centers	Planned
Center/ 511 (phone and web)	broadcast traveler information	Travelers/ Personal Communications/Computing Devices (pre-trip)	Existing
Center/ 511 (phone and web)	incident information	Terminator/ Other 511 Systems	Planned
Center/ 511 (phone and web)	road network conditions	Terminator/ Other 511 Systems	Planned
Center/ 511 (phone and web)	transit information request	Center/ Public Transit Agencies	Existing
Center/ 511 (phone and web)	travel services information	Travelers/ Personal Communications/Computing Devices (en-route)	Existing
Center/ 511 (phone and web)	travel services information	Travelers/ Personal Communications/Computing Devices (pre-trip)	Existing
Center/ 511 (phone and web)	traveler information for media	Terminator/ Media Systems (T.V. and Radio)	Existing
Center/ 511 Internal Reporting	incident information	Center/ 511 (phone and web)	Planned
Center/ 511 Internal Reporting	road network conditions	Center/ 511 (phone and web)	Planned
Center/ 511 Internal Reporting	road network conditions	Center/ Information Systems and Services Division	Existing
Center/ AMHS Dispatch and Communications	transit and fare schedules	Center/ 511 (phone and web)	Existing
Center/ AMHS Dispatch and Communications	transit and fare schedules	Center/ AMHS Website	Existing
Center/ AMHS Dispatch and Communications	transit incident information	Center/ 511 (phone and web)	Existing
Center/ AMHS Dispatch and Communications	transit incident information	Center/ AMHS Website	Existing
Center/ AMHS Dispatch and Communications	transit schedule adherence information	Center/ 511 (phone and web)	Existing
Center/ AMHS Dispatch and Communications	transit schedule adherence information	Center/ AMHS Website	Existing
Center/ AMHS Dispatch and Communications	transit service information	Center/ 511 (phone and web)	Existing
Center/ AMHS Dispatch and Communications	transit service information	Center/ AMHS Website	Existing

Source Element	Flow Name	Destination Element	Project Flow Status
Center/ AMHS Website	broadcast traveler information	Travelers/ Personal Communications/Computing Devices (pre-trip)	Existing
Center/ AMHS Website	travel services information	Travelers/ Personal Communications/Computing Devices (en-route)	Existing
Center/ AMHS Website	travel services information	Travelers/ Personal Communications/Computing Devices (pre-trip)	Existing
Center/ AMHS Website	traveler information for media	Terminator/ Media Systems (T.V. and Radio)	Existing
Center/ Central RWIS Server	road weather information	Center/ 511 Internal Reporting	Existing
Center/ Construction Offices	maint and constr work plans	Center/ 511 (phone and web)	Existing
Center/ Construction Offices	roadway maintenance status	Center/ 511 (phone and web)	Existing
Center/ Construction Offices	work zone information	Center/ 511 (phone and web)	Existing
Center/ Law Enforcement Dispatch	incident information	Center/ 511 (phone and web)	Existing
Center/ Public Transit Agencies	transit and fare schedules	Center/ 511 (phone and web)	Existing
Center/ Regional Maintenance Stations	maint and constr work plans	Center/ 511 (phone and web)	Existing
Center/ Regional Maintenance Stations	roadway maintenance status	Center/ 511 (phone and web)	Existing
Center/ Regional Maintenance Stations	work zone information	Center/ 511 (phone and web)	Existing
Center/ Statewide/Regional Transportation Operations Centers	incident information	Center/ 511 (phone and web)	Planned
Center/ Statewide/Regional Transportation Operations Centers	multimodal information	Center/ 511 (phone and web)	Planned
Center/ Statewide/Regional Transportation Operations Centers	road network conditions	Center/ 511 (phone and web)	Planned
Center/ Statewide/Regional Transportation Operations Centers	traffic images	Center/ 511 (phone and web)	Planned
Center/ Statewide/Regional Transportation Operations Centers	traffic images	Center/ Information Systems and Services Division	Planned
Center/ Traffic Control	incident information	Center/ 511 (phone and web)	Existing
Center/ Traffic Control	road network conditions	Center/ 511 (phone and web)	Existing
Center/ Traffic Control	road network conditions	Center/ Statewide/Regional Transportation Operations Centers	Planned
Center/ Traffic Control	traffic images	Center/ 3rd Party Traveler Information Services	Existing
Center/ Traffic Control	traffic images	Center/ 511 (phone and web)	Existing

Source Element	Flow Name	Destination Element	Project Flow Status
Terminator/ National Weather Service Offices	weather information	Center/ 511 (phone and web)	Existing
Travelers/ Personal Communications/Computing Devices (en-route)	.traveler provided road network conditions.	Center/ 3rd Party Traveler Information Services	Planned
Travelers/ Personal Communications/Computing Devices (en-route)	travel services request	Center/ 3rd Party Traveler Information Services	Planned
Travelers/ Personal Communications/Computing Devices (en-route)	travel services request	Center/ 511 (phone and web)	Existing
Travelers/ Personal Communications/Computing Devices (en-route)	travel services request	Center/ AMHS Website	Existing
Travelers/ Personal Communications/Computing Devices (en-route)	traveler profile	Center/ 511 (phone and web)	Planned
Travelers/ Personal Communications/Computing Devices (en-route)	traveler profile	Center/ AMHS Website	Existing
Travelers/ Personal Communications/Computing Devices (pre-trip)	.traveler provided road network conditions.	Center/ 3rd Party Traveler Information Services	Planned
Travelers/ Personal Communications/Computing Devices (pre-trip)	travel services request	Center/ 3rd Party Traveler Information Services	Planned
Travelers/ Personal Communications/Computing Devices (pre-trip)	travel services request	Center/ 511 (phone and web)	Existing
Travelers/ Personal Communications/Computing Devices (pre-trip)	travel services request	Center/ AMHS Website	Existing
Travelers/ Personal Communications/Computing Devices (pre-trip)	traveler profile	Center/ 511 (phone and web)	Planned
Travelers/ Personal Communications/Computing Devices (pre-trip)	traveler profile	Center/ AMHS Website	Existing

11.7 Data Archive Flows & Flow Diagram

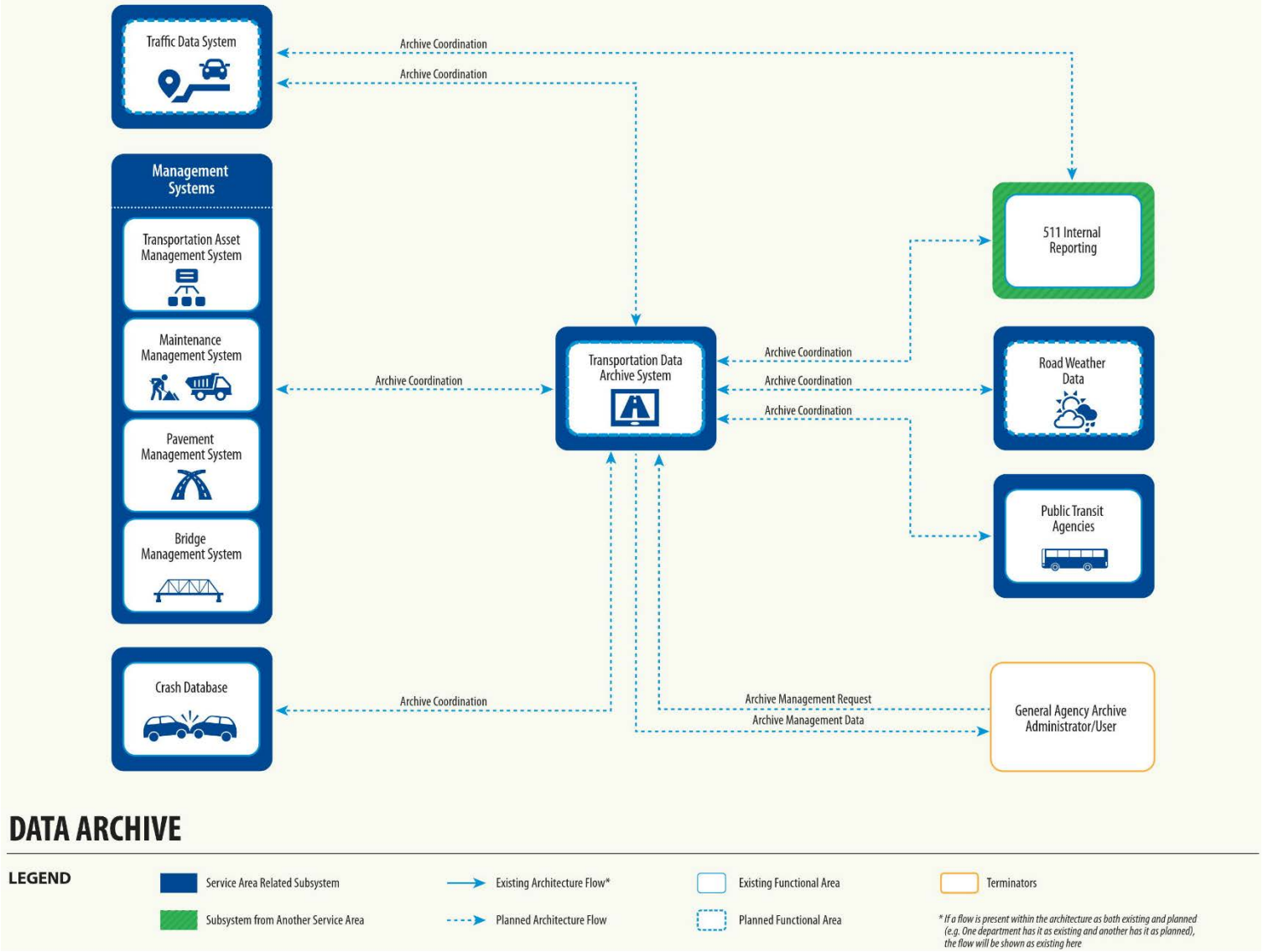


Figure 17. Large Data Archive Flow Diagram

Table 28. Data Archive Architecture Flows

Source Element	Flow Name	Destination Element	Project Flow Status
Center/ 511 Internal Reporting	archive coordination	Center/ Traffic Data System	Planned
Center/ 511 Internal Reporting	archive coordination	Center/ Transportation Data Archive System	Planned
Center/ Bridge Management System	archive coordination	Center/ Transportation Data Archive System	Planned
Center/ Crash Database	archive coordination	Center/ Law Enforcement Dispatch	Existing
Center/ Crash Database	archive coordination	Center/ Transportation Data Archive System	Planned
Center/ Law Enforcement Dispatch	archive coordination	Center/ Crash Database	Existing
Center/ Maintenance Management System	archive coordination	Center/ Traffic Data System	Planned
Center/ Maintenance Management System	archive coordination	Center/ Transportation Data Archive System	Planned
Center/ Pavement Management System	archive coordination	Center/ Transportation Data Archive System	Planned
Center/ Public Transit Agencies	archive coordination	Center/ Transportation Data Archive System	Planned
Center/ Road Weather Data	archive coordination	Center/ Transportation Data Archive System	Planned
Center/ Traffic Data System	archive coordination	Center/ 511 Internal Reporting	Planned
Center/ Traffic Data System	archive coordination	Center/ Maintenance Management System	Planned
Center/ Traffic Data System	archive coordination	Center/ Transportation Data Archive System	Planned
Center/ Transportation Asset Management System	archive coordination	Center/ Transportation Data Archive System	Planned
Center/ Transportation Data Archive System	archive coordination	Center/ 511 Internal Reporting	Planned
Center/ Transportation Data Archive System	archive coordination	Center/ Bridge Management System	Planned
Center/ Transportation Data Archive System	archive coordination	Center/ Crash Database	Planned
Center/ Transportation Data Archive System	archive coordination	Center/ Maintenance Management System	Planned
Center/ Transportation Data Archive System	archive coordination	Center/ Pavement Management System	Planned
Center/ Transportation Data Archive System	archive coordination	Center/ Public Transit Agencies	Planned
Center/ Transportation Data Archive System	archive coordination	Center/ Road Weather Data	Planned
Center/ Transportation Data Archive System	archive coordination	Center/ Traffic Data System	Planned
Center/ Transportation Data Archive System	archive coordination	Center/ Transportation Asset Management System	Planned
Center/ Transportation Data Archive System	archive management data	Terminator/ General Agency Archive Administrator or User	Planned
Terminator/ General Agency Archive Administrator or User	archive management requests	Center/ Transportation Data Archive System	Planned

12 Appendix E: Standards

This appendix exhibits the standards that are applicable to the AKIA update. Standards are technical specifications established by the consensus of manufacturers, regulators, and users that provide rules, guidelines, or characteristics for data interfaces. The standards found in these tables are from the AKIA update Turbo Architecture™ database.

12.1 Traffic Management Standards

Table 29. Traffic Management Standards

SDO	Document ID	Standard Title	Standard Type	User Defined	Source Element	Destination Element	Flow Name
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ 3rd Party Traveler Information Services	Center/ ADOTPF Regional Traffic Office	road network conditions
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ 3rd Party Traveler Information Services	Center/ Statewide/Regional Transportation Operations Centers	road network conditions
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ 3rd Party Traveler Information Services	Center/ Traffic Control	road network conditions
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ 511 Internal Reporting	Center/ Information Systems and Services Division	road network conditions
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ 511 Internal Reporting	Center/ Law Enforcement Dispatch	road network conditions
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ ADOTPF Regional Traffic Office	Center/ 3rd Party Traveler Information Services	device status
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ ADOTPF Regional Traffic Office	Center/ 3rd Party Traveler Information Services	road network conditions

SDO	Document ID	Standard Title	Standard Type	User Defined	Source Element	Destination Element	Flow Name
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ ADOTPF Regional Traffic Office	Center/ 511 (phone and web)	road network conditions
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ ADOTPF Regional Traffic Office	Center/ State Emergency Operations Center (SEOC)	road network conditions
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ Information Systems and Services Division	Center/ Statewide/Regional Transportation Operations Centers	road network conditions
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ Law Enforcement Dispatch	Center/ 3rd Party Traveler Information Services	road network conditions
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ Law Enforcement Dispatch	Center/ 511 (phone and web)	incident information
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ Law Enforcement Dispatch	Center/ State Emergency Operations Center (SEOC)	road network conditions
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ Statewide/Regional Transportation Operations Centers	Center/ Law Enforcement Dispatch	road network conditions
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ Statewide/Regional Transportation Operations Centers	Center/ State Emergency Operations Center (SEOC)	road network conditions
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ Traffic Control	Center/ 3rd Party Traveler Information Services	device status
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ Traffic Control	Center/ 3rd Party Traveler Information Services	road network conditions
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ Traffic Control	Center/ 511 (phone and web)	road network conditions

SDO	Document ID	Standard Title	Standard Type	User Defined	Source Element	Destination Element	Flow Name
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ Traffic Control	Center/ Statewide/Regional Transportation Operations Centers	road network conditions
AASHTO/ITE/NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No	Center/ ADOTPF Regional Traffic Office	Field/ Traffic Detectors	traffic sensor control
AASHTO/ITE/NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No	Center/ Law Enforcement Dispatch	Field/ Dynamic Message Signs	roadway information system data
AASHTO/ITE/NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No	Center/ Statewide/Regional Transportation Operations Centers	Field/ Cameras	video surveillance control
AASHTO/ITE/NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No	Center/ Traffic Control	Field/ Automatic Traffic Data Recorders	traffic sensor control
AASHTO/ITE/NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No	Center/ Traffic Control	Field/ Cameras	roadway information system data
AASHTO/ITE/NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No	Center/ Traffic Control	Field/ Pre-emption and Priority Systems	roadway information system data
AASHTO/ITE/NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No	Center/ Traffic Control	Field/ Traffic Detectors	signal control device configuration
AASHTO/ITE/NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No	Center/ Traffic Control	Field/ Traffic Detectors	signal system configuration
AASHTO/ITE/NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No	Center/ Traffic Control	Field/ Traffic Detectors	traffic sensor control
AASHTO/ITE/NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No	Center/ Traffic Control	Field/ Traffic Signal Controllers	signal control commands
AASHTO/ITE/NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No	Center/ Traffic Control	Field/ Traffic Signal Controllers	signal control device configuration
AASHTO/ITE/NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No	Center/ Traffic Control	Field/ Traffic Signal Controllers	signal control plans
AASHTO/ITE/NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No	Center/ Traffic Control	Field/ Traffic Signal Controllers	signal system configuration
AASHTO/ITE/NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No	Field/ Automatic Traffic Data Recorders	Center/ 511 Internal Reporting	traffic flow
AASHTO/ITE/NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No	Field/ Automatic Traffic Data Recorders	Center/ Traffic Control	traffic flow
AASHTO/ITE/NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No	Field/ Bluetooth and WiFi Sensors	Center/ 511 Internal Reporting	traffic probe data
AASHTO/ITE/NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No	Field/ Bluetooth and WiFi Sensors	Center/ ADOTPF Regional Traffic Office	traffic probe data

SDO	Document ID	Standard Title	Standard Type	User Defined	Source Element	Destination Element	Flow Name
AASHTO/ITE/NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No	Field/ Bluetooth and WiFi Sensors	Center/ Statewide/Regional Transportation Operations Centers	traffic probe data
AASHTO/ITE/NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No	Field/ Bluetooth and WiFi Sensors	Center/ Traffic Control	traffic probe data
AASHTO/ITE/NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No	Field/ Cameras	Center/ Statewide/Regional Transportation Operations Centers	traffic flow
AASHTO/ITE/NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No	Field/ Cameras	Center/ Statewide/Regional Transportation Operations Centers	traffic images
AASHTO/ITE/NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No	Field/ Cameras	Center/ Traffic Control	roadway information system status
AASHTO/ITE/NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No	Field/ Dynamic Message Signs	Center/ Law Enforcement Dispatch	roadway information system status
AASHTO/ITE/NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No	Field/ Pre-emption and Priority Systems	Center/ Traffic Control	roadway information system status
AASHTO/ITE/NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No	Field/ Traffic Detectors	Center/ 511 Internal Reporting	traffic flow
AASHTO/ITE/NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No	Field/ Traffic Detectors	Center/ ADOTPF Regional Traffic Office	traffic flow
AASHTO/ITE/NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No	Field/ Traffic Detectors	Center/ Statewide/Regional Transportation Operations Centers	traffic flow
AASHTO/ITE/NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No	Field/ Traffic Detectors	Center/ Traffic Control	right-of-way request notification
AASHTO/ITE/NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No	Field/ Traffic Detectors	Center/ Traffic Control	signal control status
AASHTO/ITE/NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No	Field/ Traffic Detectors	Center/ Traffic Control	signal fault data
AASHTO/ITE/NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No	Field/ Traffic Detectors	Center/ Traffic Control	traffic flow
AASHTO/ITE/NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No	Field/ Traffic Detectors	Field/ Traffic Signal Controllers	signal control data
AASHTO/ITE/NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No	Field/ Traffic Signal Controllers	Center/ Traffic Control	right-of-way request notification
AASHTO/ITE/NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No	Field/ Traffic Signal Controllers	Center/ Traffic Control	signal control status
AASHTO/ITE/NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No	Field/ Traffic Signal Controllers	Center/ Traffic Control	signal fault data

SDO	Document ID	Standard Title	Standard Type	User Defined	Source Element	Destination Element	Flow Name
AASHTO/ITE/NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No	Field/ Traffic Signal Controllers	Field/ Traffic Detectors	signal control data
AASHTO/ITE/NEMA	NTCIP 1202	Object Definitions for Actuated Traffic Signal Controller (ASC) Units	Message/Data	No	Center/ Traffic Control	Field/ Traffic Detectors	signal control device configuration
AASHTO/ITE/NEMA	NTCIP 1202	Object Definitions for Actuated Traffic Signal Controller (ASC) Units	Message/Data	No	Center/ Traffic Control	Field/ Traffic Detectors	signal system configuration
AASHTO/ITE/NEMA	NTCIP 1202	Object Definitions for Actuated Traffic Signal Controller (ASC) Units	Message/Data	No	Center/ Traffic Control	Field/ Traffic Signal Controllers	signal control commands
AASHTO/ITE/NEMA	NTCIP 1202	Object Definitions for Actuated Traffic Signal Controller (ASC) Units	Message/Data	No	Center/ Traffic Control	Field/ Traffic Signal Controllers	signal control device configuration
AASHTO/ITE/NEMA	NTCIP 1202	Object Definitions for Actuated Traffic Signal Controller (ASC) Units	Message/Data	No	Center/ Traffic Control	Field/ Traffic Signal Controllers	signal control plans
AASHTO/ITE/NEMA	NTCIP 1202	Object Definitions for Actuated Traffic Signal Controller (ASC) Units	Message/Data	No	Center/ Traffic Control	Field/ Traffic Signal Controllers	signal system configuration
AASHTO/ITE/NEMA	NTCIP 1202	Object Definitions for Actuated Traffic Signal Controller (ASC) Units	Message/Data	No	Field/ Automatic Traffic Data Recorders	Field/ Cameras	roadway equipment coordination
AASHTO/ITE/NEMA	NTCIP 1202	Object Definitions for Actuated Traffic Signal Controller (ASC) Units	Message/Data	No	Field/ Automatic Traffic Data Recorders	Field/ Traffic Detectors	roadway equipment coordination
AASHTO/ITE/NEMA	NTCIP 1202	Object Definitions for Actuated Traffic Signal Controller (ASC) Units	Message/Data	No	Field/ Automatic Traffic Data Recorders	Field/ Traffic Signal Controllers	roadway equipment coordination
AASHTO/ITE/NEMA	NTCIP 1202	Object Definitions for Actuated Traffic Signal Controller (ASC) Units	Message/Data	No	Field/ Cameras	Field/ Automatic Traffic Data Recorders	roadway equipment coordination
AASHTO/ITE/NEMA	NTCIP 1202	Object Definitions for Actuated Traffic Signal Controller (ASC) Units	Message/Data	No	Field/ Cameras	Field/ Traffic Detectors	roadway equipment coordination
AASHTO/ITE/NEMA	NTCIP 1202	Object Definitions for Actuated Traffic Signal Controller (ASC) Units	Message/Data	No	Field/ Cameras	Field/ Traffic Signal Controllers	roadway equipment coordination
AASHTO/ITE/NEMA	NTCIP 1202	Object Definitions for Actuated Traffic Signal Controller (ASC) Units	Message/Data	No	Field/ Traffic Detectors	Center/ Traffic Control	right-of-way request notification
AASHTO/ITE/NEMA	NTCIP 1202	Object Definitions for Actuated Traffic Signal Controller (ASC) Units	Message/Data	No	Field/ Traffic Detectors	Center/ Traffic Control	signal control status
AASHTO/ITE/NEMA	NTCIP 1202	Object Definitions for Actuated Traffic Signal Controller (ASC) Units	Message/Data	No	Field/ Traffic Detectors	Center/ Traffic Control	signal fault data
AASHTO/ITE/NEMA	NTCIP 1202	Object Definitions for Actuated Traffic Signal Controller (ASC) Units	Message/Data	No	Field/ Traffic Detectors	Field/ Automatic Traffic Data Recorders	roadway equipment coordination

SDO	Document ID	Standard Title	Standard Type	User Defined	Source Element	Destination Element	Flow Name
AASHTO/ITE/NEMA	NTCIP 1202	Object Definitions for Actuated Traffic Signal Controller (ASC) Units	Message/Data	No	Field/ Traffic Detectors	Field/ Cameras	roadway equipment coordination
AASHTO/ITE/NEMA	NTCIP 1202	Object Definitions for Actuated Traffic Signal Controller (ASC) Units	Message/Data	No	Field/ Traffic Detectors	Field/ Traffic Signal Controllers	roadway equipment coordination
AASHTO/ITE/NEMA	NTCIP 1202	Object Definitions for Actuated Traffic Signal Controller (ASC) Units	Message/Data	No	Field/ Traffic Detectors	Field/ Traffic Signal Controllers	signal control data
AASHTO/ITE/NEMA	NTCIP 1202	Object Definitions for Actuated Traffic Signal Controller (ASC) Units	Message/Data	No	Field/ Traffic Signal Controllers	Center/ Traffic Control	right-of-way request notification
AASHTO/ITE/NEMA	NTCIP 1202	Object Definitions for Actuated Traffic Signal Controller (ASC) Units	Message/Data	No	Field/ Traffic Signal Controllers	Center/ Traffic Control	signal control status
AASHTO/ITE/NEMA	NTCIP 1202	Object Definitions for Actuated Traffic Signal Controller (ASC) Units	Message/Data	No	Field/ Traffic Signal Controllers	Center/ Traffic Control	signal fault data
AASHTO/ITE/NEMA	NTCIP 1202	Object Definitions for Actuated Traffic Signal Controller (ASC) Units	Message/Data	No	Field/ Traffic Signal Controllers	Field/ Automatic Traffic Data Recorders	roadway equipment coordination
AASHTO/ITE/NEMA	NTCIP 1202	Object Definitions for Actuated Traffic Signal Controller (ASC) Units	Message/Data	No	Field/ Traffic Signal Controllers	Field/ Cameras	roadway equipment coordination
AASHTO/ITE/NEMA	NTCIP 1202	Object Definitions for Actuated Traffic Signal Controller (ASC) Units	Message/Data	No	Field/ Traffic Signal Controllers	Field/ Traffic Detectors	roadway equipment coordination
AASHTO/ITE/NEMA	NTCIP 1202	Object Definitions for Actuated Traffic Signal Controller (ASC) Units	Message/Data	No	Field/ Traffic Signal Controllers	Field/ Traffic Detectors	signal control data
AASHTO/ITE/NEMA	NTCIP 1203	Object Definitions for Dynamic Message Signs (DMS)	Message/Data	No	Center/ Law Enforcement Dispatch	Field/ Dynamic Message Signs	roadway information system data
AASHTO/ITE/NEMA	NTCIP 1203	Object Definitions for Dynamic Message Signs (DMS)	Message/Data	No	Center/ Traffic Control	Field/ Cameras	roadway information system data
AASHTO/ITE/NEMA	NTCIP 1203	Object Definitions for Dynamic Message Signs (DMS)	Message/Data	No	Center/ Traffic Control	Field/ Pre-emption and Priority Systems	roadway information system data
AASHTO/ITE/NEMA	NTCIP 1203	Object Definitions for Dynamic Message Signs (DMS)	Message/Data	No	Field/ Cameras	Center/ Traffic Control	roadway information system status
AASHTO/ITE/NEMA	NTCIP 1203	Object Definitions for Dynamic Message Signs (DMS)	Message/Data	No	Field/ Dynamic Message Signs	Center/ Law Enforcement Dispatch	roadway information system status
AASHTO/ITE/NEMA	NTCIP 1203	Object Definitions for Dynamic Message Signs (DMS)	Message/Data	No	Field/ Pre-emption and Priority Systems	Center/ Traffic Control	roadway information system status

SDO	Document ID	Standard Title	Standard Type	User Defined	Source Element	Destination Element	Flow Name
AASHTO/ITE/NEMA	NTCIP 1205	Object Definitions for Closed Circuit Television (CCTV) Camera Control	Message/Data	No	Center/ Statewide/Regional Transportation Operations Centers	Field/ Cameras	video surveillance control
AASHTO/ITE/NEMA	NTCIP 1205	Object Definitions for Closed Circuit Television (CCTV) Camera Control	Message/Data	No	Field/ Cameras	Center/ Statewide/Regional Transportation Operations Centers	traffic images
AASHTO/ITE/NEMA	NTCIP 1206	Object Definitions for Data Collection and Monitoring (DCM) Devices	Message/Data	No	Field/ Bluetooth and WiFi Sensors	Center/ 511 Internal Reporting	traffic probe data
AASHTO/ITE/NEMA	NTCIP 1206	Object Definitions for Data Collection and Monitoring (DCM) Devices	Message/Data	No	Field/ Bluetooth and WiFi Sensors	Center/ ADOTPF Regional Traffic Office	traffic probe data
AASHTO/ITE/NEMA	NTCIP 1206	Object Definitions for Data Collection and Monitoring (DCM) Devices	Message/Data	No	Field/ Bluetooth and WiFi Sensors	Center/ Statewide/Regional Transportation Operations Centers	traffic probe data
AASHTO/ITE/NEMA	NTCIP 1206	Object Definitions for Data Collection and Monitoring (DCM) Devices	Message/Data	No	Field/ Bluetooth and WiFi Sensors	Center/ Traffic Control	traffic probe data
AASHTO/ITE/NEMA	NTCIP 1208	Object Definitions for Closed Circuit Television (CCTV) Switching	Message/Data	No	Center/ Statewide/Regional Transportation Operations Centers	Field/ Cameras	video surveillance control
AASHTO/ITE/NEMA	NTCIP 1208	Object Definitions for Closed Circuit Television (CCTV) Switching	Message/Data	No	Field/ Cameras	Center/ Statewide/Regional Transportation Operations Centers	traffic images
AASHTO/ITE/NEMA	NTCIP 1209	Data Element Definitions for Transportation Sensor Systems (TSS)	Message/Data	No	Center/ ADOTPF Regional Traffic Office	Field/ Traffic Detectors	traffic sensor control
AASHTO/ITE/NEMA	NTCIP 1209	Data Element Definitions for Transportation Sensor Systems (TSS)	Message/Data	No	Center/ Traffic Control	Field/ Automatic Traffic Data Recorders	traffic sensor control
AASHTO/ITE/NEMA	NTCIP 1209	Data Element Definitions for Transportation Sensor Systems (TSS)	Message/Data	No	Center/ Traffic Control	Field/ Traffic Detectors	traffic sensor control
AASHTO/ITE/NEMA	NTCIP 1209	Data Element Definitions for Transportation Sensor Systems (TSS)	Message/Data	No	Field/ Automatic Traffic Data Recorders	Center/ 511 Internal Reporting	traffic flow
AASHTO/ITE/NEMA	NTCIP 1209	Data Element Definitions for Transportation Sensor Systems (TSS)	Message/Data	No	Field/ Automatic Traffic Data Recorders	Center/ Traffic Control	traffic flow
AASHTO/ITE/NEMA	NTCIP 1209	Data Element Definitions for Transportation Sensor Systems (TSS)	Message/Data	No	Field/ Cameras	Center/ Statewide/Regional Transportation Operations Centers	traffic flow
AASHTO/ITE/NEMA	NTCIP 1209	Data Element Definitions for Transportation Sensor Systems (TSS)	Message/Data	No	Field/ Traffic Detectors	Center/ 511 Internal Reporting	traffic flow
AASHTO/ITE/NEMA	NTCIP 1209	Data Element Definitions for Transportation Sensor Systems (TSS)	Message/Data	No	Field/ Traffic Detectors	Center/ ADOTPF Regional Traffic Office	traffic flow
AASHTO/ITE/NEMA	NTCIP 1209	Data Element Definitions for Transportation Sensor Systems (TSS)	Message/Data	No	Field/ Traffic Detectors	Center/ Statewide/Regional Transportation Operations Centers	traffic flow
AASHTO/ITE/NEMA	NTCIP 1209	Data Element Definitions for Transportation Sensor Systems (TSS)	Message/Data	No	Field/ Traffic Detectors	Center/ Traffic Control	traffic flow
AASHTO/ITE/NEMA	NTCIP 1210	Field Management Stations (FMS) - Part 1: Object Definitions for Signal System Masters	Message/Data	No	Center/ Traffic Control	Field/ Traffic Detectors	signal control device configuration

SDO	Document ID	Standard Title	Standard Type	User Defined	Source Element	Destination Element	Flow Name
AASHTO/ITE/NEMA	NTCIP 1210	Field Management Stations (FMS) - Part 1: Object Definitions for Signal System Masters	Message/Data	No	Center/ Traffic Control	Field/ Traffic Detectors	signal system configuration
AASHTO/ITE/NEMA	NTCIP 1210	Field Management Stations (FMS) - Part 1: Object Definitions for Signal System Masters	Message/Data	No	Center/ Traffic Control	Field/ Traffic Signal Controllers	signal control commands
AASHTO/ITE/NEMA	NTCIP 1210	Field Management Stations (FMS) - Part 1: Object Definitions for Signal System Masters	Message/Data	No	Center/ Traffic Control	Field/ Traffic Signal Controllers	signal control device configuration
AASHTO/ITE/NEMA	NTCIP 1210	Field Management Stations (FMS) - Part 1: Object Definitions for Signal System Masters	Message/Data	No	Center/ Traffic Control	Field/ Traffic Signal Controllers	signal control plans
AASHTO/ITE/NEMA	NTCIP 1210	Field Management Stations (FMS) - Part 1: Object Definitions for Signal System Masters	Message/Data	No	Center/ Traffic Control	Field/ Traffic Signal Controllers	signal system configuration
AASHTO/ITE/NEMA	NTCIP 1210	Field Management Stations (FMS) - Part 1: Object Definitions for Signal System Masters	Message/Data	No	Field/ Automatic Traffic Data Recorders	Field/ Cameras	roadway equipment coordination
AASHTO/ITE/NEMA	NTCIP 1210	Field Management Stations (FMS) - Part 1: Object Definitions for Signal System Masters	Message/Data	No	Field/ Automatic Traffic Data Recorders	Field/ Traffic Detectors	roadway equipment coordination
AASHTO/ITE/NEMA	NTCIP 1210	Field Management Stations (FMS) - Part 1: Object Definitions for Signal System Masters	Message/Data	No	Field/ Automatic Traffic Data Recorders	Field/ Traffic Signal Controllers	roadway equipment coordination
AASHTO/ITE/NEMA	NTCIP 1210	Field Management Stations (FMS) - Part 1: Object Definitions for Signal System Masters	Message/Data	No	Field/ Cameras	Field/ Automatic Traffic Data Recorders	roadway equipment coordination
AASHTO/ITE/NEMA	NTCIP 1210	Field Management Stations (FMS) - Part 1: Object Definitions for Signal System Masters	Message/Data	No	Field/ Cameras	Field/ Traffic Detectors	roadway equipment coordination
AASHTO/ITE/NEMA	NTCIP 1210	Field Management Stations (FMS) - Part 1: Object Definitions for Signal System Masters	Message/Data	No	Field/ Cameras	Field/ Traffic Signal Controllers	roadway equipment coordination
AASHTO/ITE/NEMA	NTCIP 1210	Field Management Stations (FMS) - Part 1: Object Definitions for Signal System Masters	Message/Data	No	Field/ Traffic Detectors	Center/ Traffic Control	signal control status
AASHTO/ITE/NEMA	NTCIP 1210	Field Management Stations (FMS) - Part 1: Object Definitions for Signal System Masters	Message/Data	No	Field/ Traffic Detectors	Center/ Traffic Control	signal fault data
AASHTO/ITE/NEMA	NTCIP 1210	Field Management Stations (FMS) - Part 1: Object Definitions for Signal System Masters	Message/Data	No	Field/ Traffic Detectors	Field/ Automatic Traffic Data Recorders	roadway equipment coordination
AASHTO/ITE/NEMA	NTCIP 1210	Field Management Stations (FMS) - Part 1: Object Definitions for Signal System Masters	Message/Data	No	Field/ Traffic Detectors	Field/ Cameras	roadway equipment coordination

SDO	Document ID	Standard Title	Standard Type	User Defined	Source Element	Destination Element	Flow Name
AASHTO/ITE/NEMA	NTCIP 1210	Field Management Stations (FMS) - Part 1: Object Definitions for Signal System Masters	Message/Data	No	Field/ Traffic Detectors	Field/ Traffic Signal Controllers	roadway equipment coordination
AASHTO/ITE/NEMA	NTCIP 1210	Field Management Stations (FMS) - Part 1: Object Definitions for Signal System Masters	Message/Data	No	Field/ Traffic Detectors	Field/ Traffic Signal Controllers	signal control data
AASHTO/ITE/NEMA	NTCIP 1210	Field Management Stations (FMS) - Part 1: Object Definitions for Signal System Masters	Message/Data	No	Field/ Traffic Signal Controllers	Center/ Traffic Control	signal control status
AASHTO/ITE/NEMA	NTCIP 1210	Field Management Stations (FMS) - Part 1: Object Definitions for Signal System Masters	Message/Data	No	Field/ Traffic Signal Controllers	Center/ Traffic Control	signal fault data
AASHTO/ITE/NEMA	NTCIP 1210	Field Management Stations (FMS) - Part 1: Object Definitions for Signal System Masters	Message/Data	No	Field/ Traffic Signal Controllers	Field/ Automatic Traffic Data Recorders	roadway equipment coordination
AASHTO/ITE/NEMA	NTCIP 1210	Field Management Stations (FMS) - Part 1: Object Definitions for Signal System Masters	Message/Data	No	Field/ Traffic Signal Controllers	Field/ Cameras	roadway equipment coordination
AASHTO/ITE/NEMA	NTCIP 1210	Field Management Stations (FMS) - Part 1: Object Definitions for Signal System Masters	Message/Data	No	Field/ Traffic Signal Controllers	Field/ Traffic Detectors	roadway equipment coordination
AASHTO/ITE/NEMA	NTCIP 1210	Field Management Stations (FMS) - Part 1: Object Definitions for Signal System Masters	Message/Data	No	Field/ Traffic Signal Controllers	Field/ Traffic Detectors	signal control data
AASHTO/ITE/NEMA	NTCIP 1211	Object Definitions for Signal Control and Prioritization (SCP)	Message/Data	No	Center/ Traffic Control	Field/ Traffic Detectors	signal control device configuration
AASHTO/ITE/NEMA	NTCIP 1211	Object Definitions for Signal Control and Prioritization (SCP)	Message/Data	No	Center/ Traffic Control	Field/ Traffic Detectors	signal system configuration
AASHTO/ITE/NEMA	NTCIP 1211	Object Definitions for Signal Control and Prioritization (SCP)	Message/Data	No	Center/ Traffic Control	Field/ Traffic Signal Controllers	signal control commands
AASHTO/ITE/NEMA	NTCIP 1211	Object Definitions for Signal Control and Prioritization (SCP)	Message/Data	No	Center/ Traffic Control	Field/ Traffic Signal Controllers	signal control device configuration
AASHTO/ITE/NEMA	NTCIP 1211	Object Definitions for Signal Control and Prioritization (SCP)	Message/Data	No	Center/ Traffic Control	Field/ Traffic Signal Controllers	signal control plans
AASHTO/ITE/NEMA	NTCIP 1211	Object Definitions for Signal Control and Prioritization (SCP)	Message/Data	No	Center/ Traffic Control	Field/ Traffic Signal Controllers	signal system configuration
AASHTO/ITE/NEMA	NTCIP 1211	Object Definitions for Signal Control and Prioritization (SCP)	Message/Data	No	Field/ Traffic Detectors	Center/ Traffic Control	right-of-way request notification
AASHTO/ITE/NEMA	NTCIP 1211	Object Definitions for Signal Control and Prioritization (SCP)	Message/Data	No	Field/ Traffic Detectors	Field/ Traffic Signal Controllers	signal control data
AASHTO/ITE/NEMA	NTCIP 1211	Object Definitions for Signal Control and Prioritization (SCP)	Message/Data	No	Field/ Traffic Signal Controllers	Center/ Traffic Control	right-of-way request notification

SDO	Document ID	Standard Title	Standard Type	User Defined	Source Element	Destination Element	Flow Name
AASHTO/ITE/NEMA	NTCIP 1211	Object Definitions for Signal Control and Prioritization (SCP)	Message/Data	No	Field/ Traffic Signal Controllers	Field/ Traffic Detectors	signal control data
AASHTO/ITE/NEMA	NTCIP 1213	Object Definitions for Electrical and Lighting Management Systems (ELMS)	Message/Data	No	Center/ Traffic Control	Field/ Roadway Lighting System Control	lighting system control data
AASHTO/ITE/NEMA	NTCIP 1213	Object Definitions for Electrical and Lighting Management Systems (ELMS)	Message/Data	No	Field/ Roadway Lighting System Control	Center/ Traffic Control	lighting system status
AASHTO/ITE/NEMA	NTCIP 1214	Object Definitions for Conflict Monitor Units (CMU)	Message/Data	No	Center/ Traffic Control	Field/ Traffic Detectors	signal control device configuration
AASHTO/ITE/NEMA	NTCIP 1214	Object Definitions for Conflict Monitor Units (CMU)	Message/Data	No	Center/ Traffic Control	Field/ Traffic Detectors	signal system configuration
AASHTO/ITE/NEMA	NTCIP 1214	Object Definitions for Conflict Monitor Units (CMU)	Message/Data	No	Center/ Traffic Control	Field/ Traffic Signal Controllers	signal control commands
AASHTO/ITE/NEMA	NTCIP 1214	Object Definitions for Conflict Monitor Units (CMU)	Message/Data	No	Center/ Traffic Control	Field/ Traffic Signal Controllers	signal control device configuration
AASHTO/ITE/NEMA	NTCIP 1214	Object Definitions for Conflict Monitor Units (CMU)	Message/Data	No	Center/ Traffic Control	Field/ Traffic Signal Controllers	signal control plans
AASHTO/ITE/NEMA	NTCIP 1214	Object Definitions for Conflict Monitor Units (CMU)	Message/Data	No	Center/ Traffic Control	Field/ Traffic Signal Controllers	signal system configuration
AASHTO/ITE/NEMA	NTCIP 1214	Object Definitions for Conflict Monitor Units (CMU)	Message/Data	No	Field/ Automatic Traffic Data Recorders	Field/ Cameras	roadway equipment coordination
AASHTO/ITE/NEMA	NTCIP 1214	Object Definitions for Conflict Monitor Units (CMU)	Message/Data	No	Field/ Automatic Traffic Data Recorders	Field/ Traffic Detectors	roadway equipment coordination
AASHTO/ITE/NEMA	NTCIP 1214	Object Definitions for Conflict Monitor Units (CMU)	Message/Data	No	Field/ Automatic Traffic Data Recorders	Field/ Traffic Signal Controllers	roadway equipment coordination
AASHTO/ITE/NEMA	NTCIP 1214	Object Definitions for Conflict Monitor Units (CMU)	Message/Data	No	Field/ Cameras	Field/ Automatic Traffic Data Recorders	roadway equipment coordination
AASHTO/ITE/NEMA	NTCIP 1214	Object Definitions for Conflict Monitor Units (CMU)	Message/Data	No	Field/ Cameras	Field/ Traffic Detectors	roadway equipment coordination
AASHTO/ITE/NEMA	NTCIP 1214	Object Definitions for Conflict Monitor Units (CMU)	Message/Data	No	Field/ Cameras	Field/ Traffic Signal Controllers	roadway equipment coordination
AASHTO/ITE/NEMA	NTCIP 1214	Object Definitions for Conflict Monitor Units (CMU)	Message/Data	No	Field/ Traffic Detectors	Center/ Traffic Control	right-of-way request notification
AASHTO/ITE/NEMA	NTCIP 1214	Object Definitions for Conflict Monitor Units (CMU)	Message/Data	No	Field/ Traffic Detectors	Center/ Traffic Control	signal control status
AASHTO/ITE/NEMA	NTCIP 1214	Object Definitions for Conflict Monitor Units (CMU)	Message/Data	No	Field/ Traffic Detectors	Center/ Traffic Control	signal fault data

SDO	Document ID	Standard Title	Standard Type	User Defined	Source Element	Destination Element	Flow Name
AASHTO/ITE/NEMA	NTCIP 1214	Object Definitions for Conflict Monitor Units (CMU)	Message/Data	No	Field/ Traffic Detectors	Field/ Automatic Traffic Data Recorders	roadway equipment coordination
AASHTO/ITE/NEMA	NTCIP 1214	Object Definitions for Conflict Monitor Units (CMU)	Message/Data	No	Field/ Traffic Detectors	Field/ Cameras	roadway equipment coordination
AASHTO/ITE/NEMA	NTCIP 1214	Object Definitions for Conflict Monitor Units (CMU)	Message/Data	No	Field/ Traffic Detectors	Field/ Traffic Signal Controllers	roadway equipment coordination
AASHTO/ITE/NEMA	NTCIP 1214	Object Definitions for Conflict Monitor Units (CMU)	Message/Data	No	Field/ Traffic Detectors	Field/ Traffic Signal Controllers	signal control data
AASHTO/ITE/NEMA	NTCIP 1214	Object Definitions for Conflict Monitor Units (CMU)	Message/Data	No	Field/ Traffic Signal Controllers	Center/ Traffic Control	right-of-way request notification
AASHTO/ITE/NEMA	NTCIP 1214	Object Definitions for Conflict Monitor Units (CMU)	Message/Data	No	Field/ Traffic Signal Controllers	Center/ Traffic Control	signal control status
AASHTO/ITE/NEMA	NTCIP 1214	Object Definitions for Conflict Monitor Units (CMU)	Message/Data	No	Field/ Traffic Signal Controllers	Center/ Traffic Control	signal fault data
AASHTO/ITE/NEMA	NTCIP 1214	Object Definitions for Conflict Monitor Units (CMU)	Message/Data	No	Field/ Traffic Signal Controllers	Field/ Automatic Traffic Data Recorders	roadway equipment coordination
AASHTO/ITE/NEMA	NTCIP 1214	Object Definitions for Conflict Monitor Units (CMU)	Message/Data	No	Field/ Traffic Signal Controllers	Field/ Cameras	roadway equipment coordination
AASHTO/ITE/NEMA	NTCIP 1214	Object Definitions for Conflict Monitor Units (CMU)	Message/Data	No	Field/ Traffic Signal Controllers	Field/ Traffic Detectors	roadway equipment coordination
AASHTO/ITE/NEMA	NTCIP 1214	Object Definitions for Conflict Monitor Units (CMU)	Message/Data	No	Field/ Traffic Signal Controllers	Field/ Traffic Detectors	signal control data
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ 3rd Party Traveler Information Services	Center/ ADOTPF Regional Traffic Office	road network conditions
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ 3rd Party Traveler Information Services	Center/ Statewide/Regional Transportation Operations Centers	road network conditions
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ 3rd Party Traveler Information Services	Center/ Traffic Control	road network conditions
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ 511 Internal Reporting	Center/ Information Systems and Services Division	road network conditions
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ 511 Internal Reporting	Center/ Law Enforcement Dispatch	road network conditions
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ ADOTPF Regional Traffic Office	Center/ 3rd Party Traveler Information Services	device status
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ ADOTPF Regional Traffic Office	Center/ 3rd Party Traveler Information Services	road network conditions

SDO	Document ID	Standard Title	Standard Type	User Defined	Source Element	Destination Element	Flow Name
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ ADOTPF Regional Traffic Office	Center/ 511 (phone and web)	road network conditions
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ ADOTPF Regional Traffic Office	Center/ State Emergency Operations Center (SEOC)	road network conditions
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Information Systems and Services Division	Center/ Statewide/Regional Transportation Operations Centers	road network conditions
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ 3rd Party Traveler Information Services	road network conditions
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ 511 (phone and web)	incident information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ State Emergency Operations Center (SEOC)	road network conditions
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ State Emergency Operations Center (SEOC)	Center/ 3rd Party Traveler Information Services	incident information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ State Emergency Operations Center (SEOC)	Center/ 511 (phone and web)	incident information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Statewide/Regional Transportation Operations Centers	Center/ 511 (phone and web)	traffic images
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Statewide/Regional Transportation Operations Centers	Center/ Law Enforcement Dispatch	road network conditions
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Statewide/Regional Transportation Operations Centers	Center/ State Emergency Operations Center (SEOC)	road network conditions
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Traffic Control	Center/ 3rd Party Traveler Information Services	device status
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Traffic Control	Center/ 3rd Party Traveler Information Services	road network conditions
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Traffic Control	Center/ 511 (phone and web)	road network conditions
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Traffic Control	Center/ Statewide/Regional Transportation Operations Centers	road network conditions
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Field/ Automatic Traffic Data Recorders	Field/ Cameras	roadway equipment coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Field/ Automatic Traffic Data Recorders	Field/ Traffic Detectors	roadway equipment coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Field/ Automatic Traffic Data Recorders	Field/ Traffic Signal Controllers	roadway equipment coordination

SDO	Document ID	Standard Title	Standard Type	User Defined	Source Element	Destination Element	Flow Name
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Field/ Cameras	Field/ Automatic Traffic Data Recorders	roadway equipment coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Field/ Cameras	Field/ Traffic Detectors	roadway equipment coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Field/ Cameras	Field/ Traffic Signal Controllers	roadway equipment coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Field/ Traffic Detectors	Field/ Automatic Traffic Data Recorders	roadway equipment coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Field/ Traffic Detectors	Field/ Cameras	roadway equipment coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Field/ Traffic Detectors	Field/ Traffic Signal Controllers	roadway equipment coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Field/ Traffic Signal Controllers	Field/ Automatic Traffic Data Recorders	roadway equipment coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Field/ Traffic Signal Controllers	Field/ Cameras	roadway equipment coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Field/ Traffic Signal Controllers	Field/ Traffic Detectors	roadway equipment coordination
AASHTO/ITE/NEMA	NTCIP C2F	NTCIP Center-to-Field Standards Group	Group	No	Center/ ADOTPF Regional Traffic Office	Field/ Traffic Detectors	traffic sensor control
AASHTO/ITE/NEMA	NTCIP C2F	NTCIP Center-to-Field Standards Group	Group	No	Center/ Law Enforcement Dispatch	Field/ Dynamic Message Signs	roadway information system data
AASHTO/ITE/NEMA	NTCIP C2F	NTCIP Center-to-Field Standards Group	Group	No	Center/ Statewide/Regional Transportation Operations Centers	Field/ Cameras	video surveillance control
AASHTO/ITE/NEMA	NTCIP C2F	NTCIP Center-to-Field Standards Group	Group	No	Center/ Traffic Control	Field/ Automatic Traffic Data Recorders	traffic sensor control
AASHTO/ITE/NEMA	NTCIP C2F	NTCIP Center-to-Field Standards Group	Group	No	Center/ Traffic Control	Field/ Cameras	roadway information system data
AASHTO/ITE/NEMA	NTCIP C2F	NTCIP Center-to-Field Standards Group	Group	No	Center/ Traffic Control	Field/ Pre-emption and Priority Systems	roadway information system data
AASHTO/ITE/NEMA	NTCIP C2F	NTCIP Center-to-Field Standards Group	Group	No	Center/ Traffic Control	Field/ Roadway Lighting System Control	lighting system control data

SDO	Document ID	Standard Title	Standard Type	User Defined	Source Element	Destination Element	Flow Name
AASHTO/ITE/NEMA	NTCIP C2F	NTCIP Center-to-Field Standards Group	Group	No	Center/ Traffic Control	Field/ Traffic Detectors	signal control device configuration
AASHTO/ITE/NEMA	NTCIP C2F	NTCIP Center-to-Field Standards Group	Group	No	Center/ Traffic Control	Field/ Traffic Detectors	signal system configuration
AASHTO/ITE/NEMA	NTCIP C2F	NTCIP Center-to-Field Standards Group	Group	No	Center/ Traffic Control	Field/ Traffic Detectors	traffic sensor control
AASHTO/ITE/NEMA	NTCIP C2F	NTCIP Center-to-Field Standards Group	Group	No	Center/ Traffic Control	Field/ Traffic Signal Controllers	signal control commands
AASHTO/ITE/NEMA	NTCIP C2F	NTCIP Center-to-Field Standards Group	Group	No	Center/ Traffic Control	Field/ Traffic Signal Controllers	signal control device configuration
AASHTO/ITE/NEMA	NTCIP C2F	NTCIP Center-to-Field Standards Group	Group	No	Center/ Traffic Control	Field/ Traffic Signal Controllers	signal control plans
AASHTO/ITE/NEMA	NTCIP C2F	NTCIP Center-to-Field Standards Group	Group	No	Center/ Traffic Control	Field/ Traffic Signal Controllers	signal system configuration
AASHTO/ITE/NEMA	NTCIP C2F	NTCIP Center-to-Field Standards Group	Group	No	Field/ Automatic Traffic Data Recorders	Center/ 511 Internal Reporting	traffic flow
AASHTO/ITE/NEMA	NTCIP C2F	NTCIP Center-to-Field Standards Group	Group	No	Field/ Automatic Traffic Data Recorders	Center/ Traffic Control	traffic flow
AASHTO/ITE/NEMA	NTCIP C2F	NTCIP Center-to-Field Standards Group	Group	No	Field/ Bluetooth and WiFi Sensors	Center/ 511 Internal Reporting	traffic probe data
AASHTO/ITE/NEMA	NTCIP C2F	NTCIP Center-to-Field Standards Group	Group	No	Field/ Bluetooth and WiFi Sensors	Center/ ADOTPF Regional Traffic Office	traffic probe data
AASHTO/ITE/NEMA	NTCIP C2F	NTCIP Center-to-Field Standards Group	Group	No	Field/ Bluetooth and WiFi Sensors	Center/ Statewide/Regional Transportation Operations Centers	traffic probe data
AASHTO/ITE/NEMA	NTCIP C2F	NTCIP Center-to-Field Standards Group	Group	No	Field/ Bluetooth and WiFi Sensors	Center/ Traffic Control	traffic probe data
AASHTO/ITE/NEMA	NTCIP C2F	NTCIP Center-to-Field Standards Group	Group	No	Field/ Cameras	Center/ Statewide/Regional Transportation Operations Centers	traffic flow
AASHTO/ITE/NEMA	NTCIP C2F	NTCIP Center-to-Field Standards Group	Group	No	Field/ Cameras	Center/ Statewide/Regional Transportation Operations Centers	traffic images
AASHTO/ITE/NEMA	NTCIP C2F	NTCIP Center-to-Field Standards Group	Group	No	Field/ Cameras	Center/ Traffic Control	roadway information system status
AASHTO/ITE/NEMA	NTCIP C2F	NTCIP Center-to-Field Standards Group	Group	No	Field/ Dynamic Message Signs	Center/ Law Enforcement Dispatch	roadway information system status
AASHTO/ITE/NEMA	NTCIP C2F	NTCIP Center-to-Field Standards Group	Group	No	Field/ Pre-emption and Priority Systems	Center/ Traffic Control	roadway information system status
AASHTO/ITE/NEMA	NTCIP C2F	NTCIP Center-to-Field Standards Group	Group	No	Field/ Roadway Lighting System Control	Center/ Traffic Control	lighting system status

SDO	Document ID	Standard Title	Standard Type	User Defined	Source Element	Destination Element	Flow Name
AASHTO/ITE/NEMA	NTCIP C2F	NTCIP Center-to-Field Standards Group	Group	No	Field/ Traffic Detectors	Center/ 511 Internal Reporting	traffic flow
AASHTO/ITE/NEMA	NTCIP C2F	NTCIP Center-to-Field Standards Group	Group	No	Field/ Traffic Detectors	Center/ ADOTPF Regional Traffic Office	traffic flow
AASHTO/ITE/NEMA	NTCIP C2F	NTCIP Center-to-Field Standards Group	Group	No	Field/ Traffic Detectors	Center/ Statewide/Regional Transportation Operations Centers	traffic flow
AASHTO/ITE/NEMA	NTCIP C2F	NTCIP Center-to-Field Standards Group	Group	No	Field/ Traffic Detectors	Center/ Traffic Control	right-of-way request notification
AASHTO/ITE/NEMA	NTCIP C2F	NTCIP Center-to-Field Standards Group	Group	No	Field/ Traffic Detectors	Center/ Traffic Control	signal control status
AASHTO/ITE/NEMA	NTCIP C2F	NTCIP Center-to-Field Standards Group	Group	No	Field/ Traffic Detectors	Center/ Traffic Control	signal fault data
AASHTO/ITE/NEMA	NTCIP C2F	NTCIP Center-to-Field Standards Group	Group	No	Field/ Traffic Detectors	Center/ Traffic Control	traffic flow
AASHTO/ITE/NEMA	NTCIP C2F	NTCIP Center-to-Field Standards Group	Group	No	Field/ Traffic Detectors	Field/ Traffic Signal Controllers	signal control data
AASHTO/ITE/NEMA	NTCIP C2F	NTCIP Center-to-Field Standards Group	Group	No	Field/ Traffic Signal Controllers	Center/ Traffic Control	right-of-way request notification
AASHTO/ITE/NEMA	NTCIP C2F	NTCIP Center-to-Field Standards Group	Group	No	Field/ Traffic Signal Controllers	Center/ Traffic Control	signal control status
AASHTO/ITE/NEMA	NTCIP C2F	NTCIP Center-to-Field Standards Group	Group	No	Field/ Traffic Signal Controllers	Center/ Traffic Control	signal fault data
AASHTO/ITE/NEMA	NTCIP C2F	NTCIP Center-to-Field Standards Group	Group	No	Field/ Traffic Signal Controllers	Field/ Traffic Detectors	signal control data
ASTM	DSRC 915MHz	Dedicated Short Range Communication at 915 MHz Standards Group	Group	No	Vehicle/ General Public Vehicle	Field/ Bluetooth and WiFi Sensors	traffic probe data
ASTM/IEEE/SAE	DSRC 5GHz	Dedicated Short Range Communication at 5.9 GHz Standards Group	Group	No	Vehicle/ General Public Vehicle	Field/ Bluetooth and WiFi Sensors	traffic probe data
IEEE	IEEE 1455-1999	Standard for Message Sets for Vehicle/Roadside Communications	Message/Data	No	Vehicle/ General Public Vehicle	Field/ Bluetooth and WiFi Sensors	traffic probe data
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ 511 (phone and web)	incident information
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ State Emergency Operations Center (SEOC)	Center/ 3rd Party Traveler Information Services	incident information
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ State Emergency Operations Center (SEOC)	Center/ 511 (phone and web)	incident information
SAE	ATIS General Use	Advanced Traveler Information Systems (ATIS) General Use Standards Group	Group	No	Center/ 3rd Party Traveler Information Services	Center/ Statewide/Regional Transportation Operations Centers	road network conditions
SAE	SAE J2735	Dedicated Short Range Communications (DSRC) Message Set Dictionary	Message/Data	No	Vehicle/ General Public Vehicle	Field/ Bluetooth and WiFi Sensors	traffic probe data

12.2 Winter Maintenance Standards

Table 30. Winter Maintenance Standards

SDO	Document ID	Standard Title	Standard Type	User Defined	Source Element	Destination Element	Flow Name
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ Central RWIS Server	Center/ Regional Maintenance Stations	environmental conditions data
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ Central RWIS Server	Center/ Regional Maintenance Stations	road weather information
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ Maintenance Decision Support System	Center/ 511 Internal Reporting	environmental conditions data
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ Regional Maintenance Stations	Center/ Bridge Design Section Offices	field equipment status
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ Regional Maintenance Stations	Center/ Bridge Scour System	field equipment status
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ Regional Maintenance Stations	Center/ Maintenance Management Systems	field equipment status
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ Road Weather Data	Center/ Construction Offices	road weather information
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ Road Weather Data	Center/ Regional Maintenance Stations	environmental conditions data
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ Road Weather Data	Center/ Regional Maintenance Stations	road weather information

SDO	Document ID	Standard Title	Standard Type	User Defined	Source Element	Destination Element	Flow Name
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ Road Weather Data	Terminator/ National Center for Atmospheric Research Database	road weather information
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ Road Weather Data	Terminator/ National Weather Service Offices	road weather information
AASHTO/ITE/NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No	Center/ Central RWIS Server	Field/ Environmental Sensor Stations (ESS)	environmental sensors control
AASHTO/ITE/NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No	Center/ Regional Maintenance Stations	Field/ Automated Bridge Anti-icing	roadway treatment system control
AASHTO/ITE/NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No	Field/ Automated Bridge Anti-icing	Center/ Bridge Design Section Offices	field device status
AASHTO/ITE/NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No	Field/ Automated Bridge Anti-icing	Center/ Maintenance Management Systems	field device status
AASHTO/ITE/NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No	Field/ Automated Bridge Anti-icing	Center/ Regional Maintenance Stations	field device status
AASHTO/ITE/NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No	Field/ Automated Bridge Anti-icing	Center/ Regional Maintenance Stations	roadway treatment system status
AASHTO/ITE/NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No	Field/ Bridge Scour Sensors	Center/ Bridge Design Section Offices	field device status
AASHTO/ITE/NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No	Field/ Bridge Scour Sensors	Center/ Bridge Scour System	field device status
AASHTO/ITE/NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No	Field/ Bridge Scour Sensors	Center/ Regional Maintenance Stations	field device status
AASHTO/ITE/NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No	Field/ Environmental Sensor Stations (ESS)	Center/ Central RWIS Server	environmental sensor data
AASHTO/ITE/NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No	Field/ Environmental Sensor Stations (ESS)	Center/ Central RWIS Server	field device status
AASHTO/ITE/NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No	Field/ Environmental Sensor Stations (ESS)	Center/ Central RWIS Server	traffic images
AASHTO/ITE/NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No	Field/ Environmental Sensor Stations (ESS)	Center/ Maintenance Management Systems	field device status
AASHTO/ITE/NEMA	NTCIP 1204	Object Definitions for Environmental Sensor Stations (ESS)	Message/Data	No	Center/ Central RWIS Server	Field/ Environmental Sensor Stations (ESS)	environmental sensors control
AASHTO/ITE/NEMA	NTCIP 1204	Object Definitions for Environmental Sensor Stations (ESS)	Message/Data	No	Center/ Regional Maintenance Stations	Field/ Automated Bridge Anti-icing	roadway treatment system control
AASHTO/ITE/NEMA	NTCIP 1204	Object Definitions for Environmental Sensor Stations (ESS)	Message/Data	No	Field/ Automated Bridge Anti-icing	Center/ Regional Maintenance Stations	roadway treatment system status
AASHTO/ITE/NEMA	NTCIP 1204	Object Definitions for Environmental Sensor Stations (ESS)	Message/Data	No	Field/ Environmental Sensor Stations (ESS)	Center/ Central RWIS Server	environmental sensor data
AASHTO/ITE/NEMA	NTCIP 1205	Object Definitions for Closed Circuit Television (CCTV) Camera Control	Message/Data	No	Field/ Environmental Sensor Stations (ESS)	Center/ Central RWIS Server	traffic images
AASHTO/ITE/NEMA	NTCIP 1208	Object Definitions for Closed Circuit Television (CCTV) Switching	Message/Data	No	Field/ Environmental Sensor Stations (ESS)	Center/ Central RWIS Server	traffic images

SDO	Document ID	Standard Title	Standard Type	User Defined	Source Element	Destination Element	Flow Name
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ AMHS Dispatch and Communications	Center/ Regional Maintenance Stations	work plan feedback
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Bridge Design Section Offices	Center/ Maintenance Management Systems	maint and constr administrative request
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Bridge Design Section Offices	Center/ Maintenance Management Systems	maint and constr work performance
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Bridge Design Section Offices	Center/ Regional Maintenance Stations	equipment maintenance status
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Bridge Scour System	Center/ Maintenance Management Systems	maint and constr administrative request
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Bridge Scour System	Center/ Maintenance Management Systems	maint and constr work performance
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Bridge Scour System	Center/ Regional Maintenance Stations	equipment maintenance status
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Central RWIS Server	Center/ Regional Maintenance Stations	environmental conditions data
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Central RWIS Server	Center/ Regional Maintenance Stations	road weather information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Construction Offices	Center/ 511 Internal Reporting	current asset restrictions
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Construction Offices	Center/ 511 Internal Reporting	maint and constr work plans
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Construction Offices	Center/ Customs and Border Protection	current asset restrictions
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Construction Offices	Center/ Maintenance Management Systems	asset status update
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Construction Offices	Center/ Regional Maintenance Stations	maint and constr resource coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Construction Offices	Center/ Regional Maintenance Stations	maint and constr work plans
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Construction Offices	Center/ Regional Maintenance Stations	work plan coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ Regional Maintenance Stations	maint and constr resource request
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ Regional Maintenance Stations	security field equipment status
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Maintenance Decision Support System	Center/ 511 Internal Reporting	environmental conditions data
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Maintenance Management Systems	Center/ 511 Internal Reporting	current asset restrictions
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Maintenance Management Systems	Center/ Bridge Design Section Offices	maint and constr administrative information

SDO	Document ID	Standard Title	Standard Type	User Defined	Source Element	Destination Element	Flow Name
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Maintenance Management Systems	Center/ Customs and Border Protection	current asset restrictions
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Maintenance Management Systems	Center/ Regional Maintenance Stations	asset inventory
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Maintenance Management Systems	Center/ Regional Maintenance Stations	asset restrictions
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Maintenance Management Systems	Center/ Regional Maintenance Stations	equipment maintenance status
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Maintenance Management Systems	Center/ Regional Maintenance Stations	maint and constr administrative information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Maintenance Management Systems	Center/ Regional Maintenance Stations	maintenance and repair needs
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Maintenance Management Systems	Center/ Statewide/Regional Transportation Operations Centers	current asset restrictions
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Regional Maintenance Stations	Center/ 511 Internal Reporting	current asset restrictions
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Regional Maintenance Stations	Center/ 511 Internal Reporting	maint and constr work plans
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Regional Maintenance Stations	Center/ 511 Internal Reporting	roadway maintenance status
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Regional Maintenance Stations	Center/ AMHS Dispatch and Communications	maint and constr work plans
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Regional Maintenance Stations	Center/ Bridge Design Section Offices	field equipment status
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Regional Maintenance Stations	Center/ Bridge Scour System	field equipment status
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Regional Maintenance Stations	Center/ Construction Offices	maint and constr resource coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Regional Maintenance Stations	Center/ Construction Offices	work plan coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Regional Maintenance Stations	Center/ Customs and Border Protection	current asset restrictions
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Regional Maintenance Stations	Center/ Law Enforcement Dispatch	maint and constr resource response
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Regional Maintenance Stations	Center/ Law Enforcement Dispatch	roadway maintenance status
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Regional Maintenance Stations	Center/ Maintenance Decision Support System	roadway maintenance status
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Regional Maintenance Stations	Center/ Maintenance Management Systems	field equipment status
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Regional Maintenance Stations	Center/ Maintenance Management Systems	maint and constr administrative request

SDO	Document ID	Standard Title	Standard Type	User Defined	Source Element	Destination Element	Flow Name
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Regional Maintenance Stations	Center/ Maintenance Management Systems	maint and constr work performance
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Regional Maintenance Stations	Center/ Maintenance Management Systems	roadway maintenance status
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Regional Maintenance Stations	Center/ Maintenance Management Systems	work plan coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Regional Maintenance Stations	Center/ Statewide/Regional Transportation Operations Centers	current asset restrictions
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Regional Maintenance Stations	Center/ Statewide/Regional Transportation Operations Centers	maint and constr work plans
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Regional Maintenance Stations	Terminator/ ARRC	maint and constr work plans
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Road Weather Data	Center/ Construction Offices	road weather information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Road Weather Data	Center/ Regional Maintenance Stations	environmental conditions data
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Road Weather Data	Center/ Regional Maintenance Stations	road weather information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Road Weather Data	Terminator/ National Center for Atmospheric Research Database	road weather information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Road Weather Data	Terminator/ National Weather Service Offices	road weather information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Statewide/Regional Transportation Operations Centers	Center/ Regional Maintenance Stations	work plan feedback
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Terminator/ ARRC	Center/ Regional Maintenance Stations	railroad schedules
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Terminator/ ARRC	Center/ Regional Maintenance Stations	work plan feedback
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Terminator/ National Center for Atmospheric Research Database	Center/ Maintenance Decision Support System	weather information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Terminator/ National Center for Atmospheric Research Database	Center/ Road Weather Data	weather information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Terminator/ National Weather Service Offices	Center/ Regional Maintenance Stations	weather information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Terminator/ National Weather Service Offices	Center/ Road Weather Data	weather information
AASHTO/ITE/NEMA	NTCIP C2F	NTCIP Center-to-Field Standards Group	Group	No	Center/ Central RWIS Server	Field/ Environmental Sensor Stations (ESS)	environmental sensors control
AASHTO/ITE/NEMA	NTCIP C2F	NTCIP Center-to-Field Standards Group	Group	No	Center/ Regional Maintenance Stations	Field/ Automated Bridge Anti-icing	roadway treatment system control

SDO	Document ID	Standard Title	Standard Type	User Defined	Source Element	Destination Element	Flow Name
AASHTO/ITE/NEMA	NTCIP C2F	NTCIP Center-to-Field Standards Group	Group	No	Field/ Automated Bridge Anti-icing	Center/ Bridge Design Section Offices	field device status
AASHTO/ITE/NEMA	NTCIP C2F	NTCIP Center-to-Field Standards Group	Group	No	Field/ Automated Bridge Anti-icing	Center/ Maintenance Management Systems	field device status
AASHTO/ITE/NEMA	NTCIP C2F	NTCIP Center-to-Field Standards Group	Group	No	Field/ Automated Bridge Anti-icing	Center/ Regional Maintenance Stations	field device status
AASHTO/ITE/NEMA	NTCIP C2F	NTCIP Center-to-Field Standards Group	Group	No	Field/ Automated Bridge Anti-icing	Center/ Regional Maintenance Stations	roadway treatment system status
AASHTO/ITE/NEMA	NTCIP C2F	NTCIP Center-to-Field Standards Group	Group	No	Field/ Bridge Scour Sensors	Center/ Bridge Design Section Offices	field device status
AASHTO/ITE/NEMA	NTCIP C2F	NTCIP Center-to-Field Standards Group	Group	No	Field/ Bridge Scour Sensors	Center/ Bridge Design Section Offices	infrastructure monitoring sensor data
AASHTO/ITE/NEMA	NTCIP C2F	NTCIP Center-to-Field Standards Group	Group	No	Field/ Bridge Scour Sensors	Center/ Bridge Scour System	field device status
AASHTO/ITE/NEMA	NTCIP C2F	NTCIP Center-to-Field Standards Group	Group	No	Field/ Bridge Scour Sensors	Center/ Bridge Scour System	infrastructure monitoring sensor data
AASHTO/ITE/NEMA	NTCIP C2F	NTCIP Center-to-Field Standards Group	Group	No	Field/ Bridge Scour Sensors	Center/ Regional Maintenance Stations	field device status
AASHTO/ITE/NEMA	NTCIP C2F	NTCIP Center-to-Field Standards Group	Group	No	Field/ Environmental Sensor Stations (ESS)	Center/ Central RWIS Server	environmental sensor data
AASHTO/ITE/NEMA	NTCIP C2F	NTCIP Center-to-Field Standards Group	Group	No	Field/ Environmental Sensor Stations (ESS)	Center/ Central RWIS Server	field device status
AASHTO/ITE/NEMA	NTCIP C2F	NTCIP Center-to-Field Standards Group	Group	No	Field/ Environmental Sensor Stations (ESS)	Center/ Central RWIS Server	traffic images
AASHTO/ITE/NEMA	NTCIP C2F	NTCIP Center-to-Field Standards Group	Group	No	Field/ Environmental Sensor Stations (ESS)	Center/ Maintenance Management Systems	field device status
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ Regional Maintenance Stations	maint and constr resource request
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ Regional Maintenance Stations	Center/ Law Enforcement Dispatch	maint and constr resource response

12.3 CVO and Freight Standards

Table 31. CVO and Freight Standards

SDO	Document ID	Standard Title	Standard Type	User Defined	Source Element	Destination Element	Flow Name
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ 511 Internal Reporting	Center/ Motor Carrier Offices	alerts and advisories
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Alaska Bridge Analysis Software	Center/ Permitting Program	current asset restrictions
ANSI	ANSI TS813	Electronic Filing of Tax Return Data	Message/Data	No	Center/ Motor Carrier Offices	Center/ CVIEW (MSCVE)	tax filing
ANSI	ANSI TS813	Electronic Filing of Tax Return Data	Message/Data	No	Center/ Motor Carrier Offices	Center/ PRISM (MSCVE)	tax filing
ASTM	DSRC 915MHz	Dedicated Short Range Communication at 915 MHz Standards Group	Group	No	Center/ Motor Carrier Offices	Vehicle/ Commercial Vehicle On-Board Systems	on-board vehicle request
ASTM	DSRC 915MHz	Dedicated Short Range Communication at 915 MHz Standards Group	Group	No	Center/ Motor Carrier Offices	Vehicle/ Commercial Vehicle On-Board Systems	trip log request
ASTM	DSRC 915MHz	Dedicated Short Range Communication at 915 MHz Standards Group	Group	No	Field/ AVI/WIM	Vehicle/ Commercial Vehicle On-Board Systems	electronic screening request
ASTM	DSRC 915MHz	Dedicated Short Range Communication at 915 MHz Standards Group	Group	No	Field/ AVI/WIM	Vehicle/ Commercial Vehicle On-Board Systems	pass/pull-in
ASTM	DSRC 915MHz	Dedicated Short Range Communication at 915 MHz Standards Group	Group	No	Field/ AVI/WIM	Vehicle/ Commercial Vehicle On-Board Systems	request tag data
ASTM	DSRC 915MHz	Dedicated Short Range Communication at 915 MHz Standards Group	Group	No	Field/ Enforcement (Citations)	Vehicle/ Commercial Vehicle On-Board Systems	electronic screening request
ASTM	DSRC 915MHz	Dedicated Short Range Communication at 915 MHz Standards Group	Group	No	Field/ Enforcement (Citations)	Vehicle/ Commercial Vehicle On-Board Systems	pass/pull-in
ASTM	DSRC 915MHz	Dedicated Short Range Communication at 915 MHz Standards Group	Group	No	Field/ Enforcement (Citations)	Vehicle/ Commercial Vehicle On-Board Systems	request tag data
ASTM	DSRC 915MHz	Dedicated Short Range Communication at 915 MHz Standards Group	Group	No	Field/ Inspection System	Vehicle/ Commercial Vehicle On-Board Systems	electronic screening request
ASTM	DSRC 915MHz	Dedicated Short Range Communication at 915 MHz Standards Group	Group	No	Field/ Inspection System	Vehicle/ Commercial Vehicle On-Board Systems	pass/pull-in

SDO	Document ID	Standard Title	Standard Type	User Defined	Source Element	Destination Element	Flow Name
ASTM	DSRC 915MHz	Dedicated Short Range Communication at 915 MHz Standards Group	Group	No	Field/ Inspection System	Vehicle/ Commercial Vehicle On-Board Systems	request tag data
ASTM	DSRC 915MHz	Dedicated Short Range Communication at 915 MHz Standards Group	Group	No	Field/ Inspection System	Vehicle/ Commercial Vehicle On-Board Systems	safety inspection record
ASTM	DSRC 915MHz	Dedicated Short Range Communication at 915 MHz Standards Group	Group	No	Field/ Inspection System	Vehicle/ Commercial Vehicle On-Board Systems	safety inspection request
ASTM	DSRC 915MHz	Dedicated Short Range Communication at 915 MHz Standards Group	Group	No	Field/ Virtual Weigh Station	Vehicle/ Commercial Vehicle On-Board Systems	electronic screening request
ASTM	DSRC 915MHz	Dedicated Short Range Communication at 915 MHz Standards Group	Group	No	Field/ Virtual Weigh Station	Vehicle/ Commercial Vehicle On-Board Systems	pass/pull-in
ASTM	DSRC 915MHz	Dedicated Short Range Communication at 915 MHz Standards Group	Group	No	Vehicle/ Commercial Vehicle On-Board Systems	Center/ Motor Carrier Administrative Systems	on-board vehicle data
ASTM	DSRC 915MHz	Dedicated Short Range Communication at 915 MHz Standards Group	Group	No	Vehicle/ Commercial Vehicle On-Board Systems	Center/ Motor Carrier Administrative Systems	trip log
ASTM	DSRC 915MHz	Dedicated Short Range Communication at 915 MHz Standards Group	Group	No	Vehicle/ Commercial Vehicle On-Board Systems	Center/ Motor Carrier Offices	on-board vehicle data
ASTM	DSRC 915MHz	Dedicated Short Range Communication at 915 MHz Standards Group	Group	No	Vehicle/ Commercial Vehicle On-Board Systems	Center/ Motor Carrier Offices	trip log
ASTM	DSRC 915MHz	Dedicated Short Range Communication at 915 MHz Standards Group	Group	No	Vehicle/ Commercial Vehicle On-Board Systems	Field/ Enforcement (Citations)	tag data
ASTM	DSRC 915MHz	Dedicated Short Range Communication at 915 MHz Standards Group	Group	No	Vehicle/ Commercial Vehicle On-Board Systems	Field/ Inspection System	tag data
IEEE	IEEE 1455-1999	Standard for Message Sets for Vehicle/Roadside Communications	Message/Data	No	Field/ AVI/WIM	Vehicle/ Commercial Vehicle On-Board Systems	electronic screening request
IEEE	IEEE 1455-1999	Standard for Message Sets for Vehicle/Roadside Communications	Message/Data	No	Field/ AVI/WIM	Vehicle/ Commercial Vehicle On-Board Systems	pass/pull-in
IEEE	IEEE 1455-1999	Standard for Message Sets for Vehicle/Roadside Communications	Message/Data	No	Field/ Enforcement (Citations)	Vehicle/ Commercial Vehicle On-Board Systems	electronic screening request
IEEE	IEEE 1455-1999	Standard for Message Sets for Vehicle/Roadside Communications	Message/Data	No	Field/ Enforcement (Citations)	Vehicle/ Commercial Vehicle On-Board Systems	pass/pull-in
IEEE	IEEE 1455-1999	Standard for Message Sets for Vehicle/Roadside Communications	Message/Data	No	Field/ Inspection System	Vehicle/ Commercial Vehicle On-Board Systems	electronic screening request
IEEE	IEEE 1455-1999	Standard for Message Sets for Vehicle/Roadside Communications	Message/Data	No	Field/ Inspection System	Vehicle/ Commercial Vehicle On-Board Systems	pass/pull-in

SDO	Document ID	Standard Title	Standard Type	User Defined	Source Element	Destination Element	Flow Name
IEEE	IEEE 1455-1999	Standard for Message Sets for Vehicle/Roadside Communications	Message/Data	No	Field/ Virtual Weigh Station	Vehicle/ Commercial Vehicle On-Board Systems	electronic screening request
IEEE	IEEE 1455-1999	Standard for Message Sets for Vehicle/Roadside Communications	Message/Data	No	Field/ Virtual Weigh Station	Vehicle/ Commercial Vehicle On-Board Systems	pass/pull-in

12.4 Public Transportation Standards

Table 32. Public Transportation Standards

SDO	Document ID	Standard Title	Standard Type	User Defined	Source Element	Destination Element	Flow Name
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ Statewide/Regional Transportation Operations Centers	Center/ AMHS Dispatch and Communications	incident information
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ Statewide/Regional Transportation Operations Centers	Center/ Public Transit Agencies	incident information
AASHTO/ITE/NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No	Center/ Law Enforcement Dispatch	Field/ Cameras (at AMHS Terminals)	secure area surveillance control
AASHTO/ITE/NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No	Field/ Cameras (at AMHS Terminals)	Center/ Law Enforcement Dispatch	secure area surveillance data
AASHTO/ITE/NEMA	NTCIP 1205	Object Definitions for Closed Circuit Television (CCTV) Camera Control	Message/Data	No	Center/ Law Enforcement Dispatch	Field/ Cameras (at AMHS Terminals)	secure area surveillance control
AASHTO/ITE/NEMA	NTCIP 1205	Object Definitions for Closed Circuit Television (CCTV) Camera Control	Message/Data	No	Field/ Cameras (at AMHS Terminals)	Center/ Law Enforcement Dispatch	secure area surveillance data
AASHTO/ITE/NEMA	NTCIP 1208	Object Definitions for Closed Circuit Television (CCTV) Switching	Message/Data	No	Center/ Law Enforcement Dispatch	Field/ Cameras (at AMHS Terminals)	secure area surveillance control
AASHTO/ITE/NEMA	NTCIP 1208	Object Definitions for Closed Circuit Television (CCTV) Switching	Message/Data	No	Field/ Cameras (at AMHS Terminals)	Center/ Law Enforcement Dispatch	secure area surveillance data
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ AMHS Dispatch and Communications	Center/ AMHS Website	transit and fare schedules
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ AMHS Dispatch and Communications	Center/ AMHS Website	transit incident information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ AMHS Dispatch and Communications	Center/ AMHS Website	transit service information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ AMHS Dispatch and Communications	Center/ Law Enforcement Dispatch	transit emergency data
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ AMHS Dispatch and Communications	Center/ Statewide/Regional Transportation Operations Centers	transit and fare schedules
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ AMHS Website	Center/ AMHS Dispatch and Communications	selected routes
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ AMHS Website	Center/ AMHS Dispatch and Communications	transit information request

SDO	Document ID	Standard Title	Standard Type	User Defined	Source Element	Destination Element	Flow Name
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ AMHS Website	Center/ AMHS Dispatch and Communications	transit service information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ AMHS Dispatch and Communications	incident response status
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Public Transit Agencies	Center/ Public Transit Agency Websites	transit and fare schedules
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Public Transit Agencies	Center/ Public Transit Agency Websites	transit incident information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Public Transit Agencies	Center/ Statewide/Regional Transportation Operations Centers	transit and fare schedules
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Public Transit Agency Websites	Center/ Public Transit Agencies	transit information request
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Statewide/Regional Transportation Operations Centers	Center/ AMHS Dispatch and Communications	incident information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Statewide/Regional Transportation Operations Centers	Center/ AMHS Dispatch and Communications	traffic images
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Statewide/Regional Transportation Operations Centers	Center/ Public Transit Agencies	incident information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Vessel Tracking System	Center/ AMHS Dispatch and Communications	transit probe data
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Vessel Tracking System	Center/ AMHS Dispatch and Communications	transit schedule adherence information
APTA	APTA TCIP-S-001 3.0.4	Standard for Transit Communications Interface Profiles	Message/Data	No	Center/ AMHS Dispatch and Communications	Center/ AMHS Website	transit and fare schedules
APTA	APTA TCIP-S-001 3.0.4	Standard for Transit Communications Interface Profiles	Message/Data	No	Center/ AMHS Dispatch and Communications	Center/ Statewide/Regional Transportation Operations Centers	transit and fare schedules
APTA	APTA TCIP-S-001 3.0.4	Standard for Transit Communications Interface Profiles	Message/Data	No	Center/ AMHS Dispatch and Communications	Vehicle/ Vessels On-board Systems	alarm acknowledge
APTA	APTA TCIP-S-001 3.0.4	Standard for Transit Communications Interface Profiles	Message/Data	No	Center/ AMHS Dispatch and Communications	Vehicle/ Vessels On-board Systems	transit schedule information

SDO	Document ID	Standard Title	Standard Type	User Defined	Source Element	Destination Element	Flow Name
APTA	APTA TCIP-S-001 3.0.4	Standard for Transit Communications Interface Profiles	Message/Data	No	Center/ AMHS Dispatch and Communications	Vehicle/ Vessels On-board Systems	transit vehicle operator authentication update
APTA	APTA TCIP-S-001 3.0.4	Standard for Transit Communications Interface Profiles	Message/Data	No	Center/ AMHS Dispatch and Communications	Vehicle/ Vessels On-board Systems	transit vehicle operator information
APTA	APTA TCIP-S-001 3.0.4	Standard for Transit Communications Interface Profiles	Message/Data	No	Center/ Public Transit Agencies	Center/ Public Transit Agency Websites	transit and fare schedules
APTA	APTA TCIP-S-001 3.0.4	Standard for Transit Communications Interface Profiles	Message/Data	No	Center/ Public Transit Agencies	Center/ Statewide/Regional Transportation Operations Centers	transit and fare schedules
APTA	APTA TCIP-S-001 3.0.4	Standard for Transit Communications Interface Profiles	Message/Data	No	Center/ Public Transit Agencies	Vehicle/ Public Transit Vehicle On-Board Systems	alarm acknowledge
APTA	APTA TCIP-S-001 3.0.4	Standard for Transit Communications Interface Profiles	Message/Data	No	Center/ Public Transit Agencies	Vehicle/ Public Transit Vehicle On-Board Systems	transit schedule information
APTA	APTA TCIP-S-001 3.0.4	Standard for Transit Communications Interface Profiles	Message/Data	No	Center/ Public Transit Agencies	Vehicle/ Public Transit Vehicle On-Board Systems	transit traveler information
APTA	APTA TCIP-S-001 3.0.4	Standard for Transit Communications Interface Profiles	Message/Data	No	Center/ Public Transit Agencies	Vehicle/ Public Transit Vehicle On-Board Systems	transit vehicle operator authentication update
APTA	APTA TCIP-S-001 3.0.4	Standard for Transit Communications Interface Profiles	Message/Data	No	Center/ Public Transit Agencies	Vehicle/ Public Transit Vehicle On-Board Systems	transit vehicle operator information
APTA	APTA TCIP-S-001 3.0.4	Standard for Transit Communications Interface Profiles	Message/Data	No	Center/ Vessel Tracking System	Center/ AMHS Dispatch and Communications	transit schedule adherence information
APTA	APTA TCIP-S-001 3.0.4	Standard for Transit Communications Interface Profiles	Message/Data	No	Center/ Vessel Tracking System	Vehicle/ Vessels On-board Systems	transit schedule information
APTA	APTA TCIP-S-001 3.0.4	Standard for Transit Communications Interface Profiles	Message/Data	No	Center/ Vessel Tracking System	Vehicle/ Vessels On-board Systems	transit vehicle operator information
APTA	APTA TCIP-S-001 3.0.4	Standard for Transit Communications Interface Profiles	Message/Data	No	Field/ Cameras (at AMHS Terminals)	Center/ Law Enforcement Dispatch	alarm notification
APTA	APTA TCIP-S-001 3.0.4	Standard for Transit Communications Interface Profiles	Message/Data	No	Vehicle/ Public Transit Vehicle On-Board Systems	Center/ Public Transit Agencies	alarm notification

SDO	Document ID	Standard Title	Standard Type	User Defined	Source Element	Destination Element	Flow Name
APTA	APTA TCIP-S-001 3.0.4	Standard for Transit Communications Interface Profiles	Message/Data	No	Vehicle/ Public Transit Vehicle On-Board Systems	Center/ Public Transit Agencies	transit vehicle location data
APTA	APTA TCIP-S-001 3.0.4	Standard for Transit Communications Interface Profiles	Message/Data	No	Vehicle/ Public Transit Vehicle On-Board Systems	Center/ Public Transit Agencies	transit vehicle operator authentication information
APTA	APTA TCIP-S-001 3.0.4	Standard for Transit Communications Interface Profiles	Message/Data	No	Vehicle/ Public Transit Vehicle On-Board Systems	Center/ Public Transit Agencies	transit vehicle schedule performance
APTA	APTA TCIP-S-001 3.0.4	Standard for Transit Communications Interface Profiles	Message/Data	No	Vehicle/ Vessels On-board Systems	Center/ AMHS Dispatch and Communications	alarm notification
APTA	APTA TCIP-S-001 3.0.4	Standard for Transit Communications Interface Profiles	Message/Data	No	Vehicle/ Vessels On-board Systems	Center/ AMHS Dispatch and Communications	transit vehicle location data
APTA	APTA TCIP-S-001 3.0.4	Standard for Transit Communications Interface Profiles	Message/Data	No	Vehicle/ Vessels On-board Systems	Center/ AMHS Dispatch and Communications	transit vehicle operator authentication information
APTA	APTA TCIP-S-001 3.0.4	Standard for Transit Communications Interface Profiles	Message/Data	No	Vehicle/ Vessels On-board Systems	Center/ AMHS Dispatch and Communications	transit vehicle schedule performance
APTA	APTA TCIP-S-001 3.0.4	Standard for Transit Communications Interface Profiles	Message/Data	No	Vehicle/ Vessels On-board Systems	Center/ Vessel Tracking System	transit vehicle location data
APTA	APTA TCIP-S-001 3.0.4	Standard for Transit Communications Interface Profiles	Message/Data	No	Vehicle/ Vessels On-board Systems	Center/ Vessel Tracking System	transit vehicle schedule performance
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ AMHS Dispatch and Communications	Center/ Law Enforcement Dispatch	transit emergency data
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ AMHS Dispatch and Communications	incident response status
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ Statewide/Regional Transportation Operations Centers	Center/ AMHS Dispatch and Communications	incident information
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ Statewide/Regional Transportation Operations Centers	Center/ Public Transit Agencies	incident information
SAE	ATIS General Use	Advanced Traveler Information Systems (ATIS) General Use Standards Group	Group	No	Center/ AMHS Dispatch and Communications	Center/ AMHS Website	transit service information

SDO	Document ID	Standard Title	Standard Type	User Defined	Source Element	Destination Element	Flow Name
SAE	ATIS General Use	Advanced Traveler Information Systems (ATIS) General Use Standards Group	Group	No	Center/ AMHS Website	Center/ AMHS Dispatch and Communications	selected routes
SAE	ATIS General Use	Advanced Traveler Information Systems (ATIS) General Use Standards Group	Group	No	Center/ AMHS Website	Center/ AMHS Dispatch and Communications	transit information request
SAE	ATIS General Use	Advanced Traveler Information Systems (ATIS) General Use Standards Group	Group	No	Center/ AMHS Website	Center/ AMHS Dispatch and Communications	transit service information
SAE	ATIS General Use	Advanced Traveler Information Systems (ATIS) General Use Standards Group	Group	No	Center/ Public Transit Agencies	Vehicle/ Public Transit Vehicle On-Board Systems	transit traveler information
SAE	ATIS General Use	Advanced Traveler Information Systems (ATIS) General Use Standards Group	Group	No	Center/ Public Transit Agency Websites	Center/ Public Transit Agencies	transit information request
SAE	ATIS General Use	Advanced Traveler Information Systems (ATIS) General Use Standards Group	Group	No	Center/ Statewide/Regional Transportation Operations Centers	Center/ AMHS Dispatch and Communications	incident information

12.5 Incident and Emergency Management Standards

Table 33. Incident and Emergency Management Standards

SDO	Document ID	Standard Title	Standard Type	User Defined	Source Element	Destination Element	Flow Name
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ Avalanche Detection System	Center/ Regional Maintenance Stations	incident information
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ Central RWIS Server	Center/ Regional Maintenance Stations	road weather information
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ EMS Dispatch Centers (Placeholder)	Center/ 511 Internal Reporting	incident information
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ EMS Dispatch Centers (Placeholder)	Center/ Law Enforcement Dispatch	incident information
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ EMS Dispatch Centers (Placeholder)	Center/ Law Enforcement Dispatch	incident response status
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ EMS Dispatch Centers (Placeholder)	Center/ Statewide/Regional Transportation Operations Centers	incident information

SDO	Document ID	Standard Title	Standard Type	User Defined	Source Element	Destination Element	Flow Name
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ EMS Dispatch Centers (Placeholder)	Center/ Statewide/Regional Transportation Operations Centers	incident response status
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ Law Enforcement Dispatch	Center/ 511 Internal Reporting	incident information
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ Law Enforcement Dispatch	Center/ AMHS Dispatch and Communications	incident information
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ Law Enforcement Dispatch	Center/ EMS Dispatch Centers (Placeholder)	incident information
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ Law Enforcement Dispatch	Center/ EMS Dispatch Centers (Placeholder)	incident response status
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ Law Enforcement Dispatch	Center/ Public Transit Agencies	incident information
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ Law Enforcement Dispatch	Center/ State Emergency Operations Center (SEOC)	incident information

SDO	Document ID	Standard Title	Standard Type	User Defined	Source Element	Destination Element	Flow Name
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ Law Enforcement Dispatch	Center/ State Emergency Operations Center (SEOC)	incident response status
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ Law Enforcement Dispatch	Center/ Statewide/Regional Transportation Operations Centers	incident information
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ Law Enforcement Dispatch	Center/ Statewide/Regional Transportation Operations Centers	incident response status
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ Regional 911 System (Placeholder)	Center/ Law Enforcement Dispatch	remote surveillance control
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ State Emergency Operations Center (SEOC)	Center/ 511 Internal Reporting	incident information
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ State Emergency Operations Center (SEOC)	Center/ Law Enforcement Dispatch	incident information
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ State Emergency Operations Center (SEOC)	Center/ Law Enforcement Dispatch	incident response status

SDO	Document ID	Standard Title	Standard Type	User Defined	Source Element	Destination Element	Flow Name
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ State Emergency Operations Center (SEOC)	Center/ Law Enforcement Dispatch	remote surveillance control
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ State Emergency Operations Center (SEOC)	Center/ Statewide/Regional Transportation Operations Centers	incident information
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ State Emergency Operations Center (SEOC)	Center/ Statewide/Regional Transportation Operations Centers	incident response status
AASHTO/ITE/NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No	Center/ EMS Dispatch Centers (Placeholder)	Center/ Statewide/Regional Transportation Operations Centers	emergency traffic control request
AASHTO/ITE/NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No	Center/ Law Enforcement Dispatch	Center/ State Emergency Operations Center (SEOC)	emergency traffic control information
AASHTO/ITE/NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No	Center/ Law Enforcement Dispatch	Center/ Statewide/Regional Transportation Operations Centers	emergency traffic control request
AASHTO/ITE/NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No	Center/ Statewide/Regional Transportation Operations Centers	Center/ EMS Dispatch Centers (Placeholder)	emergency traffic control information
AASHTO/ITE/NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No	Center/ Statewide/Regional Transportation Operations Centers	Center/ Law Enforcement Dispatch	emergency traffic control information
AASHTO/ITE/NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No	Vehicle/ EMS Vehicle On-board Systems	Field/ Pre-emption and Priority Systems	local signal preemption request
AASHTO/ITE/NEMA	NTCIP 1201	Global Object Definitions	Message/Data	No	Vehicle/ Law Enforcement Vehicle On-board Systems	Field/ Pre-emption and Priority Systems	local signal preemption request
AASHTO/ITE/NEMA	NTCIP 1211	Object Definitions for Signal Control and Prioritization (SCP)	Message/Data	No	Center/ EMS Dispatch Centers (Placeholder)	Center/ Statewide/Regional Transportation Operations Centers	emergency traffic control request
AASHTO/ITE/NEMA	NTCIP 1211	Object Definitions for Signal Control and Prioritization (SCP)	Message/Data	No	Center/ Law Enforcement Dispatch	Center/ State Emergency Operations Center (SEOC)	emergency traffic control information

SDO	Document ID	Standard Title	Standard Type	User Defined	Source Element	Destination Element	Flow Name
AASHTO/ITE/NEMA	NTCIP 1211	Object Definitions for Signal Control and Prioritization (SCP)	Message/Data	No	Center/ Law Enforcement Dispatch	Center/ Statewide/Regional Transportation Operations Centers	emergency traffic control request
AASHTO/ITE/NEMA	NTCIP 1211	Object Definitions for Signal Control and Prioritization (SCP)	Message/Data	No	Center/ Statewide/Regional Transportation Operations Centers	Center/ EMS Dispatch Centers (Placeholder)	emergency traffic control information
AASHTO/ITE/NEMA	NTCIP 1211	Object Definitions for Signal Control and Prioritization (SCP)	Message/Data	No	Center/ Statewide/Regional Transportation Operations Centers	Center/ Law Enforcement Dispatch	emergency traffic control information
AASHTO/ITE/NEMA	NTCIP 1211	Object Definitions for Signal Control and Prioritization (SCP)	Message/Data	No	Vehicle/ EMS Vehicle On-board Systems	Field/ Pre-emption and Priority Systems	local signal preemption request
AASHTO/ITE/NEMA	NTCIP 1211	Object Definitions for Signal Control and Prioritization (SCP)	Message/Data	No	Vehicle/ Law Enforcement Vehicle On-board Systems	Field/ Pre-emption and Priority Systems	local signal preemption request
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ 511 Internal Reporting	Center/ EMS Dispatch Centers (Placeholder)	incident command information coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ 511 Internal Reporting	Center/ State Emergency Operations Center (SEOC)	incident command information coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ AMHS Dispatch and Communications	Center/ Law Enforcement Dispatch	transit emergency data
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ AMHS Dispatch and Communications	Center/ State Emergency Operations Center (SEOC)	transit emergency data
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Avalanche Detection System	Center/ Regional Maintenance Stations	alerts and advisories
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Avalanche Detection System	Center/ Regional Maintenance Stations	incident information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Avalanche Detection System	Center/ State Emergency Operations Center (SEOC)	alerts and advisories
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Avalanche Detection System	Center/ State Emergency Operations Center (SEOC)	incident information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Central RWIS Server	Center/ Regional Maintenance Stations	road weather information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Construction Offices	Center/ EMS Dispatch Centers (Placeholder)	roadway maintenance status
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Construction Offices	Center/ EMS Dispatch Centers (Placeholder)	work zone information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Construction Offices	Center/ Law Enforcement Dispatch	current asset restrictions

SDO	Document ID	Standard Title	Standard Type	User Defined	Source Element	Destination Element	Flow Name
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Construction Offices	Center/ Law Enforcement Dispatch	roadway maintenance status
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Construction Offices	Center/ Law Enforcement Dispatch	work zone information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ EMS Dispatch Centers (Placeholder)	Center/ 511 Internal Reporting	incident command information coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ EMS Dispatch Centers (Placeholder)	Center/ 511 Internal Reporting	incident information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ EMS Dispatch Centers (Placeholder)	Center/ Law Enforcement Dispatch	incident command information coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ EMS Dispatch Centers (Placeholder)	Center/ Law Enforcement Dispatch	incident information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ EMS Dispatch Centers (Placeholder)	Center/ Law Enforcement Dispatch	incident response coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ EMS Dispatch Centers (Placeholder)	Center/ Law Enforcement Dispatch	incident response status
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ EMS Dispatch Centers (Placeholder)	Center/ Law Enforcement Dispatch	resource deployment status
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ EMS Dispatch Centers (Placeholder)	Center/ Law Enforcement Dispatch	resource request
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ EMS Dispatch Centers (Placeholder)	Center/ Regional 911 System (Placeholder)	incident report
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ EMS Dispatch Centers (Placeholder)	Center/ Regional 911 System (Placeholder)	incident response coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ EMS Dispatch Centers (Placeholder)	Center/ State Emergency Operations Center (SEOC)	incident command information coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ EMS Dispatch Centers (Placeholder)	Center/ State Emergency Operations Center (SEOC)	incident response coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ EMS Dispatch Centers (Placeholder)	Center/ Statewide/Regional Transportation Operations Centers	emergency route request
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ EMS Dispatch Centers (Placeholder)	Center/ Statewide/Regional Transportation Operations Centers	emergency traffic control request
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ EMS Dispatch Centers (Placeholder)	Center/ Statewide/Regional Transportation Operations Centers	incident information

SDO	Document ID	Standard Title	Standard Type	User Defined	Source Element	Destination Element	Flow Name
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ EMS Dispatch Centers (Placeholder)	Center/ Statewide/Regional Transportation Operations Centers	incident response status
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ 511 (phone and web)	alert notification
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ 511 Internal Reporting	incident information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ AMHS Dispatch and Communications	incident information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ AMHS Dispatch and Communications	threat information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ AMHS Dispatch and Communications	transportation system status
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ Construction Offices	alert notification
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ Construction Offices	threat information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ EMS Dispatch Centers (Placeholder)	incident command information coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ EMS Dispatch Centers (Placeholder)	incident information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ EMS Dispatch Centers (Placeholder)	incident response coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ EMS Dispatch Centers (Placeholder)	incident response status
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ EMS Dispatch Centers (Placeholder)	resource deployment status
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ EMS Dispatch Centers (Placeholder)	resource request
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ Public Transit Agencies	incident information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ Public Transit Agencies	threat information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ Public Transit Agencies	transportation system status
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ Regional 911 System (Placeholder)	incident report
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ Regional 911 System (Placeholder)	incident response coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ Regional Maintenance Stations	alert notification
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ Regional Maintenance Stations	threat information

SDO	Document ID	Standard Title	Standard Type	User Defined	Source Element	Destination Element	Flow Name
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ State Emergency Operations Center (SEOC)	emergency traffic control information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ State Emergency Operations Center (SEOC)	incident command information coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ State Emergency Operations Center (SEOC)	incident information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ State Emergency Operations Center (SEOC)	incident report
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ State Emergency Operations Center (SEOC)	incident response coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ State Emergency Operations Center (SEOC)	incident response status
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ State Emergency Operations Center (SEOC)	resource deployment status
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ State Emergency Operations Center (SEOC)	resource request
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ State Emergency Operations Center (SEOC)	threat information coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ Statewide/Regional Transportation Operations Centers	alert notification
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ Statewide/Regional Transportation Operations Centers	emergency route request
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ Statewide/Regional Transportation Operations Centers	emergency traffic control request
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ Statewide/Regional Transportation Operations Centers	incident information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ Statewide/Regional Transportation Operations Centers	incident response status
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ Statewide/Regional Transportation Operations Centers	resource request
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Law Enforcement Dispatch	Terminator/ ARRC	threat information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Public Transit Agencies	Center/ Law Enforcement Dispatch	transit emergency data

SDO	Document ID	Standard Title	Standard Type	User Defined	Source Element	Destination Element	Flow Name
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Public Transit Agencies	Center/ State Emergency Operations Center (SEOC)	transit emergency data
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Regional 911 System (Placeholder)	Center/ EMS Dispatch Centers (Placeholder)	incident response coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Regional 911 System (Placeholder)	Center/ Law Enforcement Dispatch	incident report
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Regional 911 System (Placeholder)	Center/ Law Enforcement Dispatch	incident response coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Regional 911 System (Placeholder)	Center/ Law Enforcement Dispatch	remote surveillance control
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Regional 911 System (Placeholder)	Center/ State Emergency Operations Center (SEOC)	incident report
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Regional 911 System (Placeholder)	Center/ State Emergency Operations Center (SEOC)	incident response coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Regional Maintenance Stations	Center/ EMS Dispatch Centers (Placeholder)	current asset restrictions
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Regional Maintenance Stations	Center/ EMS Dispatch Centers (Placeholder)	roadway maintenance status
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Regional Maintenance Stations	Center/ EMS Dispatch Centers (Placeholder)	work zone information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Regional Maintenance Stations	Center/ Law Enforcement Dispatch	alert status
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Regional Maintenance Stations	Center/ Law Enforcement Dispatch	current asset restrictions
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Regional Maintenance Stations	Center/ Law Enforcement Dispatch	roadway maintenance status
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Regional Maintenance Stations	Center/ Law Enforcement Dispatch	work zone information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ State Emergency Operations Center (SEOC)	Center/ 511 Internal Reporting	incident command information coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ State Emergency Operations Center (SEOC)	Center/ 511 Internal Reporting	incident information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ State Emergency Operations Center (SEOC)	Center/ AMHS Dispatch and Communications	incident information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ State Emergency Operations Center (SEOC)	Center/ AMHS Dispatch and Communications	threat information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ State Emergency Operations Center (SEOC)	Center/ AMHS Dispatch and Communications	transportation system status
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ State Emergency Operations Center (SEOC)	Center/ Avalanche Detection System	incident response status

SDO	Document ID	Standard Title	Standard Type	User Defined	Source Element	Destination Element	Flow Name
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ State Emergency Operations Center (SEOC)	Center/ EMS Dispatch Centers (Placeholder)	incident command information coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ State Emergency Operations Center (SEOC)	Center/ EMS Dispatch Centers (Placeholder)	incident response coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ State Emergency Operations Center (SEOC)	Center/ Law Enforcement Dispatch	incident command information coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ State Emergency Operations Center (SEOC)	Center/ Law Enforcement Dispatch	incident information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ State Emergency Operations Center (SEOC)	Center/ Law Enforcement Dispatch	incident report
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ State Emergency Operations Center (SEOC)	Center/ Law Enforcement Dispatch	incident response coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ State Emergency Operations Center (SEOC)	Center/ Law Enforcement Dispatch	incident response status
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ State Emergency Operations Center (SEOC)	Center/ Law Enforcement Dispatch	remote surveillance control
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ State Emergency Operations Center (SEOC)	Center/ Law Enforcement Dispatch	resource deployment status
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ State Emergency Operations Center (SEOC)	Center/ Law Enforcement Dispatch	resource request
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ State Emergency Operations Center (SEOC)	Center/ Law Enforcement Dispatch	threat information coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ State Emergency Operations Center (SEOC)	Center/ Law Enforcement Dispatch	transportation system status
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ State Emergency Operations Center (SEOC)	Center/ Public Transit Agencies	incident information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ State Emergency Operations Center (SEOC)	Center/ Public Transit Agencies	threat information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ State Emergency Operations Center (SEOC)	Center/ Public Transit Agencies	transportation system status
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ State Emergency Operations Center (SEOC)	Center/ Regional 911 System (Placeholder)	incident report
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ State Emergency Operations Center (SEOC)	Center/ Regional 911 System (Placeholder)	incident response coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ State Emergency Operations Center (SEOC)	Center/ Statewide/Regional Transportation Operations Centers	incident information

SDO	Document ID	Standard Title	Standard Type	User Defined	Source Element	Destination Element	Flow Name
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ State Emergency Operations Center (SEOC)	Center/ Statewide/Regional Transportation Operations Centers	incident response status
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ State Emergency Operations Center (SEOC)	Terminator/ ARRC	threat information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Statewide/Regional Transportation Operations Centers	Center/ 511 (phone and web)	emergency traveler information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Statewide/Regional Transportation Operations Centers	Center/ EMS Dispatch Centers (Placeholder)	emergency routes
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Statewide/Regional Transportation Operations Centers	Center/ EMS Dispatch Centers (Placeholder)	emergency traffic control information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Statewide/Regional Transportation Operations Centers	Center/ Law Enforcement Dispatch	alert status
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Statewide/Regional Transportation Operations Centers	Center/ Law Enforcement Dispatch	emergency routes
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Statewide/Regional Transportation Operations Centers	Center/ Law Enforcement Dispatch	emergency traffic control information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Terminator/ ARRC	Center/ Law Enforcement Dispatch	incident information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Terminator/ ARRC	Center/ State Emergency Operations Center (SEOC)	incident information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Terminator/ Emergency Alert System	Center/ Law Enforcement Dispatch	alerts and advisories
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Terminator/ Emergency Alert System	Center/ State Emergency Operations Center (SEOC)	alerts and advisories
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Terminator/ National Weather Service Offices	Center/ Law Enforcement Dispatch	weather information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Terminator/ National Weather Service Offices	Center/ State Emergency Operations Center (SEOC)	weather information
AASHTO/ITE/NEMA	NTCIP C2F	NTCIP Center-to-Field Standards Group	Group	No	Center/ Avalanche Detection System	Center/ State Emergency Operations Center (SEOC)	infrastructure monitoring sensor data
AASHTO/ITE/NEMA	NTCIP C2F	NTCIP Center-to-Field Standards Group	Group	No	Center/ State Emergency Operations Center (SEOC)	Center/ Avalanche Detection System	infrastructure monitoring sensor control
ASTM	DSRC 915MHz	Dedicated Short Range Communication at 915 MHz Standards Group	Group	No	Vehicle/ EMS Vehicle On-board Systems	Field/ Pre-emption and Priority Systems	local signal preemption request

SDO	Document ID	Standard Title	Standard Type	User Defined	Source Element	Destination Element	Flow Name
ASTM	DSRC 915MHz	Dedicated Short Range Communication at 915 MHz Standards Group	Group	No	Vehicle/ Law Enforcement Vehicle On-board Systems	Field/ Pre-emption and Priority Systems	local signal preemption request
ASTM/IEEE/SAE	DSRC 5GHz	Dedicated Short Range Communication at 5.9 GHz Standards Group	Group	No	Vehicle/ EMS Vehicle On-board Systems	Field/ Pre-emption and Priority Systems	local signal preemption request
ASTM/IEEE/SAE	DSRC 5GHz	Dedicated Short Range Communication at 5.9 GHz Standards Group	Group	No	Vehicle/ EMS Vehicle On-board Systems	Vehicle/ EMS Vehicle AVL	emergency vehicle alert
ASTM/IEEE/SAE	DSRC 5GHz	Dedicated Short Range Communication at 5.9 GHz Standards Group	Group	No	Vehicle/ Law Enforcement Vehicle On-board Systems	Field/ Pre-emption and Priority Systems	local signal preemption request
ASTM/IEEE/SAE	DSRC 5GHz	Dedicated Short Range Communication at 5.9 GHz Standards Group	Group	No	Vehicle/ Law Enforcement Vehicle On-board Systems	Vehicle/ Law Enforcement Vehicle AVL	emergency vehicle alert
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ 511 Internal Reporting	Center/ EMS Dispatch Centers (Placeholder)	incident command information coordination
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ 511 Internal Reporting	Center/ State Emergency Operations Center (SEOC)	incident command information coordination
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ AMHS Dispatch and Communications	Center/ Law Enforcement Dispatch	transit emergency data
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ AMHS Dispatch and Communications	Center/ State Emergency Operations Center (SEOC)	transit emergency data
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ Avalanche Detection System	Center/ Regional Maintenance Stations	incident information
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ Avalanche Detection System	Center/ State Emergency Operations Center (SEOC)	incident information
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ EMS Dispatch Centers (Placeholder)	Center/ 511 Internal Reporting	incident command information coordination
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ EMS Dispatch Centers (Placeholder)	Center/ 511 Internal Reporting	incident information
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ EMS Dispatch Centers (Placeholder)	Center/ Law Enforcement Dispatch	incident command information coordination
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ EMS Dispatch Centers (Placeholder)	Center/ Law Enforcement Dispatch	incident information
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ EMS Dispatch Centers (Placeholder)	Center/ Law Enforcement Dispatch	incident response coordination

SDO	Document ID	Standard Title	Standard Type	User Defined	Source Element	Destination Element	Flow Name
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ EMS Dispatch Centers (Placeholder)	Center/ Law Enforcement Dispatch	incident response status
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ EMS Dispatch Centers (Placeholder)	Center/ Law Enforcement Dispatch	resource deployment status
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ EMS Dispatch Centers (Placeholder)	Center/ Law Enforcement Dispatch	resource request
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ EMS Dispatch Centers (Placeholder)	Center/ Regional 911 System (Placeholder)	incident report
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ EMS Dispatch Centers (Placeholder)	Center/ Regional 911 System (Placeholder)	incident response coordination
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ EMS Dispatch Centers (Placeholder)	Center/ State Emergency Operations Center (SEOC)	incident command information coordination
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ EMS Dispatch Centers (Placeholder)	Center/ State Emergency Operations Center (SEOC)	incident response coordination
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ EMS Dispatch Centers (Placeholder)	Center/ Statewide/Regional Transportation Operations Centers	emergency traffic control request
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ EMS Dispatch Centers (Placeholder)	Center/ Statewide/Regional Transportation Operations Centers	incident information
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ EMS Dispatch Centers (Placeholder)	Center/ Statewide/Regional Transportation Operations Centers	incident response status
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ 511 Internal Reporting	incident information
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ AMHS Dispatch and Communications	incident information
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ EMS Dispatch Centers (Placeholder)	incident command information coordination
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ EMS Dispatch Centers (Placeholder)	incident information
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ EMS Dispatch Centers (Placeholder)	incident response coordination
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ EMS Dispatch Centers (Placeholder)	incident response status
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ EMS Dispatch Centers (Placeholder)	resource deployment status
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ EMS Dispatch Centers (Placeholder)	resource request

SDO	Document ID	Standard Title	Standard Type	User Defined	Source Element	Destination Element	Flow Name
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ Public Transit Agencies	incident information
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ Regional 911 System (Placeholder)	incident report
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ Regional 911 System (Placeholder)	incident response coordination
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ State Emergency Operations Center (SEOC)	emergency traffic control information
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ State Emergency Operations Center (SEOC)	incident command information coordination
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ State Emergency Operations Center (SEOC)	incident information
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ State Emergency Operations Center (SEOC)	incident report
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ State Emergency Operations Center (SEOC)	incident response coordination
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ State Emergency Operations Center (SEOC)	incident response status
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ State Emergency Operations Center (SEOC)	resource deployment status
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ State Emergency Operations Center (SEOC)	resource request
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ Statewide/Regional Transportation Operations Centers	emergency traffic control request
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ Statewide/Regional Transportation Operations Centers	incident information
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ Statewide/Regional Transportation Operations Centers	incident response status
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ Statewide/Regional Transportation Operations Centers	resource request
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ Public Transit Agencies	Center/ Law Enforcement Dispatch	transit emergency data
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ Public Transit Agencies	Center/ State Emergency Operations Center (SEOC)	transit emergency data
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ Regional 911 System (Placeholder)	Center/ EMS Dispatch Centers (Placeholder)	incident response coordination
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ Regional 911 System (Placeholder)	Center/ Law Enforcement Dispatch	incident report

SDO	Document ID	Standard Title	Standard Type	User Defined	Source Element	Destination Element	Flow Name
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ Regional 911 System (Placeholder)	Center/ Law Enforcement Dispatch	incident response coordination
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ Regional 911 System (Placeholder)	Center/ State Emergency Operations Center (SEOC)	incident report
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ Regional 911 System (Placeholder)	Center/ State Emergency Operations Center (SEOC)	incident response coordination
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ State Emergency Operations Center (SEOC)	Center/ 511 Internal Reporting	incident command information coordination
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ State Emergency Operations Center (SEOC)	Center/ 511 Internal Reporting	incident information
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ State Emergency Operations Center (SEOC)	Center/ AMHS Dispatch and Communications	incident information
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ State Emergency Operations Center (SEOC)	Center/ Avalanche Detection System	incident response status
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ State Emergency Operations Center (SEOC)	Center/ EMS Dispatch Centers (Placeholder)	incident command information coordination
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ State Emergency Operations Center (SEOC)	Center/ EMS Dispatch Centers (Placeholder)	incident response coordination
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ State Emergency Operations Center (SEOC)	Center/ Law Enforcement Dispatch	incident command information coordination
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ State Emergency Operations Center (SEOC)	Center/ Law Enforcement Dispatch	incident information
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ State Emergency Operations Center (SEOC)	Center/ Law Enforcement Dispatch	incident report
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ State Emergency Operations Center (SEOC)	Center/ Law Enforcement Dispatch	incident response coordination
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ State Emergency Operations Center (SEOC)	Center/ Law Enforcement Dispatch	incident response status
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ State Emergency Operations Center (SEOC)	Center/ Law Enforcement Dispatch	resource deployment status
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ State Emergency Operations Center (SEOC)	Center/ Law Enforcement Dispatch	resource request
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ State Emergency Operations Center (SEOC)	Center/ Public Transit Agencies	incident information
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ State Emergency Operations Center (SEOC)	Center/ Regional 911 System (Placeholder)	incident report
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ State Emergency Operations Center (SEOC)	Center/ Regional 911 System (Placeholder)	incident response coordination

SDO	Document ID	Standard Title	Standard Type	User Defined	Source Element	Destination Element	Flow Name
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ State Emergency Operations Center (SEOC)	Center/ Statewide/Regional Transportation Operations Centers	incident information
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ State Emergency Operations Center (SEOC)	Center/ Statewide/Regional Transportation Operations Centers	incident response status
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ Statewide/Regional Transportation Operations Centers	Center/ EMS Dispatch Centers (Placeholder)	emergency traffic control information
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ Statewide/Regional Transportation Operations Centers	Center/ Law Enforcement Dispatch	emergency traffic control information
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Terminator/ ARRC	Center/ Law Enforcement Dispatch	incident information
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Terminator/ ARRC	Center/ State Emergency Operations Center (SEOC)	incident information
SAE	ATIS General Use	Advanced Traveler Information Systems (ATIS) General Use Standards Group	Group	No	Center/ Statewide/Regional Transportation Operations Centers	Center/ 511 (phone and web)	emergency traveler information
SAE	Mayday	On-board Vehicle Mayday Standards Group	Group	No	Center/ EMS Dispatch Centers (Placeholder)	Travelers/ Personal Communications/Computing Devices (en-route)	emergency acknowledge
SAE	Mayday	On-board Vehicle Mayday Standards Group	Group	No	Center/ EMS Dispatch Centers (Placeholder)	Travelers/ Personal Communications/Computing Devices (pre-trip)	emergency acknowledge
SAE	Mayday	On-board Vehicle Mayday Standards Group	Group	No	Center/ Law Enforcement Dispatch	Travelers/ Personal Communications/Computing Devices (en-route)	emergency acknowledge
SAE	Mayday	On-board Vehicle Mayday Standards Group	Group	No	Center/ Law Enforcement Dispatch	Travelers/ Personal Communications/Computing Devices (pre-trip)	emergency acknowledge
SAE	Mayday	On-board Vehicle Mayday Standards Group	Group	No	Center/ Regional 911 System (Placeholder)	Travelers/ Personal Communications/Computing Devices (en-route)	emergency acknowledge
SAE	Mayday	On-board Vehicle Mayday Standards Group	Group	No	Center/ Regional 911 System (Placeholder)	Travelers/ Personal Communications/Computing Devices (pre-trip)	emergency acknowledge
SAE	Mayday	On-board Vehicle Mayday Standards Group	Group	No	Travelers/ Personal Communications/Computing Devices (en-route)	Center/ EMS Dispatch Centers (Placeholder)	emergency notification
SAE	Mayday	On-board Vehicle Mayday Standards Group	Group	No	Travelers/ Personal Communications/Computing Devices (en-route)	Center/ Law Enforcement Dispatch	emergency notification
SAE	Mayday	On-board Vehicle Mayday Standards Group	Group	No	Travelers/ Personal Communications/Computing Devices (en-route)	Center/ Regional 911 System (Placeholder)	emergency notification

SDO	Document ID	Standard Title	Standard Type	User Defined	Source Element	Destination Element	Flow Name
SAE	Mayday	On-board Vehicle Mayday Standards Group	Group	No	Travelers/ Personal Communications/Computing Devices (pre-trip)	Center/ EMS Dispatch Centers (Placeholder)	emergency notification
SAE	Mayday	On-board Vehicle Mayday Standards Group	Group	No	Travelers/ Personal Communications/Computing Devices (pre-trip)	Center/ Law Enforcement Dispatch	emergency notification
SAE	Mayday	On-board Vehicle Mayday Standards Group	Group	No	Travelers/ Personal Communications/Computing Devices (pre-trip)	Center/ Regional 911 System (Placeholder)	emergency notification
SAE	SAE J2735	Dedicated Short Range Communications (DSRC) Message Set Dictionary	Message/Data	No	Vehicle/ EMS Vehicle On-board Systems	Vehicle/ EMS Vehicle AVL	emergency vehicle alert
SAE	SAE J2735	Dedicated Short Range Communications (DSRC) Message Set Dictionary	Message/Data	No	Vehicle/ Law Enforcement Vehicle On-board Systems	Vehicle/ Law Enforcement Vehicle AVL	emergency vehicle alert

12.6 Traveler Information Standards

Table 34. Traveler Information Standards

SDO	Document ID	Standard Title	Standard Type	User Defined	Source Element	Destination Element	Flow Name
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ 511 Internal Reporting	Center/ 511 (phone and web)	incident information
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ 511 Internal Reporting	Center/ 511 (phone and web)	road network conditions
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ 511 Internal Reporting	Center/ Information Systems and Services Division	road network conditions
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ Central RWIS Server	Center/ 511 Internal Reporting	road weather information
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ Law Enforcement Dispatch	Center/ 511 (phone and web)	incident information
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ Statewide/Regional Transportation Operations Centers	Center/ 511 (phone and web)	incident information

SDO	Document ID	Standard Title	Standard Type	User Defined	Source Element	Destination Element	Flow Name
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ Statewide/Regional Transportation Operations Centers	Center/ 511 (phone and web)	road network conditions
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ Traffic Control	Center/ 511 (phone and web)	incident information
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ Traffic Control	Center/ 511 (phone and web)	road network conditions
AASHTO/ITE	ITE TMDD	Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications (MS/ETMCC)	Message/Data	No	Center/ Traffic Control	Center/ Statewide/Regional Transportation Operations Centers	road network conditions
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ 3rd Party Traveler Information Services	Center/ 511 (phone and web)	incident information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ 3rd Party Traveler Information Services	Center/ 511 (phone and web)	road network conditions
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ 3rd Party Traveler Information Services	Center/ 511 Internal Reporting	road network conditions
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ 3rd Party Traveler Information Services	Center/ Statewide/Regional Transportation Operations Centers	road network conditions
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ 511 (phone and web)	Center/ Public Transit Agencies	transit information request
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ 511 (phone and web)	Terminator/ Media Systems (T.V. and Radio)	traveler information for media
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ 511 (phone and web)	Terminator/ Other 511 Systems	incident information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ 511 (phone and web)	Terminator/ Other 511 Systems	road network conditions
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ 511 Internal Reporting	Center/ 511 (phone and web)	incident information

SDO	Document ID	Standard Title	Standard Type	User Defined	Source Element	Destination Element	Flow Name
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ 511 Internal Reporting	Center/ 511 (phone and web)	road network conditions
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ 511 Internal Reporting	Center/ Information Systems and Services Division	road network conditions
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ AMHS Dispatch and Communications	Center/ 511 (phone and web)	transit and fare schedules
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ AMHS Dispatch and Communications	Center/ 511 (phone and web)	transit incident information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ AMHS Dispatch and Communications	Center/ 511 (phone and web)	transit schedule adherence information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ AMHS Dispatch and Communications	Center/ 511 (phone and web)	transit service information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ AMHS Dispatch and Communications	Center/ AMHS Website	transit and fare schedules
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ AMHS Dispatch and Communications	Center/ AMHS Website	transit incident information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ AMHS Dispatch and Communications	Center/ AMHS Website	transit schedule adherence information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ AMHS Dispatch and Communications	Center/ AMHS Website	transit service information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ AMHS Website	Terminator/ Media Systems (T.V. and Radio)	traveler information for media
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Central RWIS Server	Center/ 511 Internal Reporting	road weather information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Construction Offices	Center/ 511 (phone and web)	maint and constr work plans
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Construction Offices	Center/ 511 (phone and web)	roadway maintenance status
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Construction Offices	Center/ 511 (phone and web)	work zone information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ 511 (phone and web)	incident information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Public Transit Agencies	Center/ 511 (phone and web)	transit and fare schedules
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Regional Maintenance Stations	Center/ 511 (phone and web)	maint and constr work plans
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Regional Maintenance Stations	Center/ 511 (phone and web)	roadway maintenance status

SDO	Document ID	Standard Title	Standard Type	User Defined	Source Element	Destination Element	Flow Name
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Regional Maintenance Stations	Center/ 511 (phone and web)	work zone information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Statewide/Regional Transportation Operations Centers	Center/ 511 (phone and web)	incident information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Statewide/Regional Transportation Operations Centers	Center/ 511 (phone and web)	multimodal information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Statewide/Regional Transportation Operations Centers	Center/ 511 (phone and web)	road network conditions
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Statewide/Regional Transportation Operations Centers	Center/ 511 (phone and web)	traffic images
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Traffic Control	Center/ 511 (phone and web)	incident information
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Traffic Control	Center/ 511 (phone and web)	road network conditions
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Traffic Control	Center/ Statewide/Regional Transportation Operations Centers	road network conditions
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Terminator/ National Weather Service Offices	Center/ 511 (phone and web)	weather information
APTA	APTA TCIP-S-001 3.0.4	Standard for Transit Communications Interface Profiles	Message/Data	No	Center/ AMHS Dispatch and Communications	Center/ 511 (phone and web)	transit and fare schedules
APTA	APTA TCIP-S-001 3.0.4	Standard for Transit Communications Interface Profiles	Message/Data	No	Center/ AMHS Dispatch and Communications	Center/ 511 (phone and web)	transit schedule adherence information
APTA	APTA TCIP-S-001 3.0.4	Standard for Transit Communications Interface Profiles	Message/Data	No	Center/ AMHS Dispatch and Communications	Center/ AMHS Website	transit and fare schedules
APTA	APTA TCIP-S-001 3.0.4	Standard for Transit Communications Interface Profiles	Message/Data	No	Center/ AMHS Dispatch and Communications	Center/ AMHS Website	transit schedule adherence information
APTA	APTA TCIP-S-001 3.0.4	Standard for Transit Communications Interface Profiles	Message/Data	No	Center/ Public Transit Agencies	Center/ 511 (phone and web)	transit and fare schedules
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ 511 Internal Reporting	Center/ 511 (phone and web)	incident information
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ 511 (phone and web)	incident information
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ Statewide/Regional Transportation Operations Centers	Center/ 511 (phone and web)	incident information

SDO	Document ID	Standard Title	Standard Type	User Defined	Source Element	Destination Element	Flow Name
IEEE	IEEE IM	Incident Management Standards Group	Group	No	Center/ Traffic Control	Center/ 511 (phone and web)	incident information
SAE	ATIS General Use	Advanced Traveler Information Systems (ATIS) General Use Standards Group	Group	No	Center/ 3rd Party Traveler Information Services	Center/ 511 (phone and web)	incident information
SAE	ATIS General Use	Advanced Traveler Information Systems (ATIS) General Use Standards Group	Group	No	Center/ 3rd Party Traveler Information Services	Center/ 511 (phone and web)	road network conditions
SAE	ATIS General Use	Advanced Traveler Information Systems (ATIS) General Use Standards Group	Group	No	Center/ 3rd Party Traveler Information Services	Center/ 511 Internal Reporting	road network conditions
SAE	ATIS General Use	Advanced Traveler Information Systems (ATIS) General Use Standards Group	Group	No	Center/ 3rd Party Traveler Information Services	Center/ Statewide/Regional Transportation Operations Centers	road network conditions
SAE	ATIS General Use	Advanced Traveler Information Systems (ATIS) General Use Standards Group	Group	No	Center/ 511 (phone and web)	Center/ Public Transit Agencies	transit information request
SAE	ATIS General Use	Advanced Traveler Information Systems (ATIS) General Use Standards Group	Group	No	Center/ 511 (phone and web)	Terminator/ Media Systems (T.V. and Radio)	traveler information for media
SAE	ATIS General Use	Advanced Traveler Information Systems (ATIS) General Use Standards Group	Group	No	Center/ 511 (phone and web)	Terminator/ Other 511 Systems	incident information
SAE	ATIS General Use	Advanced Traveler Information Systems (ATIS) General Use Standards Group	Group	No	Center/ 511 (phone and web)	Terminator/ Other 511 Systems	road network conditions
SAE	ATIS General Use	Advanced Traveler Information Systems (ATIS) General Use Standards Group	Group	No	Center/ 511 (phone and web)	Travelers/ Personal Communications/Computing Devices (en-route)	travel services information
SAE	ATIS General Use	Advanced Traveler Information Systems (ATIS) General Use Standards Group	Group	No	Center/ 511 (phone and web)	Travelers/ Personal Communications/Computing Devices (pre-trip)	broadcast traveler information
SAE	ATIS General Use	Advanced Traveler Information Systems (ATIS) General Use Standards Group	Group	No	Center/ 511 (phone and web)	Travelers/ Personal Communications/Computing Devices (pre-trip)	travel services information
SAE	ATIS General Use	Advanced Traveler Information Systems (ATIS) General Use Standards Group	Group	No	Center/ 511 Internal Reporting	Center/ 511 (phone and web)	incident information
SAE	ATIS General Use	Advanced Traveler Information Systems (ATIS) General Use Standards Group	Group	No	Center/ 511 Internal Reporting	Center/ 511 (phone and web)	road network conditions
SAE	ATIS General Use	Advanced Traveler Information Systems (ATIS) General Use Standards Group	Group	No	Center/ AMHS Dispatch and Communications	Center/ 511 (phone and web)	transit service information

SDO	Document ID	Standard Title	Standard Type	User Defined	Source Element	Destination Element	Flow Name
SAE	ATIS General Use	Advanced Traveler Information Systems (ATIS) General Use Standards Group	Group	No	Center/ AMHS Dispatch and Communications	Center/ AMHS Website	transit service information
SAE	ATIS General Use	Advanced Traveler Information Systems (ATIS) General Use Standards Group	Group	No	Center/ AMHS Website	Terminator/ Media Systems (T.V. and Radio)	traveler information for media
SAE	ATIS General Use	Advanced Traveler Information Systems (ATIS) General Use Standards Group	Group	No	Center/ AMHS Website	Travelers/ Personal Communications/Computing Devices (en-route)	travel services information
SAE	ATIS General Use	Advanced Traveler Information Systems (ATIS) General Use Standards Group	Group	No	Center/ AMHS Website	Travelers/ Personal Communications/Computing Devices (pre-trip)	broadcast traveler information
SAE	ATIS General Use	Advanced Traveler Information Systems (ATIS) General Use Standards Group	Group	No	Center/ AMHS Website	Travelers/ Personal Communications/Computing Devices (pre-trip)	travel services information
SAE	ATIS General Use	Advanced Traveler Information Systems (ATIS) General Use Standards Group	Group	No	Center/ Statewide/Regional Transportation Operations Centers	Center/ 511 (phone and web)	incident information
SAE	ATIS General Use	Advanced Traveler Information Systems (ATIS) General Use Standards Group	Group	No	Center/ Statewide/Regional Transportation Operations Centers	Center/ 511 (phone and web)	multimodal information
SAE	ATIS General Use	Advanced Traveler Information Systems (ATIS) General Use Standards Group	Group	No	Center/ Statewide/Regional Transportation Operations Centers	Center/ 511 (phone and web)	road network conditions
SAE	ATIS General Use	Advanced Traveler Information Systems (ATIS) General Use Standards Group	Group	No	Travelers/ Personal Communications/Computing Devices (en-route)	Center/ 3rd Party Traveler Information Services	travel services request
SAE	ATIS General Use	Advanced Traveler Information Systems (ATIS) General Use Standards Group	Group	No	Travelers/ Personal Communications/Computing Devices (en-route)	Center/ 511 (phone and web)	travel services request
SAE	ATIS General Use	Advanced Traveler Information Systems (ATIS) General Use Standards Group	Group	No	Travelers/ Personal Communications/Computing Devices (en-route)	Center/ 511 (phone and web)	traveler profile
SAE	ATIS General Use	Advanced Traveler Information Systems (ATIS) General Use Standards Group	Group	No	Travelers/ Personal Communications/Computing Devices (en-route)	Center/ AMHS Website	travel services request
SAE	ATIS General Use	Advanced Traveler Information Systems (ATIS) General Use Standards Group	Group	No	Travelers/ Personal Communications/Computing Devices (en-route)	Center/ AMHS Website	traveler profile
SAE	ATIS General Use	Advanced Traveler Information Systems (ATIS) General Use Standards Group	Group	No	Travelers/ Personal Communications/Computing Devices (pre-trip)	Center/ 3rd Party Traveler Information Services	travel services request
SAE	ATIS General Use	Advanced Traveler Information Systems (ATIS) General Use Standards Group	Group	No	Travelers/ Personal Communications/Computing Devices (pre-trip)	Center/ 511 (phone and web)	travel services request

SDO	Document ID	Standard Title	Standard Type	User Defined	Source Element	Destination Element	Flow Name
SAE	ATIS General Use	Advanced Traveler Information Systems (ATIS) General Use Standards Group	Group	No	Travelers/ Personal Communications/Computing Devices (pre-trip)	Center/ 511 (phone and web)	traveler profile
SAE	ATIS General Use	Advanced Traveler Information Systems (ATIS) General Use Standards Group	Group	No	Travelers/ Personal Communications/Computing Devices (pre-trip)	Center/ AMHS Website	travel services request
SAE	ATIS General Use	Advanced Traveler Information Systems (ATIS) General Use Standards Group	Group	No	Travelers/ Personal Communications/Computing Devices (pre-trip)	Center/ AMHS Website	traveler profile
SAE	ATIS Low Bandwidth	Advanced Traveler Information Systems (ATIS) Bandwidth Limited Standards Group	Group	No	Center/ 511 (phone and web)	Travelers/ Personal Communications/Computing Devices (pre-trip)	broadcast traveler information
SAE	ATIS Low Bandwidth	Advanced Traveler Information Systems (ATIS) Bandwidth Limited Standards Group	Group	No	Center/ AMHS Website	Travelers/ Personal Communications/Computing Devices (pre-trip)	broadcast traveler information

12.7 Data Archive Standards

Table 35. Data Archive Standards

SDO	Document ID	Standard Title	Standard Type	User Defined	Source Element	Destination Element	Flow Name
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ 511 Internal Reporting	Center/ Traffic Data System	archive coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ 511 Internal Reporting	Center/ Transportation Data Archive System	archive coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Bridge Management System	Center/ Transportation Data Archive System	archive coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Crash Database	Center/ Law Enforcement Dispatch	archive coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Crash Database	Center/ Transportation Data Archive System	archive coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Law Enforcement Dispatch	Center/ Crash Database	archive coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Maintenance Management System	Center/ Traffic Data System	archive coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Maintenance Management System	Center/ Transportation Data Archive System	archive coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Pavement Management System	Center/ Transportation Data Archive System	archive coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Public Transit Agencies	Center/ Transportation Data Archive System	archive coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Road Weather Data	Center/ Transportation Data Archive System	archive coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Traffic Data System	Center/ 511 Internal Reporting	archive coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Traffic Data System	Center/ Maintenance Management System	archive coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Traffic Data System	Center/ Transportation Data Archive System	archive coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Transportation Asset Management System	Center/ Transportation Data Archive System	archive coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Transportation Data Archive System	Center/ 511 Internal Reporting	archive coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Transportation Data Archive System	Center/ Bridge Management System	archive coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Transportation Data Archive System	Center/ Crash Database	archive coordination

SDO	Document ID	Standard Title	Standard Type	User Defined	Source Element	Destination Element	Flow Name
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Transportation Data Archive System	Center/ Maintenance Management System	archive coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Transportation Data Archive System	Center/ Pavement Management System	archive coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Transportation Data Archive System	Center/ Public Transit Agencies	archive coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Transportation Data Archive System	Center/ Road Weather Data	archive coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Transportation Data Archive System	Center/ Traffic Data System	archive coordination
AASHTO/ITE/NEMA	NTCIP C2C	NTCIP Center-to-Center Standards Group	Group	No	Center/ Transportation Data Archive System	Center/ Transportation Asset Management System	archive coordination