

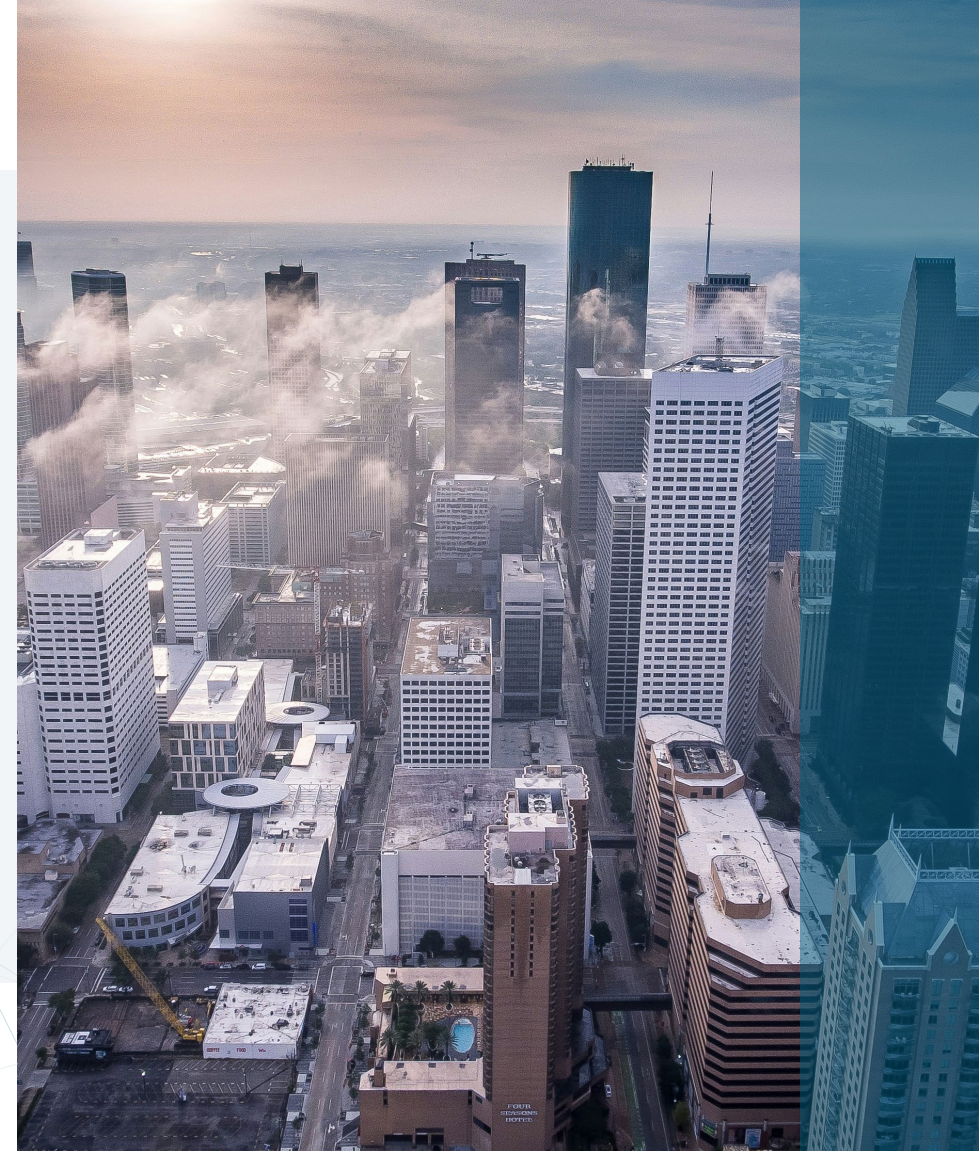
May 2, 2024

# H-GAC ITS Architecture and Website Update

H-GAC TSMO Subcommittee Briefing



Kimley»Horn  
Expect More. Experience Better.



# Project Team

Subconsultants



**s+v+traffic**  
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**Architecture  
Conformity and  
Website Development**  
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**ITS Deployment**  
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# What is an ITS Architecture

A plan for the **deployment**, **integration**, and **operation** of Intelligent Transportation Systems in a state or region

The plan includes **traffic**, **transit**, **tolling**, **public safety**, and **emergency management** agencies

The plan should be developed in **coordination** with other **regional planning efforts** including the TxDOT Houston TSMO Program Plan, local ITS plans, and the H-GAC Regional Transportation Plan



# Why an ITS Architecture is Important?

**All transportation projects that incorporate ITS elements and are funded through the Highway Trust Fund must conform with an ITS Architecture**

## **An ITS Architecture can also...**

- Help scope projects appropriately
- Ensure regional interoperability
- Offer a focused perspective for long-range planning
- Ensure preparedness for future deployment of technology

# Project Goals

## H-GAC ITS ARCHITECTURE AND WEBSITE UPDATE

1. Update the **existing H-GAC Regional ITS Architecture** to the current National ITS Architecture (Version 9.2)
2. Develop an ITS inventory software analysis tool that will **assist in transportation project prioritization**, benefit cost analysis, and economic impact analysis
3. Update and advance the existing Transportation Systems Management and Operations (TSMO) website
4. Create a **Geographic Information System (GIS) database of all ITS and signal fiber in the eight-county MPO**
5. Develop a standard method for collecting inventories and implementation plans from each stakeholder agency
6. Meet with all **eight counties and in the region (and cities)** to verify existing inventory and obtain plans for new ITS, signals, TMCs, and other deployments to be implemented over the next seven years
7. Meet with the **TxDOT Houston and Beaumont Districts** to inventory all existing ITS, signal, and tolling facilities and document their implementation plans for the next seven to 10 years
8. Determine which **cities will potentially surpass 50,000 residents** in the 2030 Census **and meet with them** to document their existing ITS and signal inventories and implementation plans leading up to 2030
9. Meet with all **Toll Authorities** in the MPO to inventory all existing ITS, signal, and tolling facilities and document the implementation plans for each for the next seven to 10 years

# H-GAC ITS Architecture History

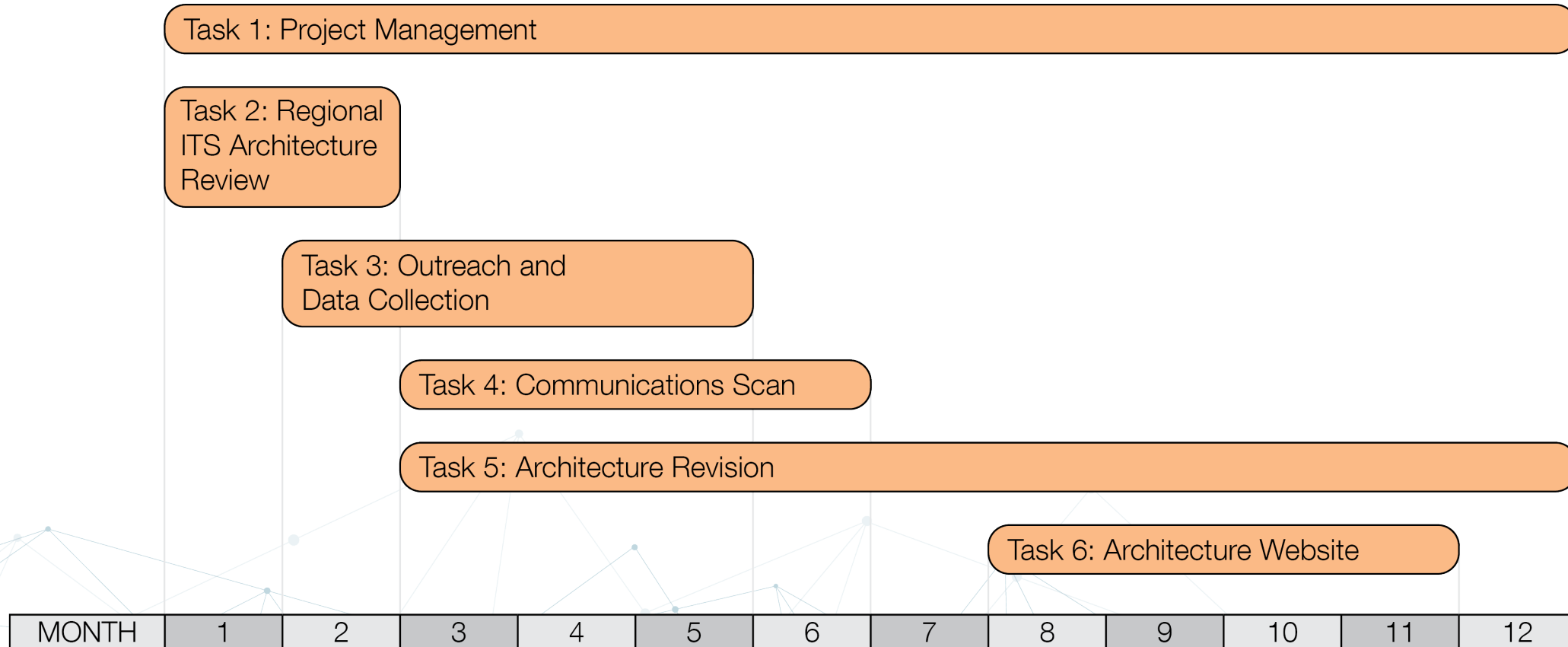
First Developed in 2003

Updated in 2010

Updated in 2017

Current Update for 2024

# Key Tasks and Timeline







# TSMO Subcommittee Participation

## TSMO Subcommittee Meetings

**August 2024** – Summary of Stakeholder Outreach and Communications Scan

**November 2024** – Regional ITS Architecture Recommendations

**February 2025** – Training Overview and ITS Scoring Process

## Other TSMO Subcommittee Touchpoints

**May/June 2024** – Stakeholder Interviews

**December 2024** – Virtual Stakeholder Workshop to Review Recommendations

**January/February 2025** – Stakeholder Training

**On-Going** – Drafts and Revised Draft Report Reviews

# Stakeholder Agencies to be Interviewed

| H-GAC Counties   | H-GAC Cities  | Regional Agencies  |
|--|---|--|
| Brazoria<br><i>(Includes Toll Road Authority)</i><br>Chambers<br>Fort Bend<br><i>(Includes Toll Road Authority and Transit)</i><br>Galveston<br>Harris<br>Liberty<br>Montgomery<br><i>(Includes Toll Road Authority)</i><br>Waller | Baytown<br>Conroe<br>Galveston<br>Houston<br>League City<br>Missouri City<br>Pasadena<br>Pearland<br>Sugar Land<br>Texas City | TxDOT Houston District<br><i>(Includes the BlueRidge Transportation Group)</i><br>TxDOT Beaumont District<br>Brazos Transit District<br>Harris County Regional Transit Authority<br>Houston Metro<br>Port of Freeport<br>Port of Houston<br>Uptown TIRZ<br>Woodland Regional Transit Authority |

*Note: Stakeholders cites were chosen based on population over 50,000 people.*

# Regional ITS Architectures Reviewed

Atlanta

Dallas-Fort Worth

Los Angeles County

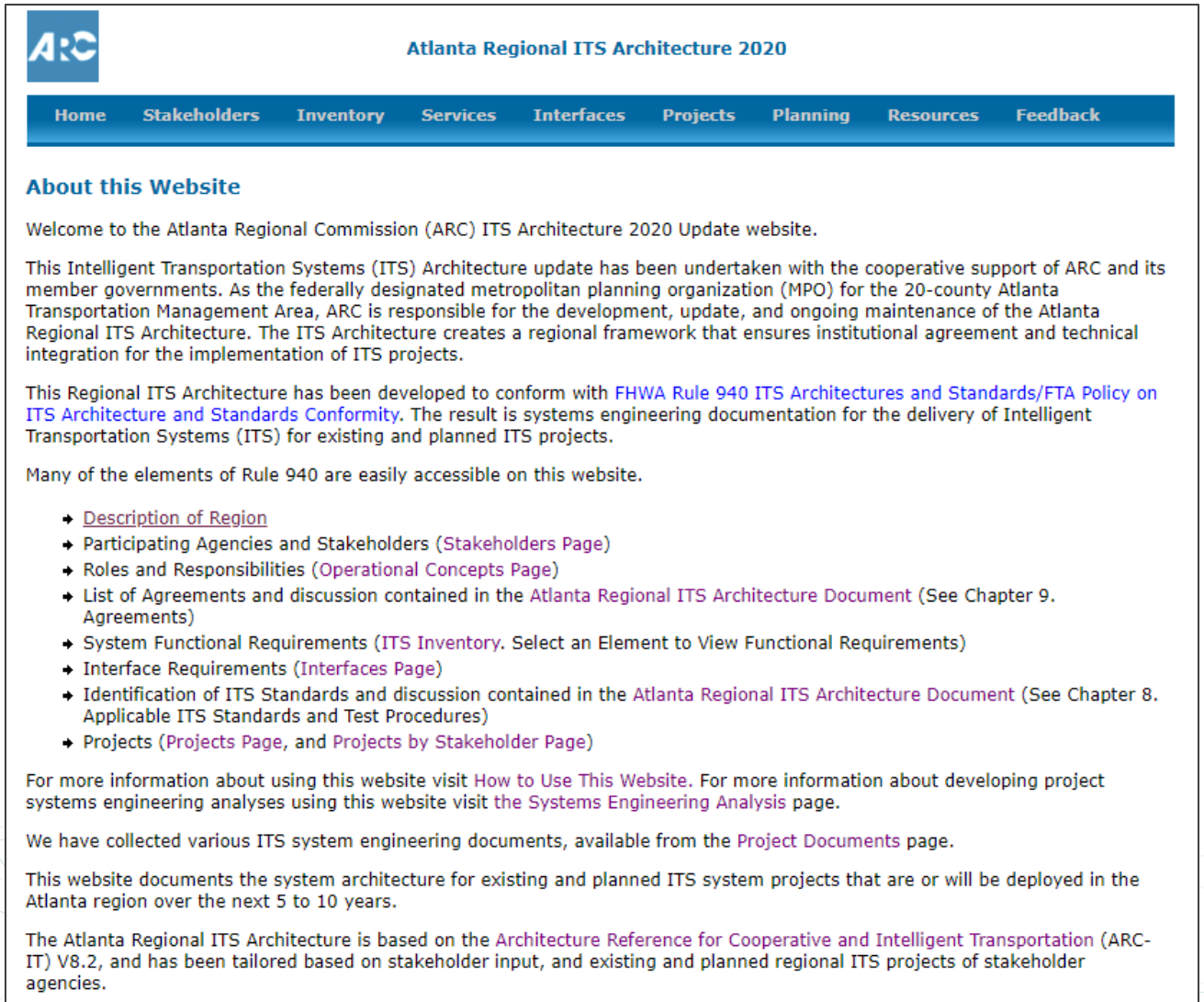

Other

# Atlanta Regional ITS Architecture

## Stakeholders

Included all cities  
(population as low as 6,500)

All cities have elements mapped  
towards them



**ARC** Atlanta Regional ITS Architecture 2020

Home Stakeholders Inventory Services Interfaces Projects Planning Resources Feedback

### About this Website

Welcome to the Atlanta Regional Commission (ARC) ITS Architecture 2020 Update website.

This Intelligent Transportation Systems (ITS) Architecture update has been undertaken with the cooperative support of ARC and its member governments. As the federally designated metropolitan planning organization (MPO) for the 20-county Atlanta Transportation Management Area, ARC is responsible for the development, update, and ongoing maintenance of the Atlanta Regional ITS Architecture. The ITS Architecture creates a regional framework that ensures institutional agreement and technical integration for the implementation of ITS projects.

This Regional ITS Architecture has been developed to conform with [FHWA Rule 940 ITS Architectures and Standards/FTA Policy on ITS Architecture and Standards Conformity](#). The result is systems engineering documentation for the delivery of Intelligent Transportation Systems (ITS) for existing and planned ITS projects.

Many of the elements of Rule 940 are easily accessible on this website.

- [Description of Region](#)
- Participating Agencies and Stakeholders ([Stakeholders Page](#))
- Roles and Responsibilities ([Operational Concepts Page](#))
- List of Agreements and discussion contained in the [Atlanta Regional ITS Architecture Document](#) (See Chapter 9. Agreements)
- System Functional Requirements ([ITS Inventory](#). Select an Element to View Functional Requirements)
- Interface Requirements ([Interfaces Page](#))
- Identification of ITS Standards and discussion contained in the [Atlanta Regional ITS Architecture Document](#) (See Chapter 8. Applicable ITS Standards and Test Procedures)
- Projects ([Projects Page](#), and [Projects by Stakeholder Page](#))

For more information about using this website visit [How to Use This Website](#). For more information about developing project systems engineering analyses using this website visit the [Systems Engineering Analysis](#) page.

We have collected various ITS system engineering documents, available from the [Project Documents](#) page.

This website documents the system architecture for existing and planned ITS system projects that are or will be deployed in the Atlanta region over the next 5 to 10 years.

The Atlanta Regional ITS Architecture is based on the [Architecture Reference for Cooperative and Intelligent Transportation](#) (ARC-IT) V8.2, and has been tailored based on stakeholder input, and existing and planned regional ITS projects of stakeholder agencies.

# North Central Texas ITS Architecture

## Stakeholders

Included all cities and towns in the DFW area as stakeholders (population as low as 383)

Only large cities, such as Dallas, Fort Worth, Arlington, and Plano have elements listed on the NCTCOG ITS Architecture

**RAD-IT<sup>✓</sup>**

Regional ITS Architecture Dec2022-Update

[Home](#)  
[Scope](#)  
[Planning](#)  
[Stakeholders](#)  
[Inventory](#)  
    By Physical Object  
    By Stakeholder  
[Services](#)  
[Roles and Resp](#)  
[Needs](#)  
[Functions](#)  
[Interfaces](#)  
[Communications](#)  
[Agreements](#)  
[Projects](#)

### Architecture Scope

The scope of the Regional ITS Architecture can be described in terms of: 1) the size of the region and jurisdictions covered (geographic scope), 2) the planning or time horizon, and 3) the variety of transportation services that are covered. This scope is defined in the context of adjacent and overlapping Regional ITS Architectures.

### Description

The North Central Texas ITS Architecture is an update to the Regional Intelligent Transportation System (ITS) Architecture for the North Central Texas Region. The North Central Texas Regional ITS Architecture is the Regional ITS Architecture for the North Central Texas Region. The Regional ITS Architecture establishes a blueprint for transportation integration and needs to be updated periodically to reflect technological advances in ITS. In addition, the Regional ITS Architecture needs to maintain consistency with the National ITS Architecture.

**Time Frame: Existing to twelve years.**

### Geographic Scope

North Central Texas is a 16-county region of North Central Texas, which is centered around the two urban centers of Dallas and Fort Worth. It covers the following counties:

- Collin
- Dallas
- Denton
- Ellis
- Erath
- Hood
- Hunt
- Johnson
- Kaufman
- Navarro
- Palo Pinto
- Parker
- Rockwall
- Somervell
- Tarrant
- Wise

### Service Scope

- Archive Data Management
- Public Transportation
- Traffic Management
- Traveler Information
- Emergency Management
- Automated Vehicles Safety Systems
- Maintenance and Construction
- Commercial Vehicle Operations

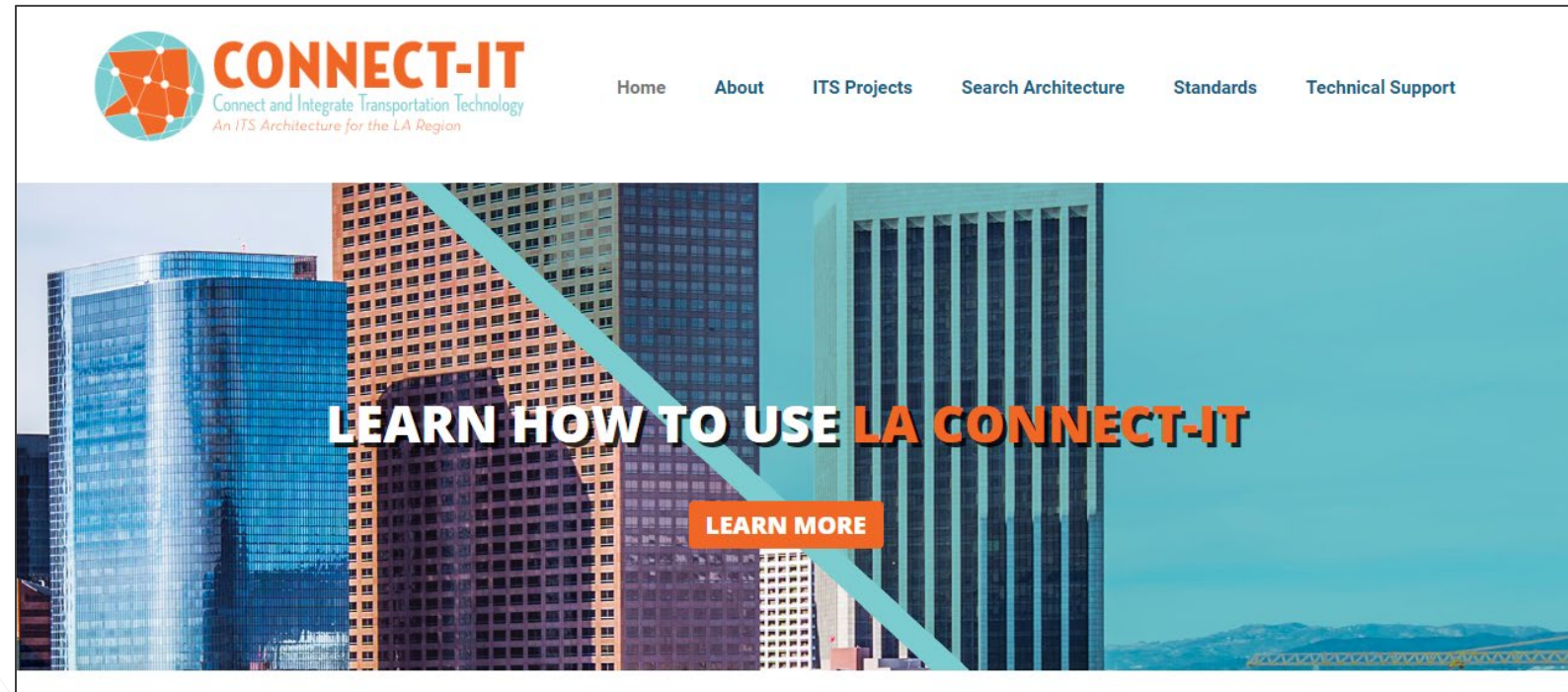


# Los Angeles County ITS Architecture

## Stakeholders

Does not include specific cities within Los Angeles County

Uses “Local Agency” for cities within the LA County Region



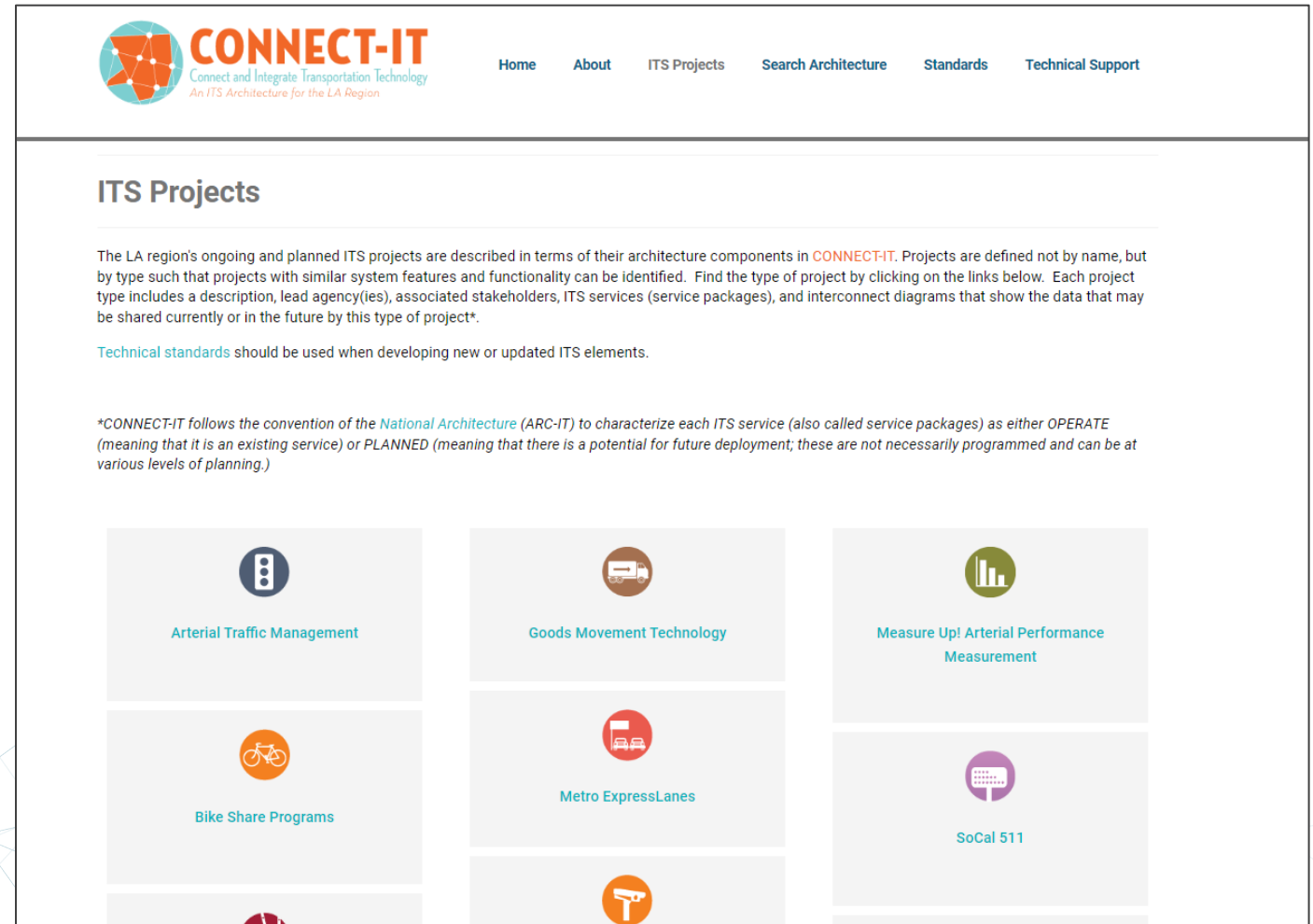
# Los Angeles County ITS Architecture

## Project Focused

Project focused with regional ITS architecture tied to 16 regional project initiatives

For each project initiative, the following are identified:

- Description
- Lead and Associated Agencies
- ITS Services Packages



The screenshot displays the CONNECT-IT website, which is dedicated to regional ITS architecture. The header features the CONNECT-IT logo and navigation links: Home, About, ITS Projects, Search Architecture, Standards, and Technical Support. The main content area is titled "ITS Projects" and includes a descriptive paragraph about the LA region's ongoing and planned ITS projects. Below this, a note states that technical standards should be used when developing new or updated ITS elements. A disclaimer at the bottom explains the convention of the National Architecture (ARC-IT) for characterizing ITS services. The bottom section of the screenshot shows a grid of project initiatives, each with an icon and a title: Arterial Traffic Management (traffic light icon), Goods Movement Technology (truck icon), Measure Up! Arterial Performance Measurement (bar chart icon), Bike Share Programs (bicycle icon), Metro ExpressLanes (car icon), and SoCal 511 (phone icon).

**CONNECT-IT**  
Connect and Integrate Transportation Technology  
An ITS Architecture for the LA Region

Home About ITS Projects Search Architecture Standards Technical Support

### ITS Projects

The LA region's ongoing and planned ITS projects are described in terms of their architecture components in **CONNECT-IT**. Projects are defined not by name, but by type such that projects with similar system features and functionality can be identified. Find the type of project by clicking on the links below. Each project type includes a description, lead agency(ies), associated stakeholders, ITS services (service packages), and interconnect diagrams that show the data that may be shared currently or in the future by this type of project\*.

Technical standards should be used when developing new or updated ITS elements.

\*CONNECT-IT follows the convention of the *National Architecture (ARC-IT)* to characterize each ITS service (also called service packages) as either *OPERATE* (meaning that it is an existing service) or *PLANNED* (meaning that there is a potential for future deployment; these are not necessarily programmed and can be at various levels of planning.)

- Arterial Traffic Management
- Goods Movement Technology
- Measure Up! Arterial Performance Measurement
- Bike Share Programs
- Metro ExpressLanes
- SoCal 511

# Other - San Diego MPO ITS Architecture

## Project Focused

Identified “5 Big Moves” for the San Diego Region regarding ITS

1. Complete Corridors
2. Transit Leap
3. Mobility Hubs
4. Flexible Fleets
5. Next Operating System

| SANDAG Regional ITS Architecture   |   |
|------------------------------------|---|
| Home                               | 5 Big Moves   |
| 5 Big Moves                        | The Regional ITS Architecture provides a starting point for 5 Big Move definition. It provides an overall framework that shows how anticipated projects will integrate with each other and with existing systems. This page lists the 5 Big Moves that have been mapped to the regional ITS architecture.   |
| Services                           |   |
| Needs                              |   |
| Scope                              |   |
| Planning                           |   |
| Stakeholders                       |   |
| Inventory                          |   |
| By Physical Object                 |   |
| By Stakeholder                     |   |
| Roles and Resp                     |   |
| Functions                          |   |
| Interfaces                         |   |
| Agreements                         |   |
| Sitemap                            |   |
| Project                            | Description   |
| 5 Big Moves #1: Complete Corridors | <p>An integrated, comprehensive vision to provide a variety of travel choices and technology to manage the use of highways, arterials and other assets in real time. Complete Corridors provides a balance of dedicated, safe space for all travelers in the region, including local commuters, through travelers, freight and delivery vehicles and active transportation users who walk, bike, use transit, and utilize Flexible Fleets.</p> <p>Key features of Complete Corridors include: managed lanes, active transportation and demand management (ATDM), smart infrastructure and connected vehicles, priority for transit, active transportation and shared mobility services, curb management and electric vehicle infrastructure.</p> <p>Projects that fall within Complete Corridors will be evaluated against SANDAG 2021 Regional Transportation Plan goals and objectives.</p>   |
| 5 Big Moves #2: Transit Leap       | <p>Transit Leap could create a complete network of fast, high-capacity, high-frequency transit services that connect major residential areas with employment centers and attractions throughout the San Diego region. Transit Leap services could connect to supporting Flexible Fleets in Mobility Hubs. New high-speed services — covering longer distances with limited stops— may be separated from vehicle traffic with bridges, tunnels, or dedicated lanes. Improvements to existing transit services—such as the Trolley, COASTER, SPRINTER, and Rapid—may include additional rail tracks, more frequent service, dedicated transit lanes, and traffic signal priority to keep transit moving quickly.</p> <p>Transit Leap will provide practical transit choices that are viable alternatives to driving for most trips along Complete Corridor highways.</p> <p>Projects that fall within Transit Leap will be evaluated against SANDAG 2021 Regional Transportation Plan goals and objectives.</p> |

# North Central Texas ITS Architecture

## Training

### Learning Center

North Central Texas Regional ITS Architecture Update Usage Seminar Videos

Usage Seminar - Part 1: Using the Architecture

Usage Seminar - Part 2: Project Consistency with the Architecture

Usage Seminar - Part 3: Architecture Maintenance

## North Central Texas Regional ITS Architecture Update

Usage Seminar - Part 1  
Using the Architecture

NCTCOG  
North Central Texas Council of Governments  
0:02 / 32:40



North Central Texas Regional ITS Architecture Update Usage Seminar – Part 1

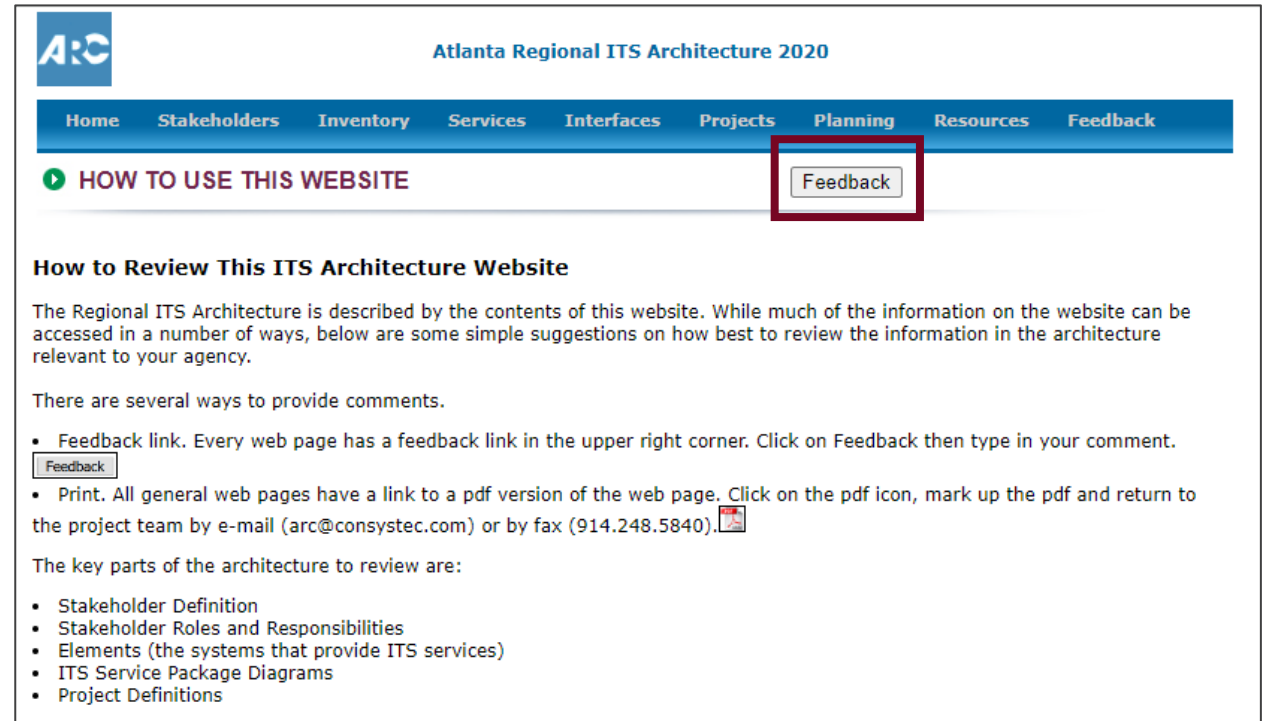


# Atlanta Regional ITS Architecture

## Use and Feedback

Website includes a “How to Use this Website” page

Website includes a “Feedback” feature on all pages of the website which allows users to email updates or questions



The screenshot shows the website's header with the ARC logo and the title "Atlanta Regional ITS Architecture 2020". A navigation bar contains links: Home, Stakeholders, Inventory, Services, Interfaces, Projects, Planning, Resources, and Feedback. Below the navigation bar, a section titled "HOW TO USE THIS WEBSITE" is visible. A red box highlights the "Feedback" button in the top right corner of the page. The main content area includes a heading "How to Review This ITS Architecture Website" and a paragraph explaining the purpose of the website. It lists several ways to provide comments: a feedback link, a print option, and a link to a pdf version. A list of key parts to review is also provided.

ARC Atlanta Regional ITS Architecture 2020

Home Stakeholders Inventory Services Interfaces Projects Planning Resources Feedback

▶ HOW TO USE THIS WEBSITE

Feedback

### How to Review This ITS Architecture Website

The Regional ITS Architecture is described by the contents of this website. While much of the information on the website can be accessed in a number of ways, below are some simple suggestions on how best to review the information in the architecture relevant to your agency.

There are several ways to provide comments.

- Feedback link. Every web page has a feedback link in the upper right corner. Click on Feedback then type in your comment.
- Print. All general web pages have a link to a pdf version of the web page. Click on the pdf icon, mark up the pdf and return to the project team by e-mail (arc@consystec.com) or by fax (914.248.5840).

The key parts of the architecture to review are:

- Stakeholder Definition
- Stakeholder Roles and Responsibilities
- Elements (the systems that provide ITS services)
- ITS Service Package Diagrams
- Project Definitions



# Los Angeles County ITS Architecture

## Use and Feedback

How to Use CONNECT-IT page to walk user through use of regional ITS architecture

Explains what the ITS architecture is and resources that are available

Technical Support / Send Updates page

The screenshot displays two overlapping pages from the CONNECT-IT website. The top page is the 'How to Use' page, which includes a navigation bar with links: Home, About, ITS Projects, Search Architecture, Standards, and Technical Support. The main content area is titled 'How to Use' and lists several resources: 'CONNECT-IT consists of', 'Final report - the most current methodology, outreach and...', 'RAD-IT database - the RAD-IT database provides details of the interconnect details of the system throughout the website.', 'Website - this website serves as a central access point for the interconnect details. When planning/designing a project, users can access the interconnect details in project deployment and...', and a list of search options: 'Search by Project Type' (project type includes a list of project types and package diagrams for each), 'Search by ITS Service' (service packages - the RAD-IT database provides a detailed list of service packages), and 'Search Online' (Search the RAD-IT database). The bottom page is the 'Technical Support / Send Updates' page, which also features the same navigation bar. It includes a paragraph explaining that CONNECT-IT is dynamic and will be revised as needed, with a link to 'here' for more information. Below this is a form for requesting changes or technical support, with fields for Name (First and Last), Organization, Email, Phone, and a text area for 'Describe Requested Update(s)'.

**CONNECT-IT**  
Connect and Integrate Transportation Technology  
An ITS Architecture for the LA Region

Home About ITS Projects Search Architecture Standards Technical Support

### How to Use

#### How to Use this

CONNECT-IT consists of

- Final report** - the most current methodology, outreach and...
- RAD-IT database** - the RAD-IT database provides details of the interconnect details of the system throughout the website.
- Website** - this website serves as a central access point for the interconnect details. When planning/designing a project, users can access the interconnect details in project deployment and...
- Search by Project Type** - project type includes a list of project types and package diagrams for each
- Search by ITS Service** - service packages - the RAD-IT database provides a detailed list of service packages
- Search Online** - Search the RAD-IT database

**Technical Support / Send Updates**

CONNECT-IT is dynamic in nature and will be revised as needed to reflect changes in the region's goals and as ITS projects are implemented. Changes can consist of minor revisions, such as changing a stakeholder name or revising a data flow. Major updates will occur approximately every five years. A Maintenance Committee will be convened to monitor changes to the ITS projects in the region and advise on interim updates. More about the change management procedures can be found [here](#).

Use the form below to request a change or to request technical support for using **CONNECT-IT**.

**Name \***

First Last

**Organization \***

**Email \***

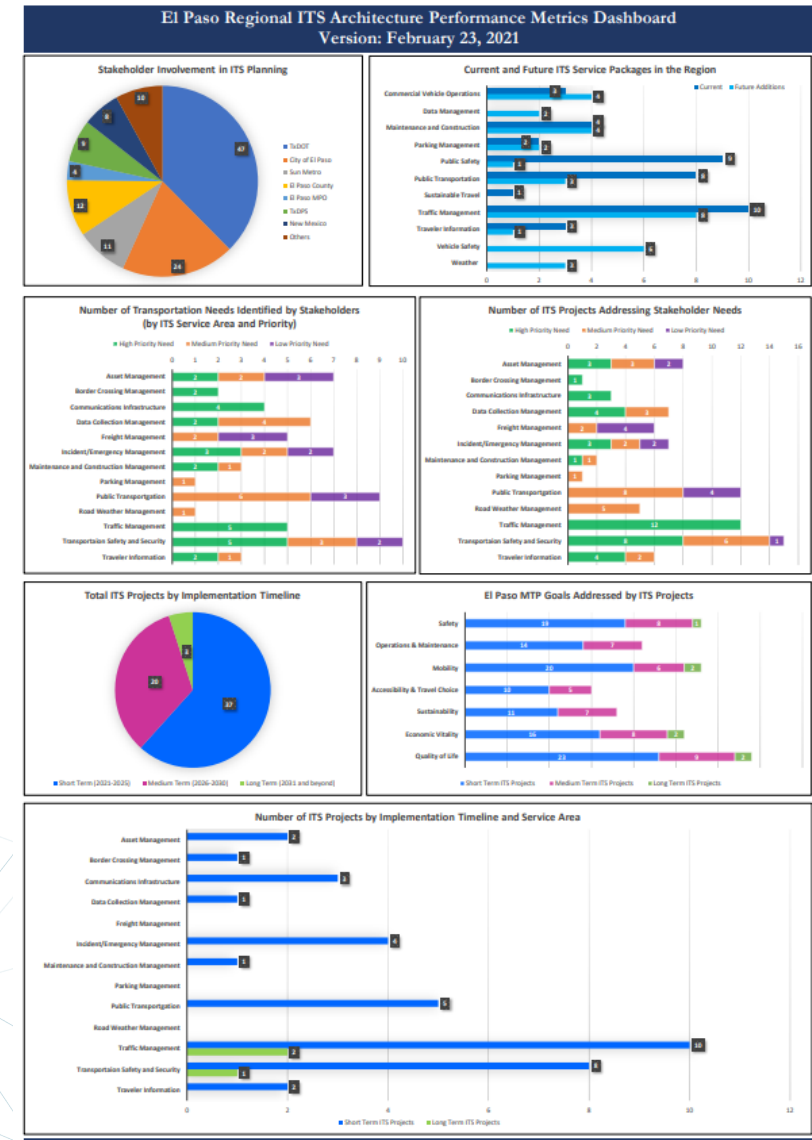
**Phone**

**Describe Requested Update(s)**

# Other - El Paso MPO ITS Architecture

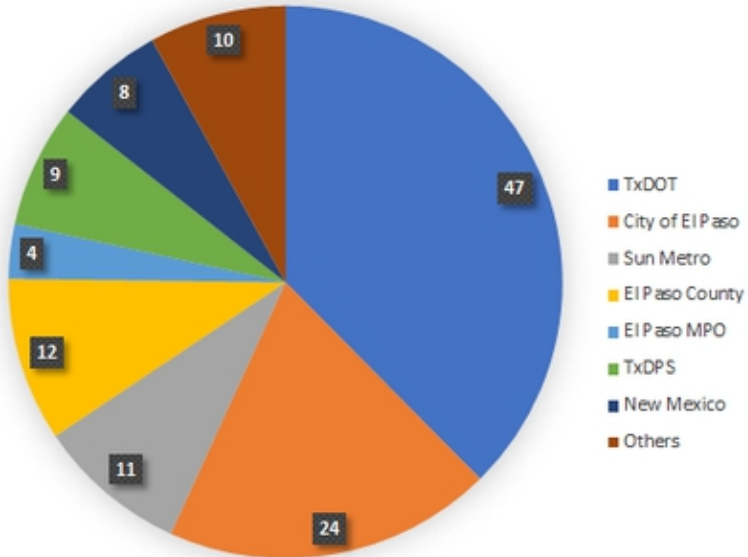
## ITS Architecture Performance Metrics Dashboard

1. Stakeholder Involvement
2. Current and Future ITS Service Packages in the Region
3. Number of Transportation Needs Identified by Stakeholders
4. Number of ITS Projects Addressing Stakeholder Needs
5. Total ITS Projects by Implementation Timeline

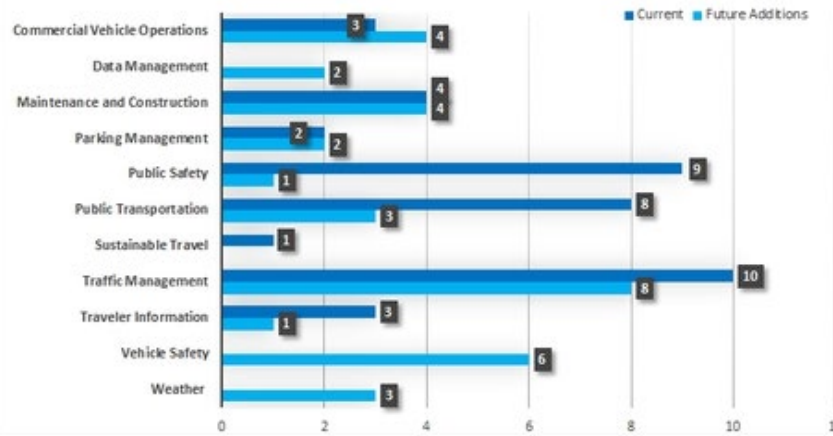


# Other - El Paso MPO ITS Architecture

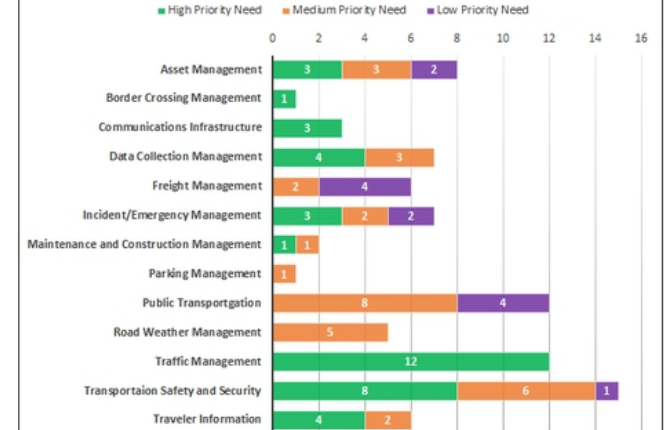
Stakeholder Involvement in ITS Planning



Current and Future ITS Service Packages in the Region



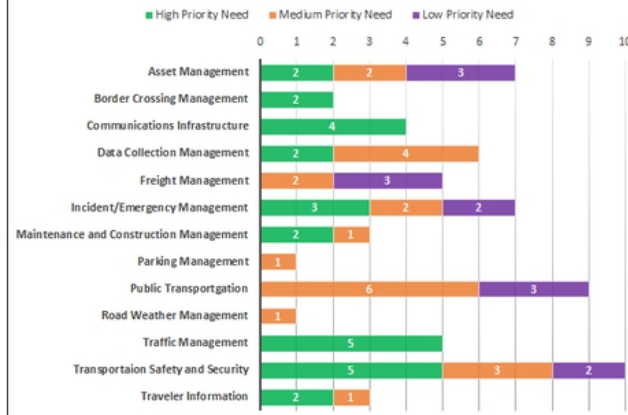
Number of ITS Projects Addressing Stakeholder Needs



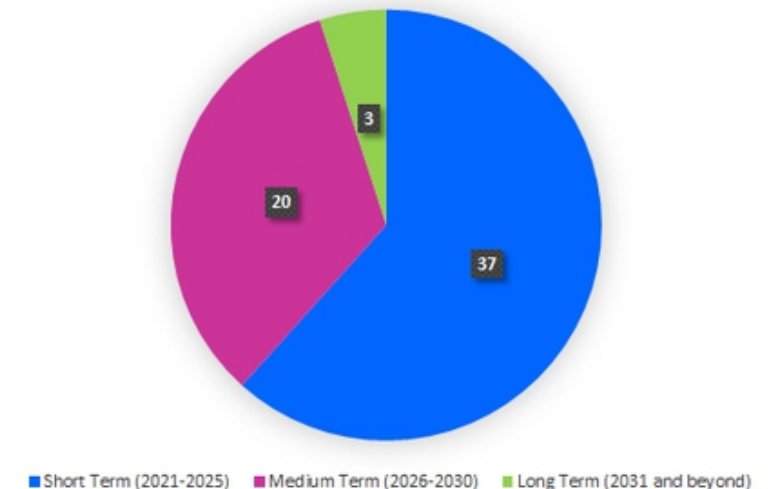
El Paso MTP Goals Addressed by ITS Projects



Number of Transportation Needs Identified by Stakeholders (by ITS Service Area and Priority)



Total ITS Projects by Implementation Timeline



# Next Steps

- Complete Tech Memo on ITS Architecture Scan
- Complete Stakeholder Outreach Interviews and Develop Summary Report
- Conduct Communications Scan

## Contacts

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# Thank You