SHRP2 SOLUTIONS
TOOLS FOR THE ROAD AHEAD

SHRP2 Solutions: C19 Expediting Project Delivery Session 1

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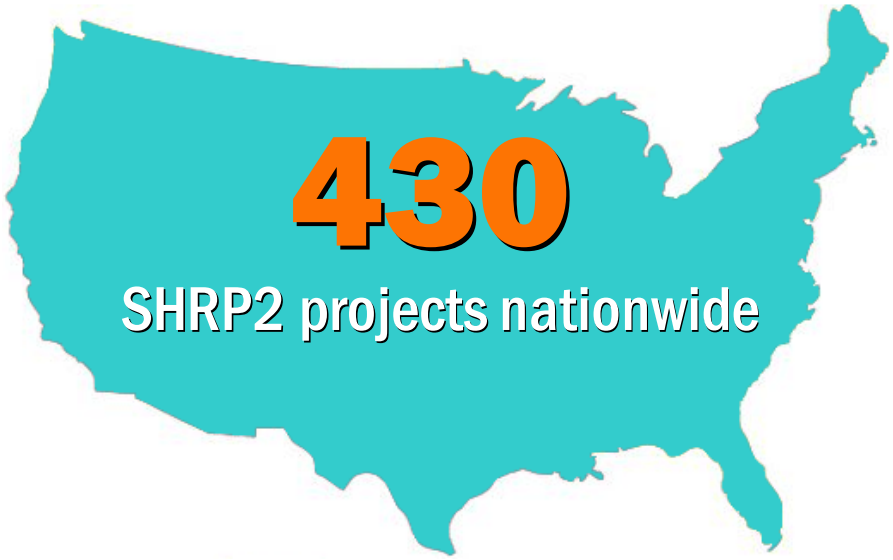
U.S. Department of Transportation
Federal Highway Administration

American Association of State Highway and Transportation Officials
AASHTO

SHRP2 at a Glance

- **SHRP2 Solutions** – 63 products
- **Solution Development** – processes, software, testing procedures, and specifications
- **Field Testing** – refined in the field
- **Implementation** – More than 430 transportation projects; adopt as standard practice
- **SHRP2 Education Connection** – connecting next-generation professionals with next-generation innovations



Focus Areas

Safety: fostering safer driving through analysis of driver, roadway, and vehicle factors in crashes, near crashes, and ordinary driving

Reliability: reducing congestion and creating more predictable travel times through better operations

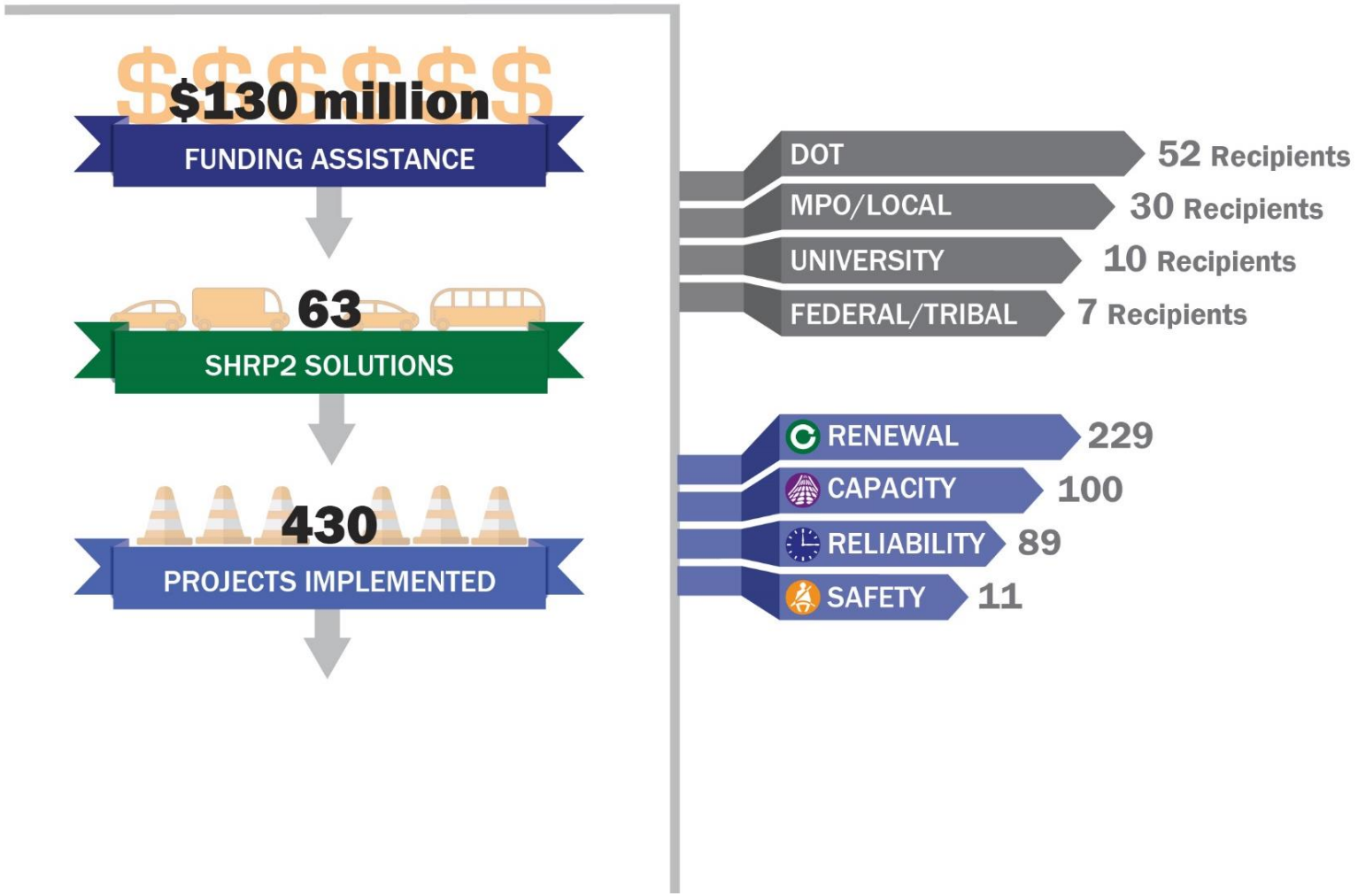
Capacity: planning and designing a highway system that offers minimum disruption and meets the environmental and economic needs of the community

Renewal: rapid maintenance and repair of the deteriorating infrastructure using already-available resources, innovations, and technologies

SHRP2 Implementation Assistance Program

- **Round 7:**
  - 13 products or bundles of products
  - 1 capacity; 3 reliability; 9 renewal products
- **42 recipients** just announced in June 2016
  - **37 state DOTs**
  - **4 MPOs**
  - **1 Federal Lands Highway**
- **79 projects** in **37 states**

SHRP2 Implementation: Moving Us Forward



Expediting Project Delivery

- *Expediting Project Delivery* identifies 24 strategies for addressing or avoiding 16 common constraints in order to speed delivery of transportation projects.
- Strategies Grouped Under Six Objectives:
  - **Improve internal communication and coordination;**
  - **Streamline decision-making;**
  - **Improve resource agency involvement and collaboration;**
  - **Improve public involvement and support;**
  - **Demonstrate real commitment to the project; and**
  - **Coordinate work across phases of project delivery.**

Expediting Project Delivery

Strategy	Stage of Project Planning or Delivery				
	Early Planning	Corridor Planning	NEPA	Design/ROW/ Permitting	Construction
1. Change-control practices			●	●	●
2. Consolidated decision council		○	●	●	
3. Context-sensitive design and solutions	○	○	●	●	○
4. Coordinated and responsive agency involvement	○	●	●	●	●
5. Dispute-resolution process		○	●	●	○
6. DOT-funded resource agency liaisons		○	●	●	
7. Early commitment of construction funding	●	●	●		
8. Expedited internal review and decision-making	●	●	●	●	
9. Facilitation to align expectations up front	○	●	●		
10. Highly responsive public engagement	●	●	●	●	○
11. Incentive payments to expedite relocations				●	
12. Media relations manager		●	●	●	○
13. Performance standards	○	●	●	●	
14. Planning and environmental linkages	●	●	●		
15. Planning-level environmental screening criteria	●	●			
16. Programmatic agreement for Section 106			●	●	
17. Programmatic or batched permitting			●	●	
18. Real-time collaborative interagency reviews	○	○	●	○	
19. Regional environmental analysis framework	○	●	●	●	
20. Risk management	●	●	●	●	●
21. Strategic oversight and readiness assessment	○	●	●		
22. Team co-location		○	●	●	
23. Tiered NEPA process	○	●	●		
24. Up-front environmental commitments		●	●	●	

For More Information

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Additional Resources:

GoSHRP2 Website:	fhwa.dot.gov/GoSHRP2
AASHTO SHRP2 Website:	http://shrp2.transportation.org
GoSHRP2 Alert Sign Up:	fhwa.dot.gov/goshrp2/contact
Email:	GoSHRP2@dot.gov

Session 1 Presentations

- Maricopa Association of Governments - Anubhav Bagley: Intermountain West Region GIS tool

- Arizona DOT - Marinela Konomi: Program management protocols for the Local Public Agency Federal-aid Highway Program.

- Vermont DOT - Jennifer Fitch and Aaron Guyette: Accelerated Bridge Program.

- Panel: Question and Answers

SHRP2 SOLUTIONS
TOOLS FOR THE ROAD AHEAD

C19: Expediting Project Delivery

Expediting Planning and Environmental Review of Key Global Transportation Projects in the Intermountain West Region

MARICOPA ASSOCIATION of GOVERNMENTS

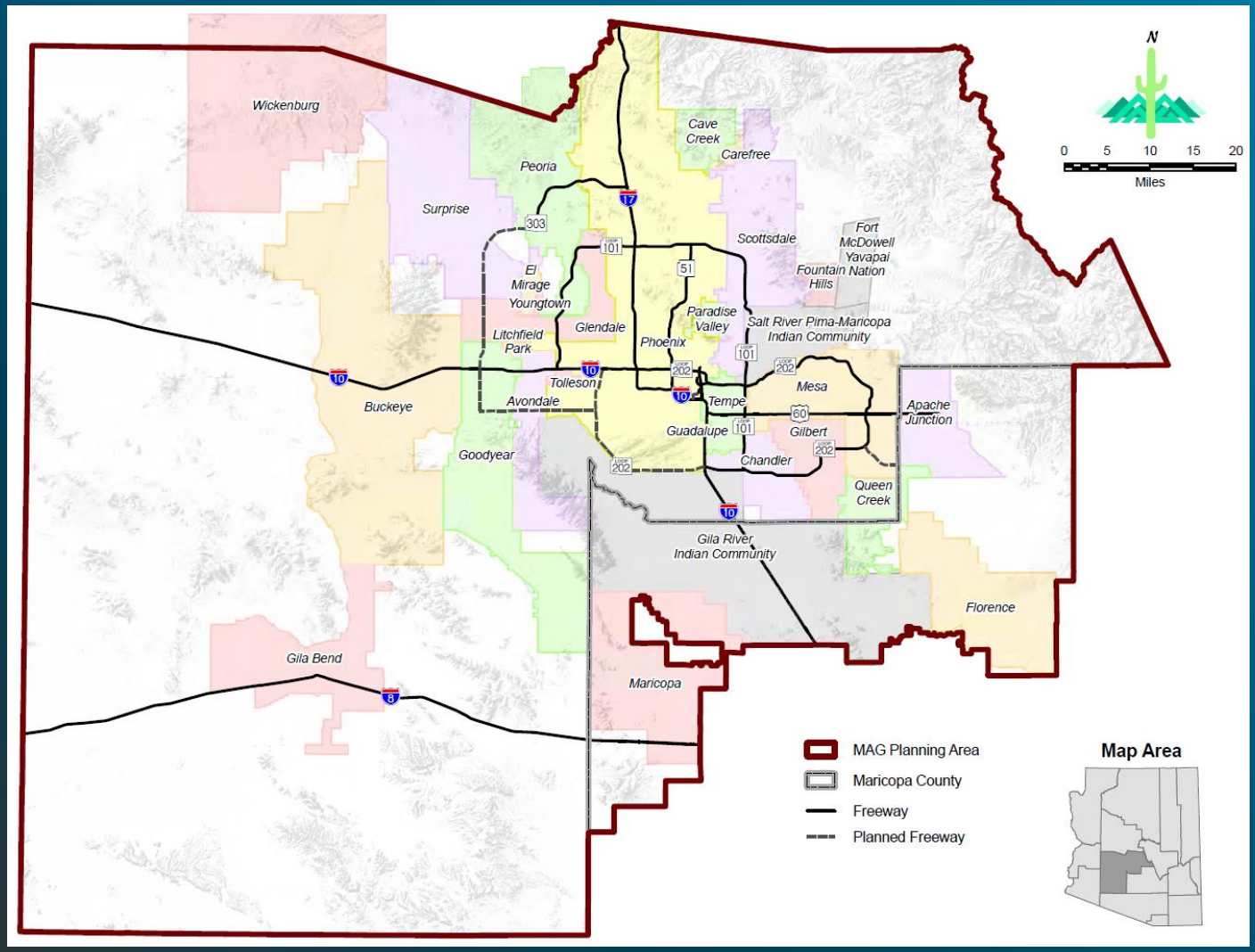
July 19, 2016

U.S. Department of Transportation
Federal Highway Administration

American Association of State Highway and Transportation Officials
AASHTO

MAG Region

Maricopa Association of Governments

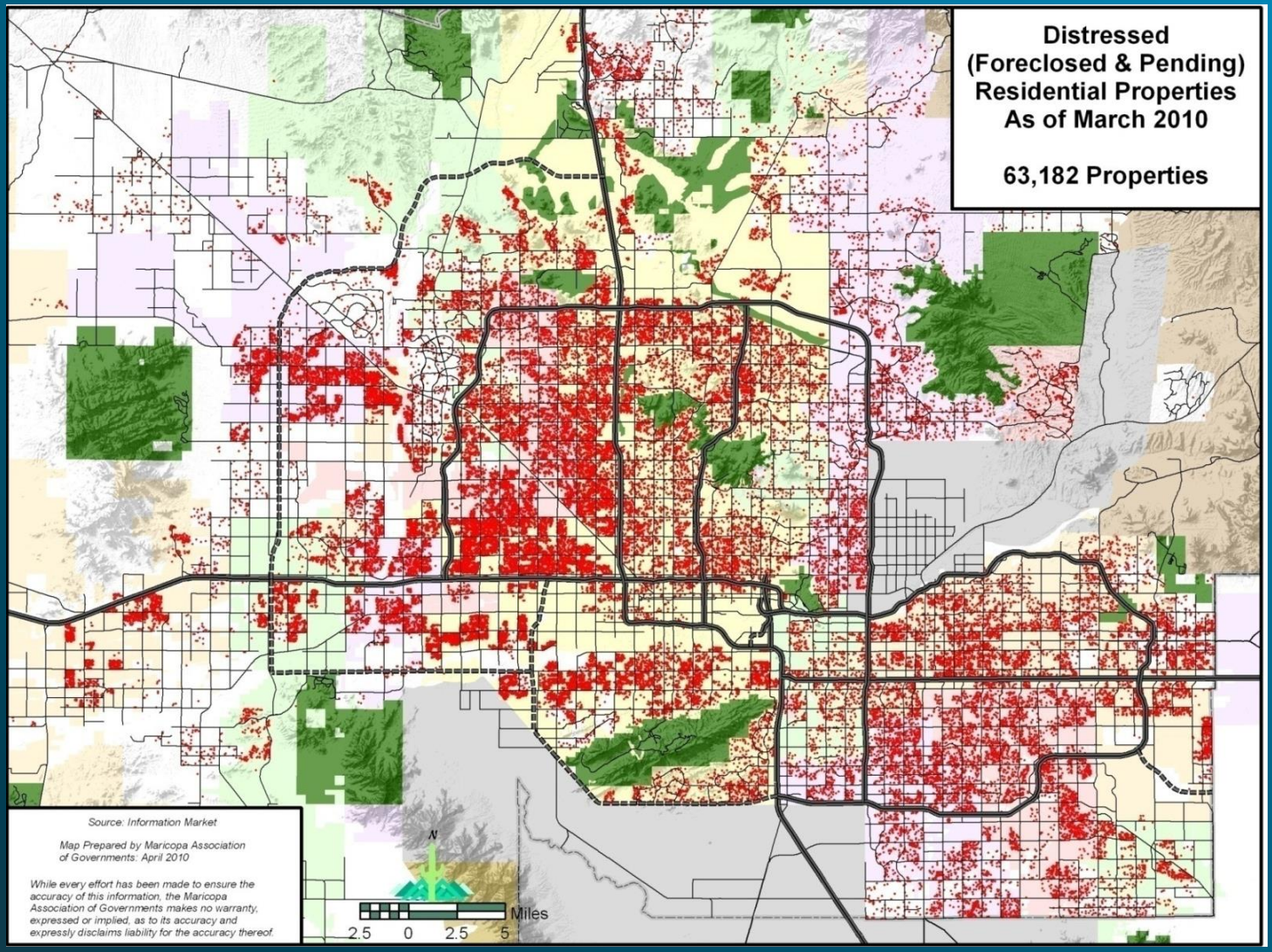


- 27 cities and towns, 3 Indian communities, 2 counties
- Area: 14,590 sq. mile
- Population: 4.4 Million
- Employment: 1.8 Million

Wake up call: 2007 Downturn

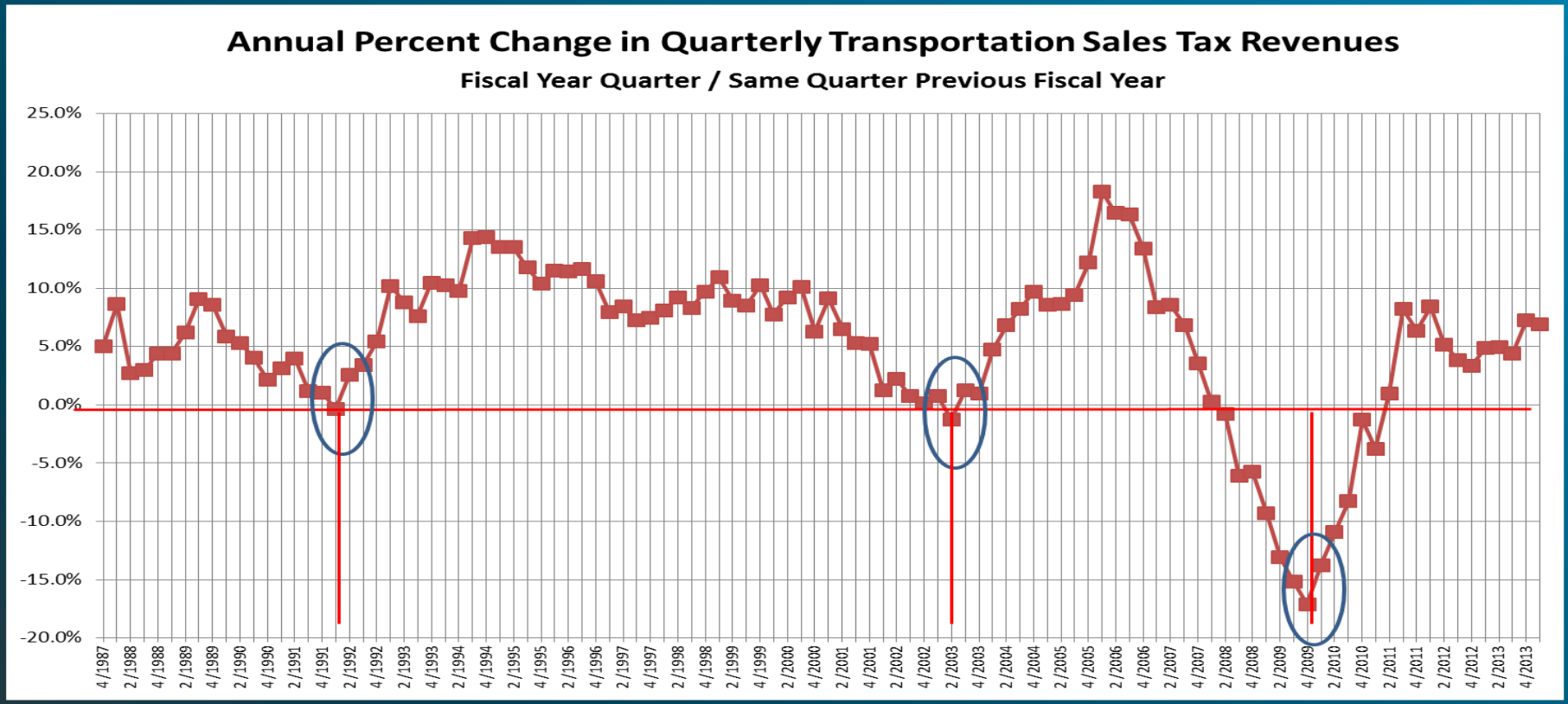
Distressed Residential Properties: March 2010

Second Worst in the Country



Wake up call: 2007 Downturn

Annual Percent Change in Quarterly Transportation Sales Tax Revenues



Economic Development Committee

Transportation: To What End?
Diversify the Economy!

- Formed in October 2010
- Role: *Develop an opportunity-specific and action-oriented plan that fosters and advances infrastructure in the MAG Region, especially transportation infrastructure, that would further economic development opportunities.*
- Membership: 30 Total Members

  State/Local government agencies & business representatives

GreaterPhoenix RISING

GreaterPhoenixRising.com

Business & Economy

From a skilled labor market to attractive tax incentives, learn more about the Greater Phoenix business climate.

Population & Housing

Arizona is the second fastest-growing state in the nation, with some of the lowest housing costs in the country.

Transportation

A state-of-the-art freeway system combined with light rail and transit connectivity equates to easy commutes.

Lifestyle

Great weather, safe neighborhoods & lots to do. The Greater Phoenix region offers a vibrant lifestyle for all.

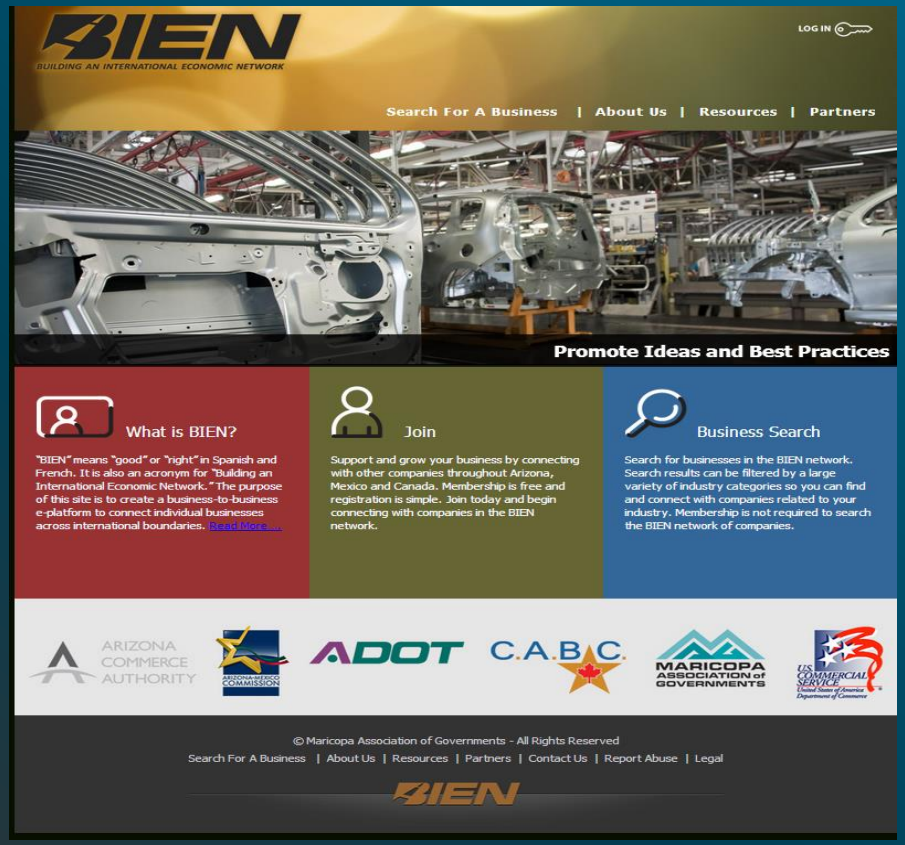
Key Assets

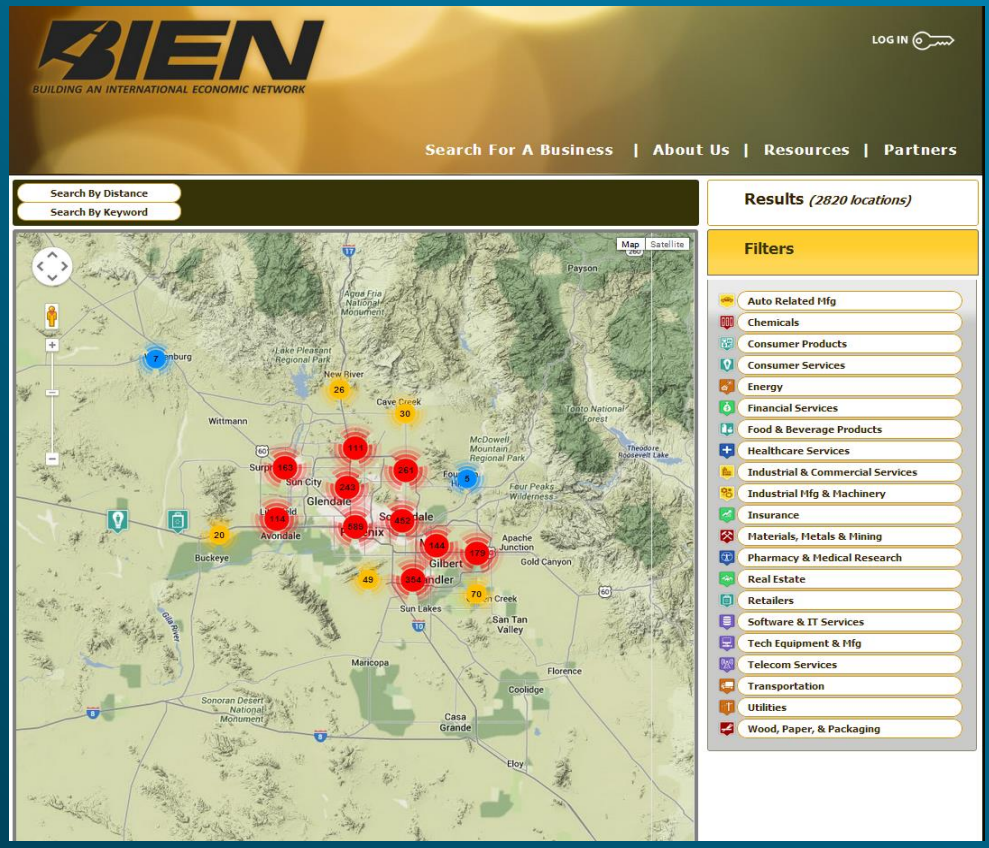
From military to health and educational facilities, learn more about other important assets and infrastructure.

Connect - BIEN

www.connectbien.com

Building an International Economic Network





Nine Live Applications

http://ims.azmag.gov

- ✓ Ongoing Data Updates
- ✓ Constant User Feedback
- ✓ Hands-on training sessions
  - ✓ 381 attendees since Feb 2014
  - ✓ 18 events scheduled in 2016
  - ✓ 3 regional locations & user sites


Demographic


Statewide


Employment

MapLIT


Land Use


Bikeways


Building Landmark Inventory

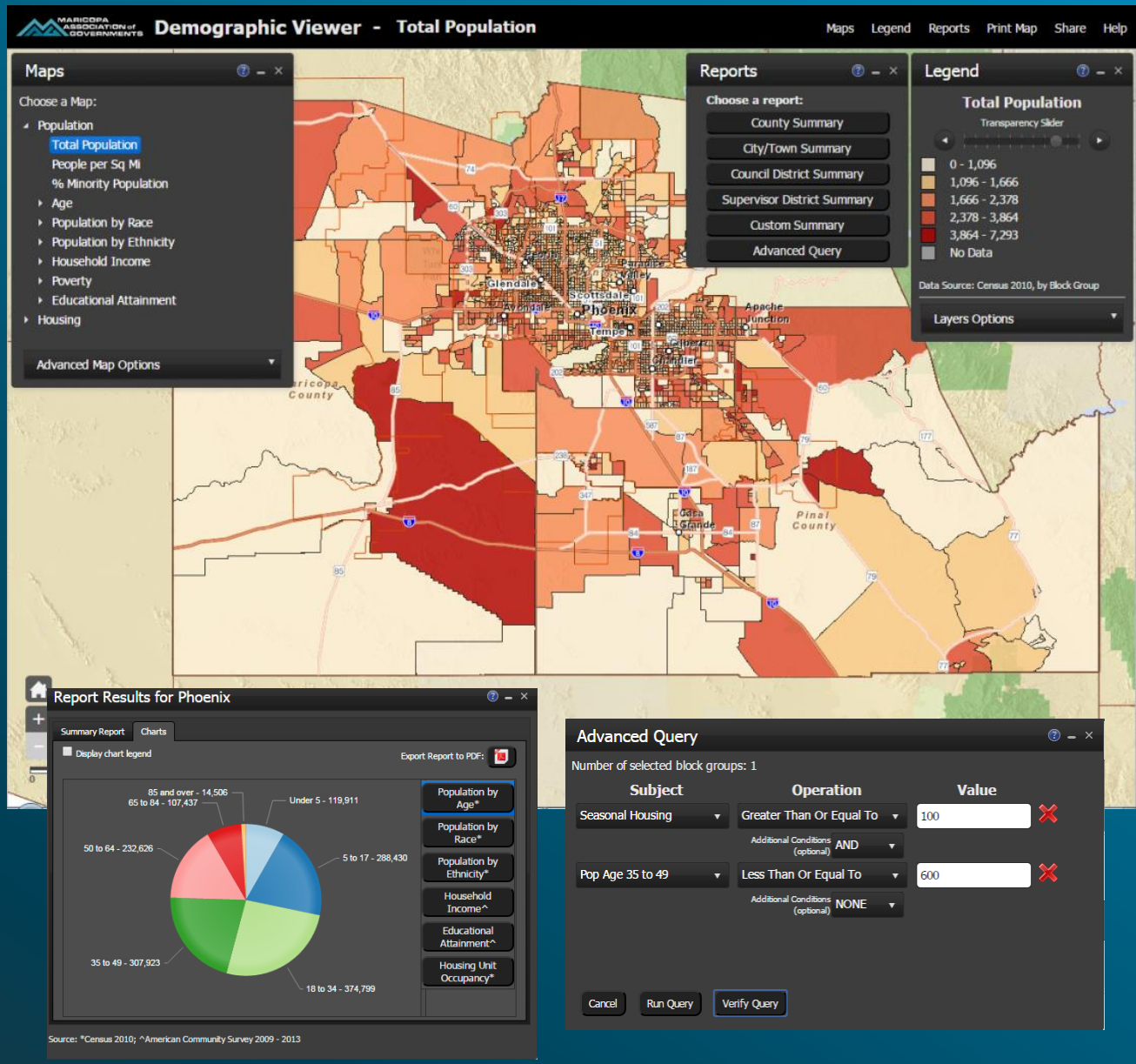

Projections


Victim Services

Interactive Tools

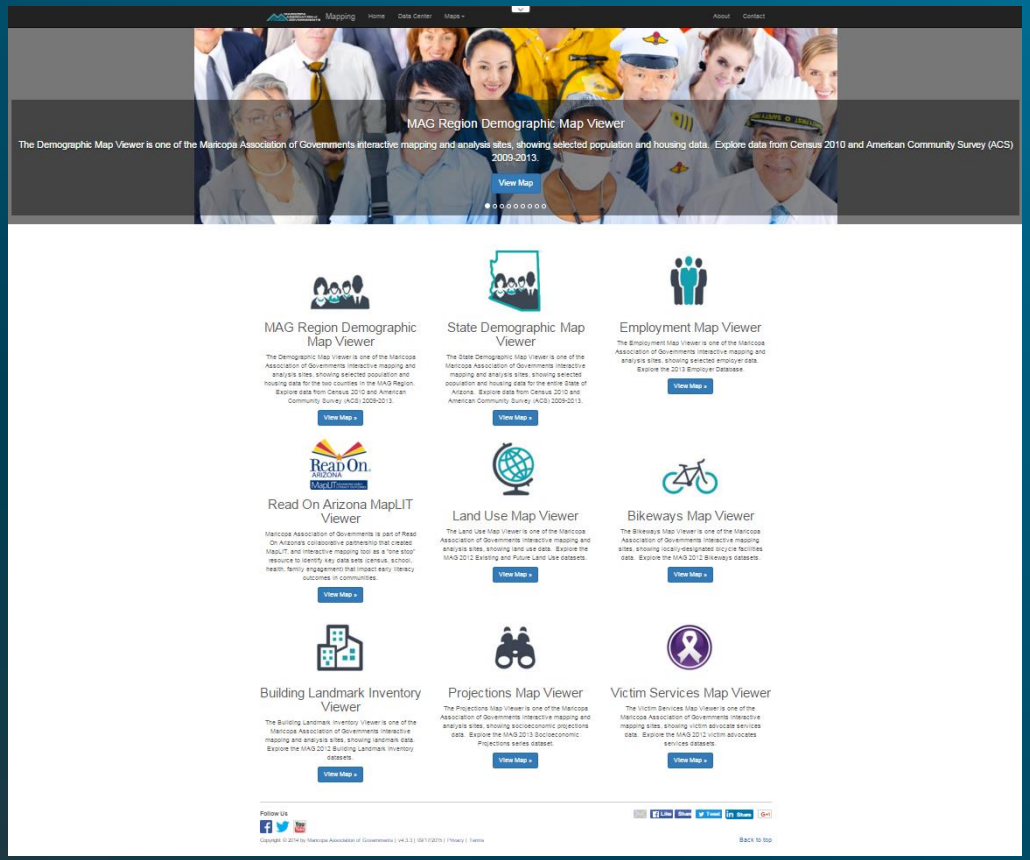
Beyond Maps

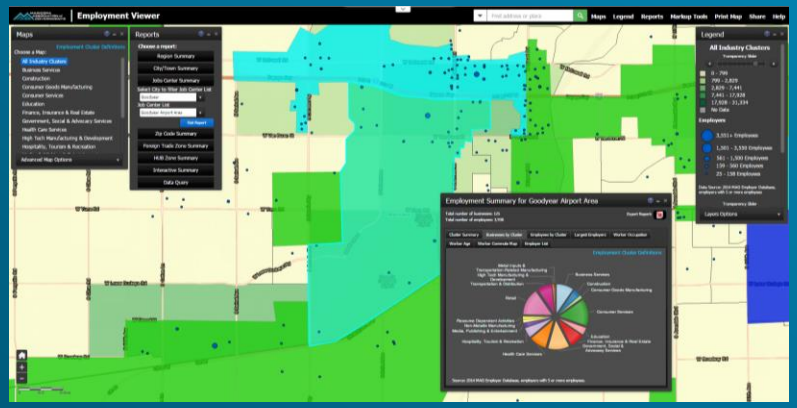
- Interactive reporting
  - *Pre-written reports*
  - *Custom*
- Buffer tools
- Download/Export data and reports
- Census and ACS data
- Mapping:
  - *Colors*
  - *Classification*
- Mobile friendly
- Interactive selection and queries

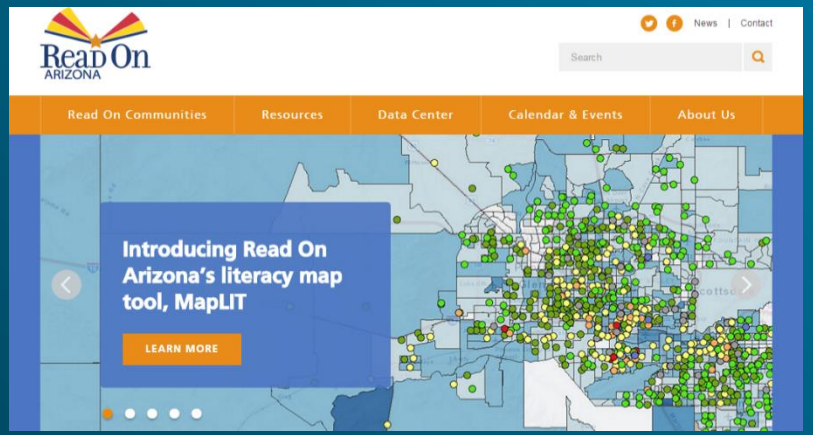


Demonstration

http://ims.azmag.gov







C19 SHRP2

PROJECT OVERVIEW

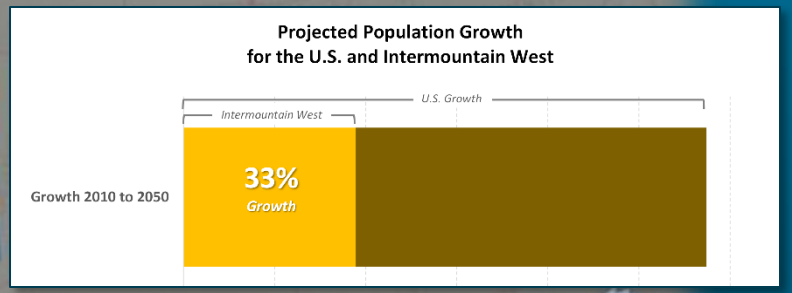
- Safety
- Renewal
- Reliability
- Capacity


America's Trade Corridor
Connecting Canada, the United States, and Mexico
Prince Rupert
Edmonton
Calgary
Vancouver
Bellingham
Seattle
Spokane
Portland
Billings
Boise
Reno
Salt Lake City
Cheyenne
San Francisco/Oakland
Sacramento
San Jose
Denver
Colorado Springs
Las Vegas
Los Angeles/Long Beach
Albuquerque
San Diego
Mexicali
Phoenix
Tijuana
Ensenada
Tucson
El Paso
Hermosillo
Guaymas
Ciudad Obregón
Culiacan
Monterrey
Mazatlán
Leon
Guadalajara
Mexico City
Manzanillo
Pacific Ocean
Atlantic Ocean
Gulf of Mexico
Caribbean Sea
I-11 Proposed Route
Canamex Route
I-11 Alternate Routes
I-17 Possible Extension
Deep Water Port

Intermountain West

Quick Facts

- 9 states
- 934,905 square miles
- Population:
  - 2010:29 million
  - 2050:48 million
- 9.5% of the U.S. population
- 26% of the U.S. land mass
- 13.3% of public road miles
- 46.4% federally managed
- Includes 6 of the top 10 largest states in the nation



Partners


DRCOG
Denver Regional Council Of Governments


ADOT


Pikes Peak Area
Council of Governments
Communities Working Together


SRTC
Spokane Regional Transportation Council


UDOT
udot.utah.gov


COMPASS
COMMUNITY PLANNING ASSOCIATION
of Southwest Idaho


RTC
rtcsnv.com


MR COG


PAG
Pima Association of Governments


WESTERN
GOVERNORS'
ASSOCIATION


MARICOPA
ASSOCIATION of
GOVERNMENTS


WRP
WESTERN REGIONAL PARTNERSHIP


U.S. Department of Transportation
Federal Highway
Administration


WECC


WASATCH FRONT REGIONAL COUNCIL


WSDOT


MOUNTAINLAND
ASSOCIATION OF GOVERNMENTS


NFRMPO
NORTH
FRONT RANGE
METROPOLITAN
PLANNING
ORGANIZATION


NEVADA
DOT

SHRP2 Project Goals

FHWA awarded a grant to MAG to advance deployment of multi-objective solutions that expedite transportation project delivery in the **broader Intermountain West Region**

Project Goals:

- ✓ Outreach to identify needs and potential gaps related to transportation and data resources
- ✓ Develop GIS Common Operating Vision/Platform for easier data information sharing
- ✓ Align expectations for a long-range vision to move people and goods in the Region
- ✓ Develop Report with Risk Register

Outreach (ongoing)

- Communications Network across the Intermountain West Region includes:
  - GIS/Technical
  - Transportation
  - Policy contacts
- Extend connection to other key contacts as the GIS Tool is developed.
  - Federal, Tribal, State, local agencies, non-profits, and Universities

Surveyed Partners

GIS Survey; **reviewed analytics; assessed available data in region**; and conducted follow up interviews with 14 agencies for data gathering

Intermountain West Region Survey

Identifying Key Data Resources to Develop Common GIS Vision/Platform

Your input is greatly needed on this survey of the Intermountain West Region. We are using a SHRP2 grant to conduct outreach; develop a GIS Common Operating Vision/platform for easier data information sharin develop a report with Risk Register. We are seeking your critical input to identify available data resources that are used/can be used to assist with current and planned transportation corridors and projects. We belie information sharing and decision making.

Section One: Contact Information

Your Name: _____ Agency: _____
Title: _____ Work Phone: _____
Email Address: _____ Web Address: _____

Section Two: Data Related Questions

Please provide details on what GIS data sets your organization has access to. For each data set, identify:	Primary agency that maintains the data (if other than your agency)	Contact information of agency maintaining the data (if other than your agency)	What is the geographic extent for this dataset? What is the scale for this dataset (state/county/city/parcel)?	What is the most current data available (Year)?
a. Current Land Use				
b. Planning/Zoning				
c. Development Projects (pipeline projects)				
d. Employment Inventory				
e. Housing (dwelling units inventory)				
f. Land Ownership (private, federal, state, military, etc.)				
g. Demographic Data (other than Census)				
h. Open Space				
i. Natural Constraints (terrain, wildlife corridors, floodplain, etc.)				
j. Current and future transportation networks (highways, major roads, rail, airport, etc.)				
k. Buildings and landmark location (education, facilites, etc.)				
l. Other (please specify)				
m. Other (please specify)				
n. Other (please specify)				

Section Three: Socioeconomic Projections Related Questions

Do you have access to county and sub-county socioeconomic projections for your region? If Yes please provide details, otherwise skip to the next section.	Which agency develops these projections?	Contact information of agency developing projections	Please describe this dataset - including the geographic extent and detailed attributes if available	When were the most recent socioeconomic projections developed? How often are th projections updated?
a. Population				
b. Housing				

Results

- High level of similarity in data sets being collected and maintained
- Differences in scope and schedules due to size and resources
- Highlighted the need for collaboration in data purchase and tools

Survey Responses	Available		Sharable		Data Source			
Section Two: Data Related Questions	Yes	No	Yes	No	MPO/Member Agency	State	Multiple	Other
a. Current Land Use	11		11		9		2	
b. Planning/Zoning	11		11		11			
c. Development Projects (pipeline projects)	7	4	7		6			1
d. Employment Inventory	11		8	3	5	5	1	
e. Housing (dwelling units inventory)	11		11		10		1	
f. Land Ownership (private, federal, state, military, etc.)	11		11		7	4		
g. Demographic Data (other than Census)	6	5	6	1	5			1
h. Open Space	10	1	10		9	1		
I. Natural Constraints (terrain, wildlife corridors, floodplain, etc.)	11		11		5	2	2	2
j. Current and future transportation networks (highways, major roads, rail, airport, etc.)	11		11		6	1	4	
k. Buildings and landmark location (education, facilities, etc.)	8	3	8		3	2	2	1
Section Three: Projections								
a. Population	11		11		7		4	
b. Housing	11		11		8		3	
c. Employment	11		11		9		2	
Section Four: Transportation								
a. Current and future transportation networks (highways, transit, etc.)	11		11		10			1
b. VMT	11		11		10			1
c. VHT	11		11		10			1
d. TAZ to TAZ travel times	11		11		10			1
e. TAZ geography	11		11		10			1

NOTE : 11 responding MPOs tallied. 4 state DOTs not tallied due to different types of data and organizational responsibilities.

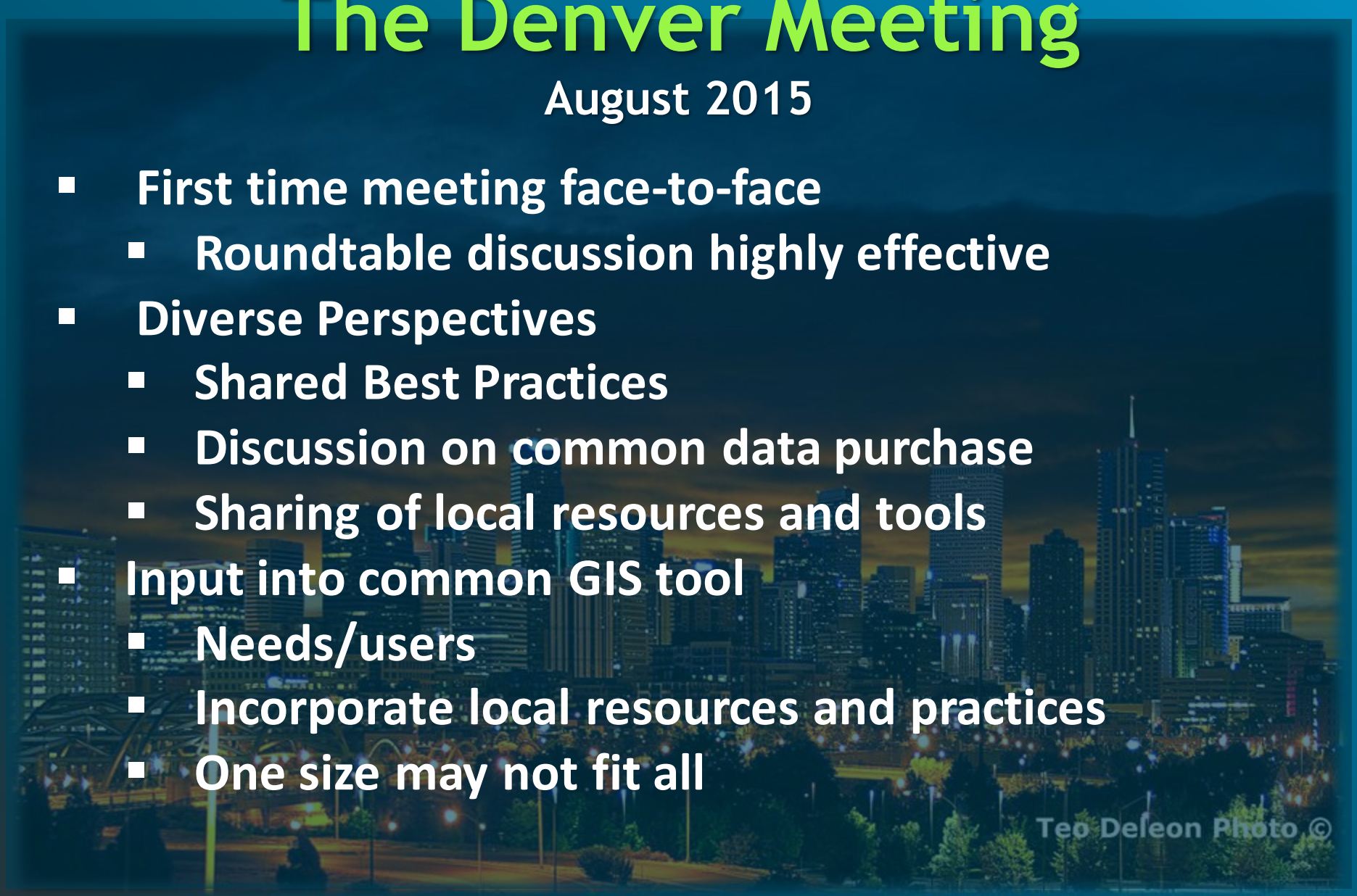
Continued Outreach

- ✓ Held over 12 Webinars
  - ✓ **Participants:** ADOT, UDOT, DRCOG, MAG, MRCOG, Pikes Peak, Spokane RTC, RTC of Southern Nevada, WRP, WGA, FHWA, WECC
  - ✓ Information sharing on data resources, tools, challenges
- ✓ Surveyed Partners
  - ✓ Reviewed analytics
  - ✓ Assessed available data
  - ✓ 14 follow-up interviews
- ✓ Key Meeting Held (Denver)
  - ✓ 26 technical staff attended
  - ✓ 14 different agencies represented

The Denver Meeting

August 2015

- First time meeting face-to-face
  - Roundtable discussion highly effective
- Diverse Perspectives
  - Shared Best Practices
  - Discussion on common data purchase
  - Sharing of local resources and tools
- Input into common GIS tool
  - Needs/users
  - Incorporate local resources and practices
  - One size may not fit all



Aligning Expectations

- Tiered approach
  - **Tech**: working with GIS/technical experts to develop GIS Common Operating Vision/Platform
  - **Executive**: highlight technical efforts to transportation and policy makers to get their input
  - **Policy:** inform policy makes of efforts, lessons, and tools. Highlight importance of IMW region
- More fully address critical infrastructure needs
  - Need to work across political boundaries; collaborate and leverage efforts
  - Identify: stakeholder expectations, issue priorities, areas of commonality, potential areas of conflict, and methods of reducing or resolving areas of conflict

Common GIS Platform

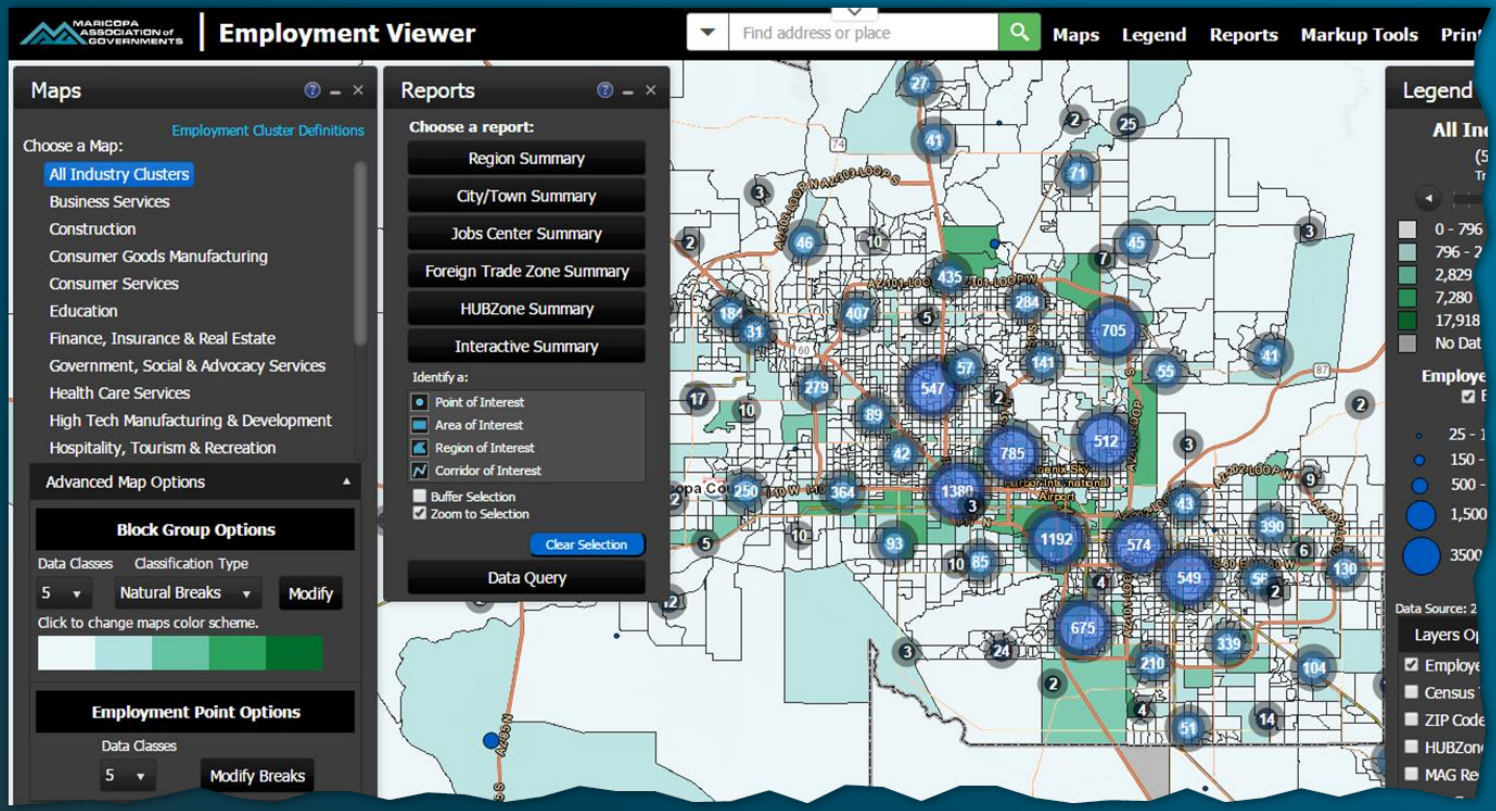
35+ tools identified

Agency	Name	Site
COLORADO		
DRCOG	Denver Regional Equity Atlas	http://www.denverregionalequityatlas.org/
	Regional Data Catalog	http://gis.drcog.org/datacatalog/
	Metro Vision	https://drcog.org/planning-great-region/metro-vision
CDOT	Online Transportation Information System (OTIS)	http://dtdapps.coloradodot.info/otis
RTD Denver	RTD Data Downloads	http://maps.rtd-denver.com/gisdatadownload/datadownload.aspx
Piton Foundation	Colorado Data Engine	http://codataengine.org/
State of Colorado	Colorado Information Marketplace	https://data.colorado.gov/
NFRMPO	NFRMPO GIS	http://nfrmpo.maps.arcgis.com/apps/OnePane/basicviewer/index.html?appid=1748dc541c40454084c67d2e83a66dba
	Crosswalk Cooperative Planning (AECOM)	http://www.cooperativeplan.com/
El Paso County	Geographic Information Systems	http://adm.elpasoco.com/InformationTechnologies/GeographicInformationSystems/Pages/default.aspx
Colorado Springs	Interactive Maps	https://gis.springsgov.com/
IDAHO		
COMPASS	Mapping and GIS	http://www.compassidaho.org/prodserv/mapgis-maps.htm
Boise	Property Viewer	http://gis.cityofboise.org/
Ada County	Mapping Services	https://adacounty.id.gov/Mapping-Services
Ada County Highway District	RITA	http://achdidaho.org/gis/
Canyon County	Interactive Map	http://gis.canyonco.org/flexviewers/Test/
State of Idaho	Highway Info	http://hb.511.idaho.gov/main.jsf
UTAH		
Mountainland AOG	MAG GIS Data	https://mountainland.org/site/categories/view/103
Utah County	County Maps and GIS Data	http://www.co.utah.ut.us/OnlineServices/maps/index.asp
Utah AGRC	Automated Geographic Reference Center	http://gis.utah.gov/
UDOT	Data Portal	https://www.udot.utah.gov/ugate/f?p=111:2:0::NO:::
	Uplan UDOT Map Center	http://uplan.maps.arcgis.com/home/
WFRC	WFRC Map Gallery	http://www.wfrc.org/public-maps-gallery/index.html
ARIZONA		
PAG	Interactive Maps	http://www.pagnet.org/RegionalData/GISDataandMaps/InteractiveMaps/tabid/109/Default.aspx
	Travel Data and Forecasting	http://www.pagnet.org/RegionalData/TravelDataandForecasting/tabid/87/Default.aspx
Tucson	ZoomTucson	http://maps.tucsonaz.gov/zoomTucson/
	Map Resources	http://it.tucsonaz.gov/gis/map-resources
Marana Arizona	Marana Map	http://maranaegov.com/webmap3/webmap3.aspx?xml=marana2c.xml
Oro Valley Arizona	Oro Valley Maps - GIS	http://www.orovalleyaz.gov/town/departments/maps-gis
Pima County	Pima Maps	https://pimamaps.pima.gov/Silverlightviewer/Viewer.html?ViewerConfig=https://pimamaps.pima.gov/Geocortex/Essentials/REST/sites/mainsite/viewers/mainmap/virtualdirectory/config/viewer.xml
MAG	Interactive Map Viewer	http://ims.azmag.gov/
NEW MEXICO		

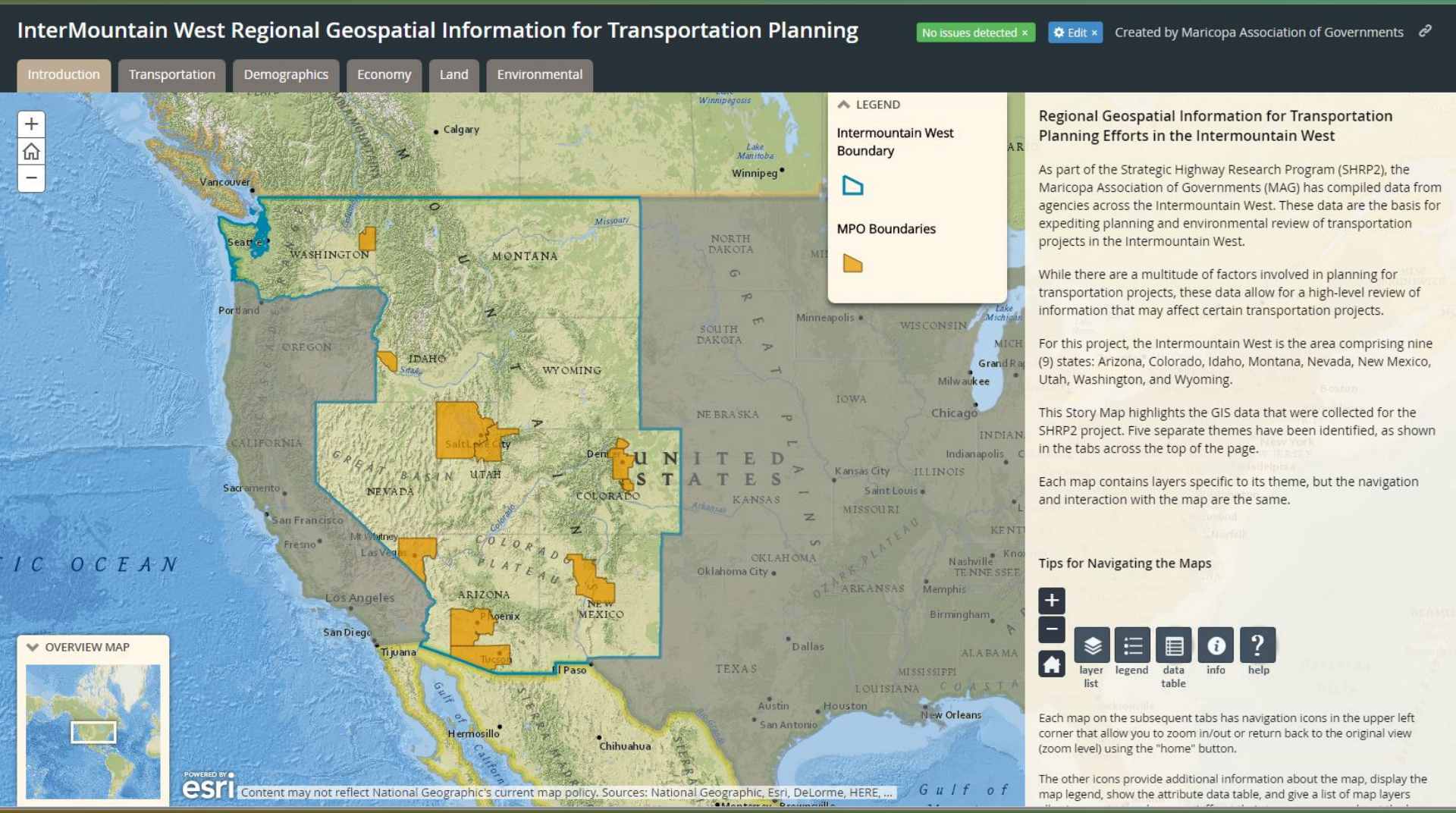
GIS Common Operating Platform

- Input from Stakeholders
  - Assessed relevant available data
  - Identified data gaps
  - Potential users & political realities
  - Provided input on story map

Goal: Provide decision makers with better situational awareness of the region and be able to make more fully informed decisions



Putting it all Together



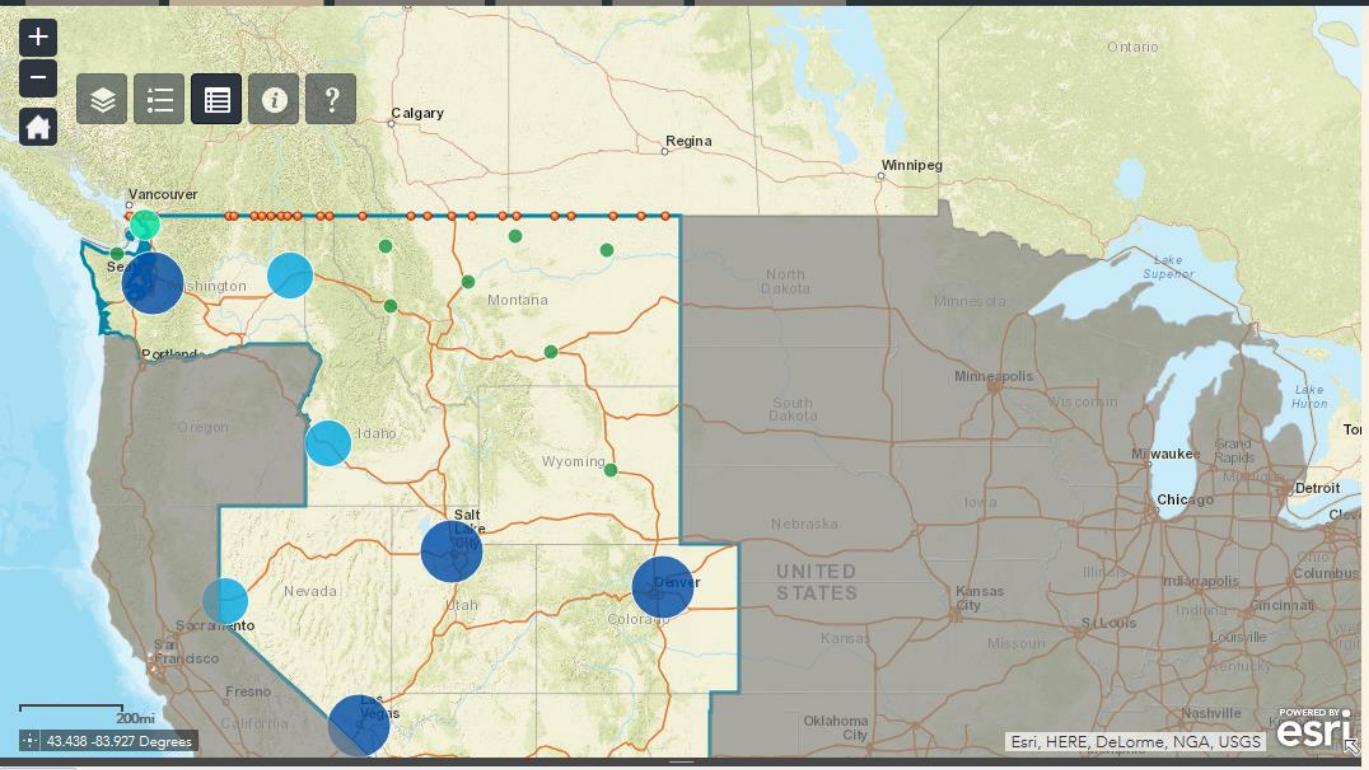
http://arcg.is/1MThxpp

http://arcg.is/1MThxpp

InterMountain West Regional Geospatial Information for Transportation Planning

Created by Maricopa Association of Governments

Introduction | Transportation | Demographics | Economy | Land | Environmental



Bridges | Ports of Entry

Options | Filter by Map Extent | Zoom to | Clear Selection | Refresh

	NAME	Avg Daily Traffic
	OCEAN LAKE WAY; GRAND CANAL	2,258
	US 12; US 12	10,000
	US 101; SOUTH NEMAH RIVER	2,342
	LECH ROAD; JONES CREEK	15
	WAUGAMAN ROAD; ZIEGLER CREEK	32
	MENLO SO.FORK ROAD; RUE CREEK	180
	CO. RD. 00100; NO. FORK GOLDSBOROUGH CK	1,863

49082 features 0 selected

Existing Transportation Infrastructure

Existing transportation infrastructure is used as a baseline for transportation projects. Statewide transportation networks are modeled for capacity to determine if expanding future volumes need to be addressed. Locations of border crossings and airports also need to be analyzed for volume trends to determine if these pose a risk or opportunity for a transportation project.

As a baseline, this map shows the existing transportation network base along with International border ports of entry and International airports. As you zoom in on the map, additional data layers become available including bridges and traffic volumes.

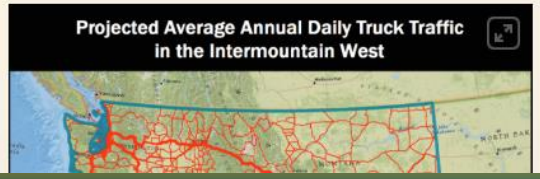
Transportation departments report measured traffic volumes in terms of Average Annual Daily Traffic (AADT). These values vary significantly across the Intermountain West region. For example, the largest reported AADT for 2013 (the most recent year for which data are available) was in the Phoenix, Arizona region along Interstate 10. This segment of roadway reported an average annual daily traffic count of 281,092 vehicles. On the end, Wyoming's highest reported AADT was just 33,691 on a segment of Del Range Blvd, just north of the Cheyenne Regional Airport. (See table below).

Highest Average Annual Daily Traffic (AADT) for Intermountain West States (2013)

State	2013 Max AADT	Location	Metro Area
Arizona	281,092	I-10 between Southern Ave and Broadway Rd	Phoenix
Colorado	257,000	I-25 between W 8th Ave and W Colfax Ave	Denver
Idaho	116,500	I-84 between S Eagle Rd and S Maple Grove Rd	Boise
Montana	48,360	US 87 between Hilltop Rd and L Airport Rd	Billings
Nevada	264,000	I-15 between W Sahara Ave and W Desert Inn Rd	Las Vegas
New Mexico	205,768	I-25 between Candelaria Rd NE and Comanche Rd NE	Albuquerque
Utah	260,552	I-15 between 2100 S and I-80	Salt Lake City
Washington	232,373	I-5 between Lakeview Blvd E (underpass) and Exit 169A	Seattle
Wyoming	33,691	Dell Range Blvd between Converse Ave and Grandview Ave	Cheyenne

Source: Federal Highway Administration, Office of Highway Policy Information, Highway Performance Monitoring System (HPMS) Public Release Geospatial Data 2013

Projected truck traffic can highlight potential areas of concern for capacity along freight corridors. Planners can use this information for a variety of tasks including scenario modeling, alternate route development, and more. To see the projected average annual daily truck traffic data show in the static map below, zoom in on the interactive map on the left.



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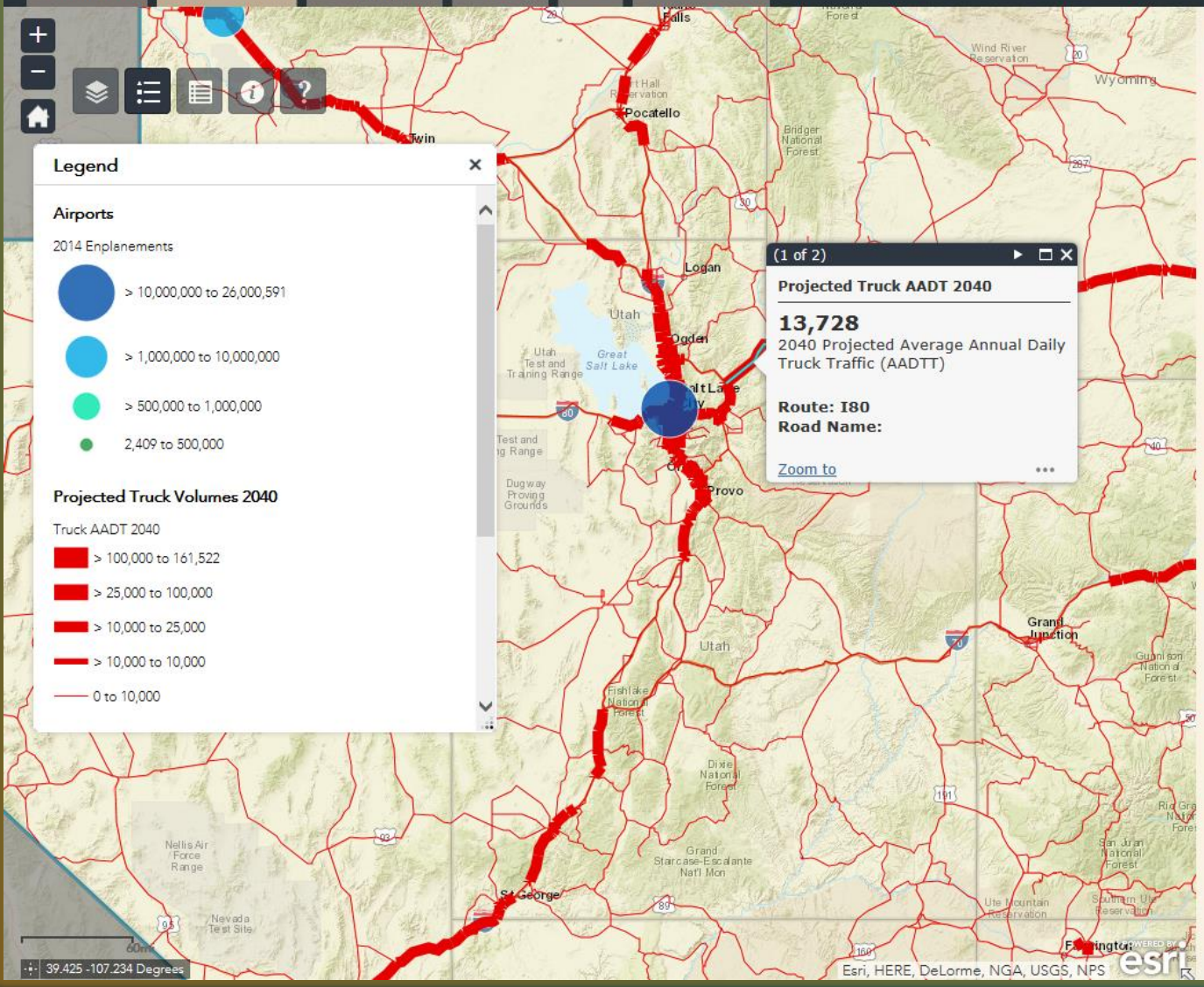
InterMountain West Regional Geospatial Information for Transportation Planning

Created by Maricopa Association of Governments

Introduction | Transportation | Demographics | Economy | Land | Environmental



Existing Transportation Infrastructure

Existing transportation infrastructure is used as a baseline for transportation projects. Statewide transportation networks are modeled for capacity to determine if expanding future volumes need to be addressed. Locations of border crossings and airports also need to be analyzed for volume trends to determine if these pose a risk or opportunity for a transportation project.

As a baseline, this map shows the existing transportation network base along with International border ports of entry and International airports. As you zoom in on the map, additional data layers become available including bridges and traffic volumes.

Transportation departments report measured traffic volumes in terms of Average Annual Daily Traffic (AADT). These values vary significantly across the Intermountain West region. For example, the largest reported AADT for 2013 (the most recent year for which data are available) was in the Phoenix, Arizona region along Interstate 10. This segment of roadway reported an average annual daily traffic count of 281,092 vehicles. On the end, Wyoming's highest reported AADT was just 33,691 on a segment of Del Range Blvd, just north of the Cheyenne Regional Airport. (See table below).

Highest Average Annual Daily Traffic (AADT) for Intermountain West States (2013)

State	2013 Max AADT	Location	Metro Area
Arizona	281,092	I-10 between South 6th Ave and Broadway Rd	Phoenix
Colorado	257,000	I-25 between W 8th Ave and W Colfax Ave	Denver
Idaho	116,400	I-84 between S Eagle Rd and S Maple Grove Rd	Boise
Montana	48,360	US 87 between Hilltop Rd and E Airport Rd	Billings
Nevada	260,000	I-15 between W Sahara Ave and W Desert Inn Rd	Las Vegas
New Mexico	206,708	I-25 between Candelaria Rd NE and Comanche Rd NE	Albuquerque
Utah	260,552	I-15 between 2100 S and I-80	Salt Lake City
Washington	232,321	I-5 between Lakeview Blvd E (southbound) and Exit 168A	Seattle
Wyoming	33,691	Dell Range Blvd between Converse Ave and Grandview Ave	Cheyenne

Source: Federal Highway Administration, Office of Highway Policy Information, Highway Performance Monitoring System (HPMS) Public Release Geospatial Data 2013

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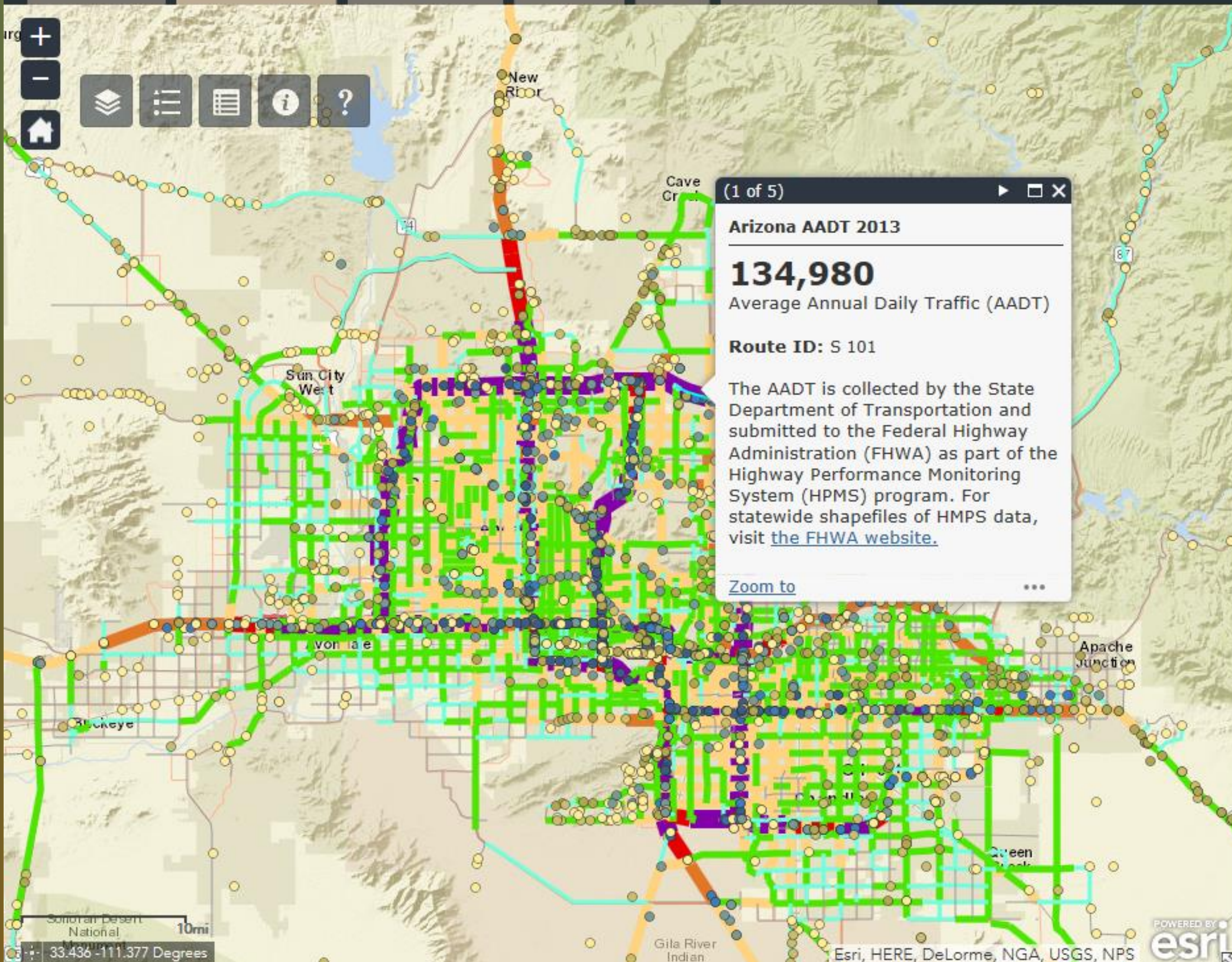

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Utah	260,552	I-15 between 2100 S and I-80	Salt Lake City
Washington	[illegible]	I-5 between Lakeview [illegible] (underpass) and [illegible]	Seattle
Wyoming	33,691	Dell Range Blvd between Converse Ave and Grandview Ave	Cheyenne

Source: Federal Highway Administration, Office of Highway Policy Information, Highway Performance Monitoring System (HPMS) Public Release Geospatial Data 2013

Projected truck traffic can highlight potential areas of concern for capacity along freight corridors. Planners can use this information for a variety of tasks including scenario

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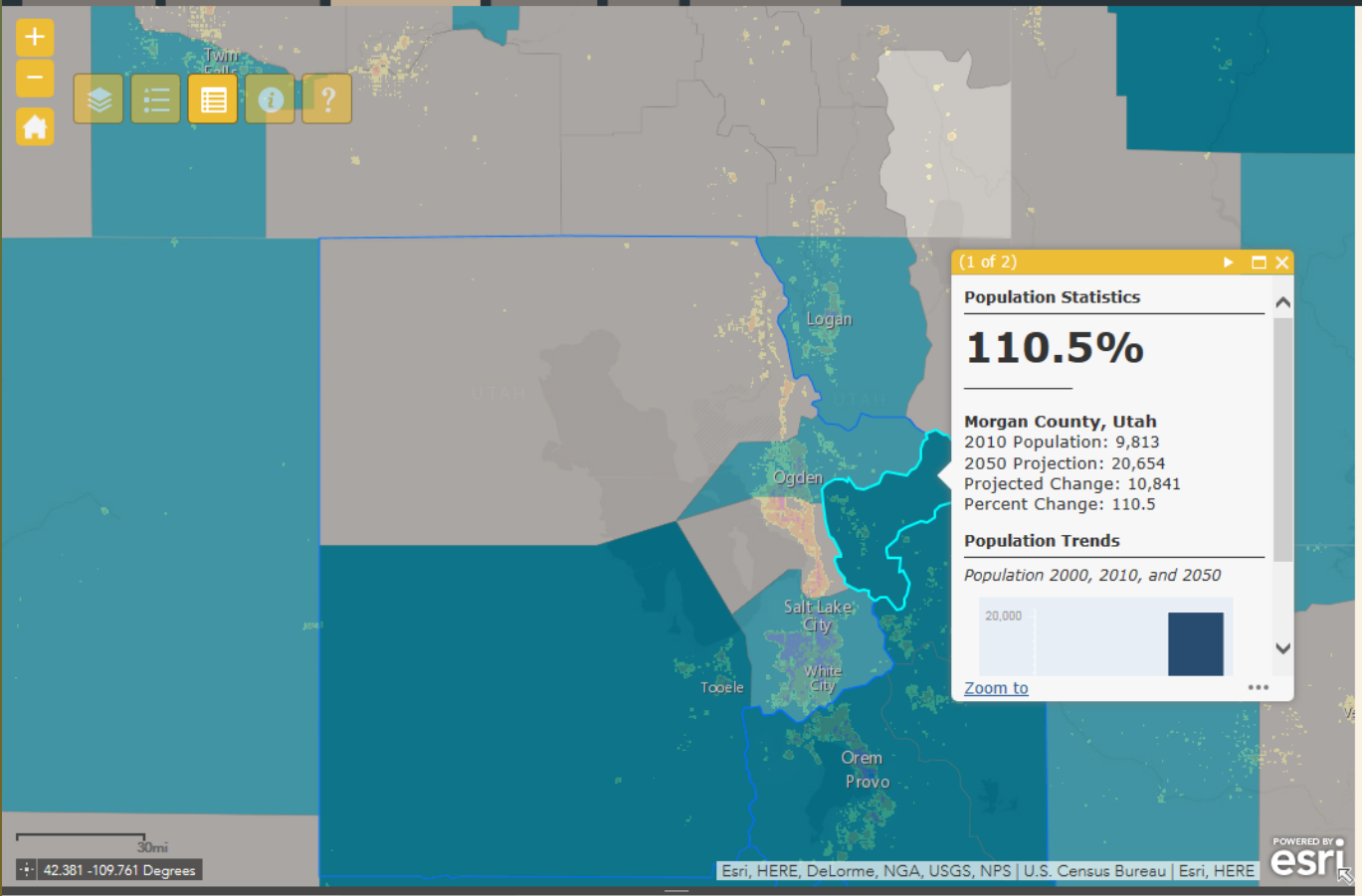


MPO Boundary | Population Growth 2010-2050 | Poverty by Block Group | Minority by Block | State Boundary

Options | Filter by Map Extent | Zoom to | Clear Selection | Refresh

GEOID	County FIPS	Tract	Block Group	2010 Population	2010 Housing Units	Population for Whom Poverty Status is Determined	Persons with Income Below Poverty	Percent Below Poverty
040130610111	013	061011	1	1,407	479	1,023	161	15.74

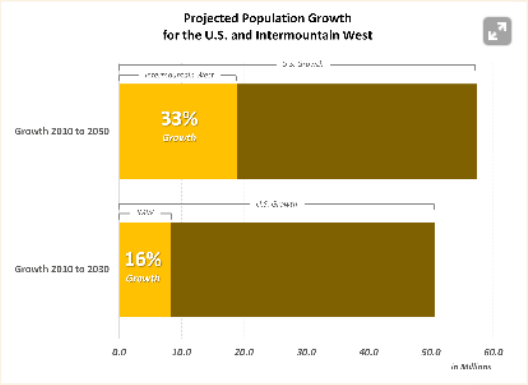
9450 features 0 selected

Demographics of the Intermountain West

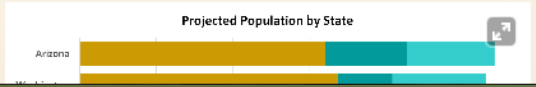
Transportation departments across the united states are tasked with planning and building projects that allow for the safe and efficient movement of people and goods. As population grows and concentrates within certain regions, how does this affect planning for transportation projects?

According to the 2010 Decennial Census, 9.3% of the U.S. population lives in this 9-state region. That's 28.8 million people. Ten years prior, in 2000, these same 9 states were home to just 8.6% of the U.S. population. It is a growing part of the nation, and indications are that it will continue to be. By 2030 it's projected that this region will be home to almost 10.5% of the nation's population. In addition, it is projected that the Intermountain West will grow by just over 30%, almost twice the projected growth for the nation.

The map to the left depicts the concentration of the population in 2010. As you zoom in, denser areas can be seen formed around urban areas with the most densely populated areas showing in shades of purple and pink.



Future growth by county can also be seen by turning on the "County Population Growth 2010-30" layer on the map. The counties expected to gain the most people by 2030 are shown in darker green. Click on any county to get the population counts and growth rates for that county.



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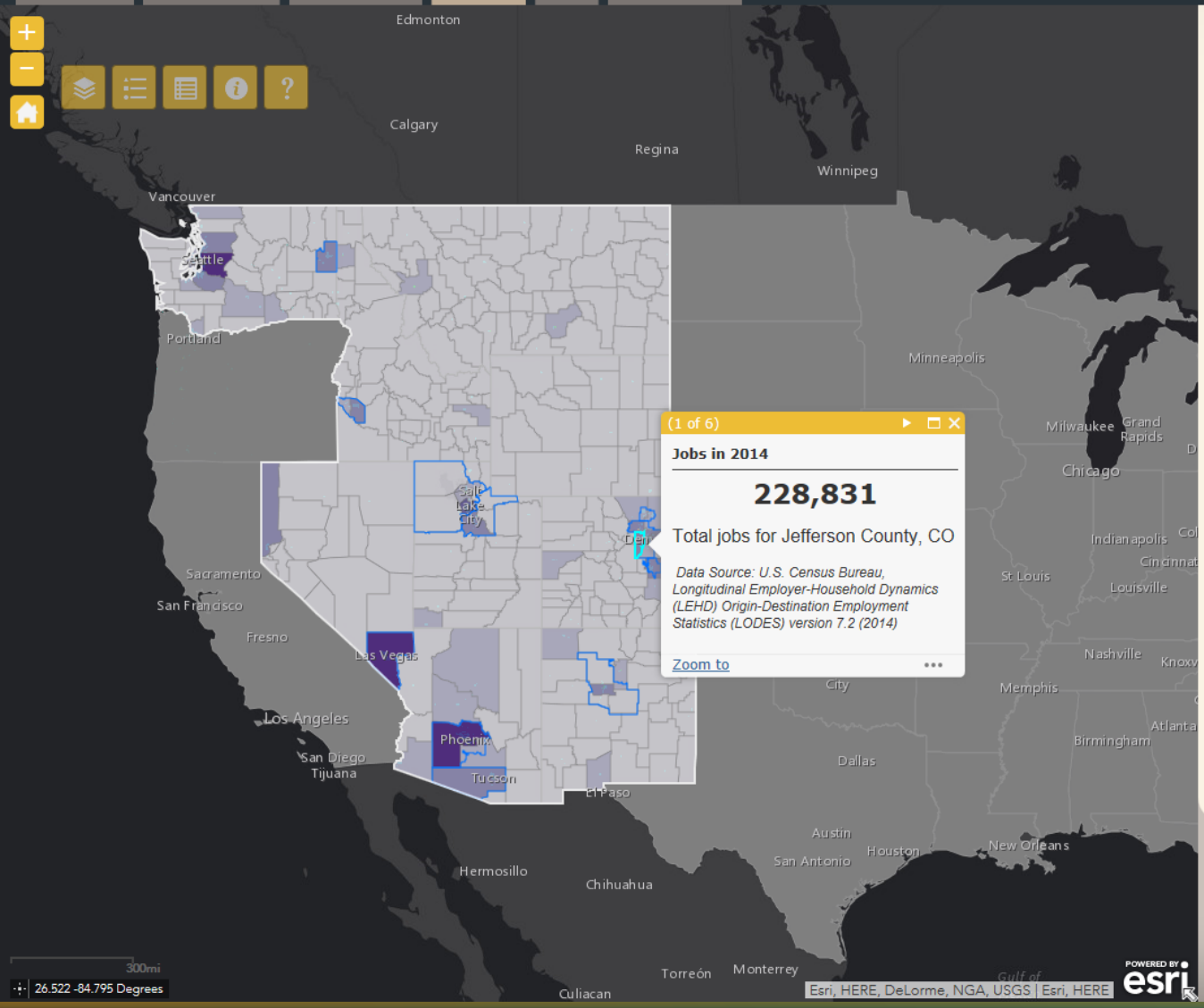
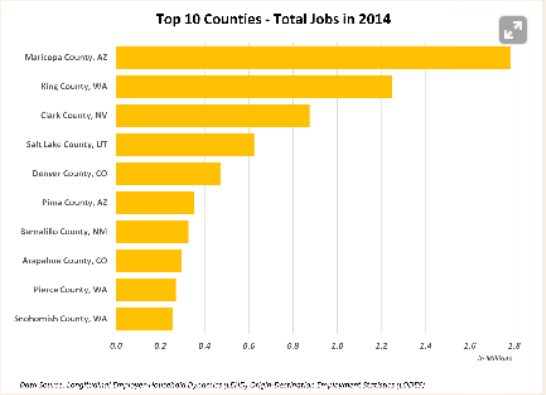


Economic Influences on Transportation

Transportation and economic development often go hand in hand. Businesses often choose to locate in accessible locations that combine efficient transportation with housing selections, good schools, community activities, and natural amenities. Transportation projects can have a significant impact on the economy as businesses and workers consider commute options when selecting a place to locate. The transportation of goods, or freight movement, is often another consideration that businesses have when locating. Additionally, businesses within the same or complimentary sectors often cluster together.

With this in mind, transportation planners may need to consider the effect that employment clusters have on roadway demands. For example, a growing warehouse and distribution sector will have much different demands for roadway use than an expanding financial services sector. And what about the sudden growth in jobs and businesses after the completion of a roadway project? With these types of questions in mind, a review of job trends in a region could be beneficial in evaluating transportation needs.



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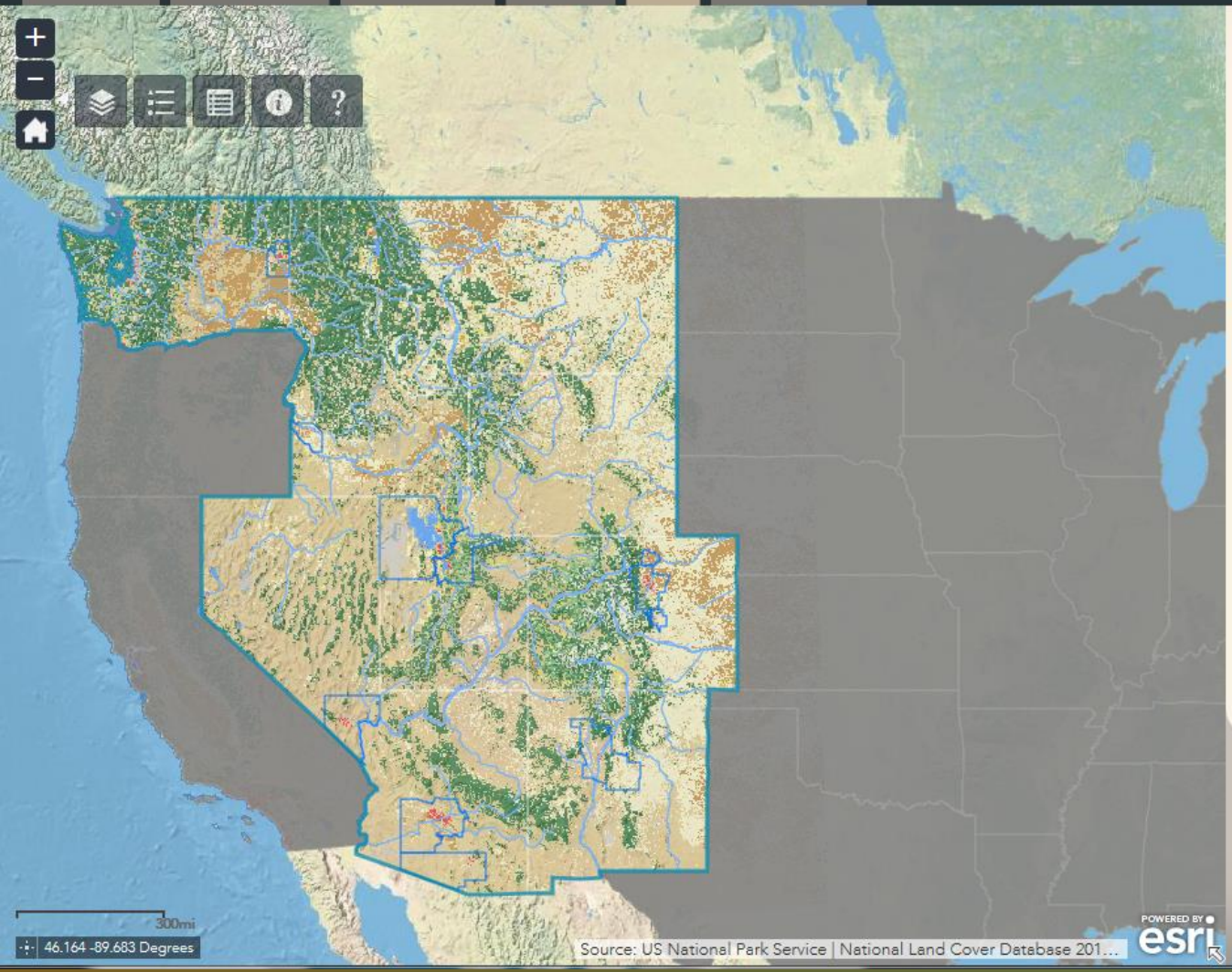
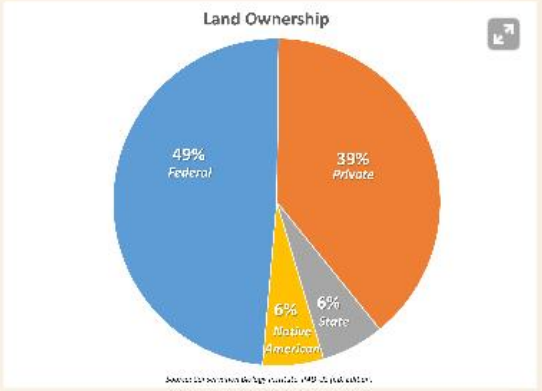


Developable Land

There are a variety of factors that affect the ability to develop land for transportation corridors, from land ownership to type of terrain. The Intermountain west is comprised of 49% Federally-owned land, 39% private land, and 6% each of State-owned and Native American land.

The slope and terrain vary from state to state and county to county. View the variety of land cover by turning on the Land Cover layer in the map. (Open the Layer List and check the box next to the Land Cover listing).



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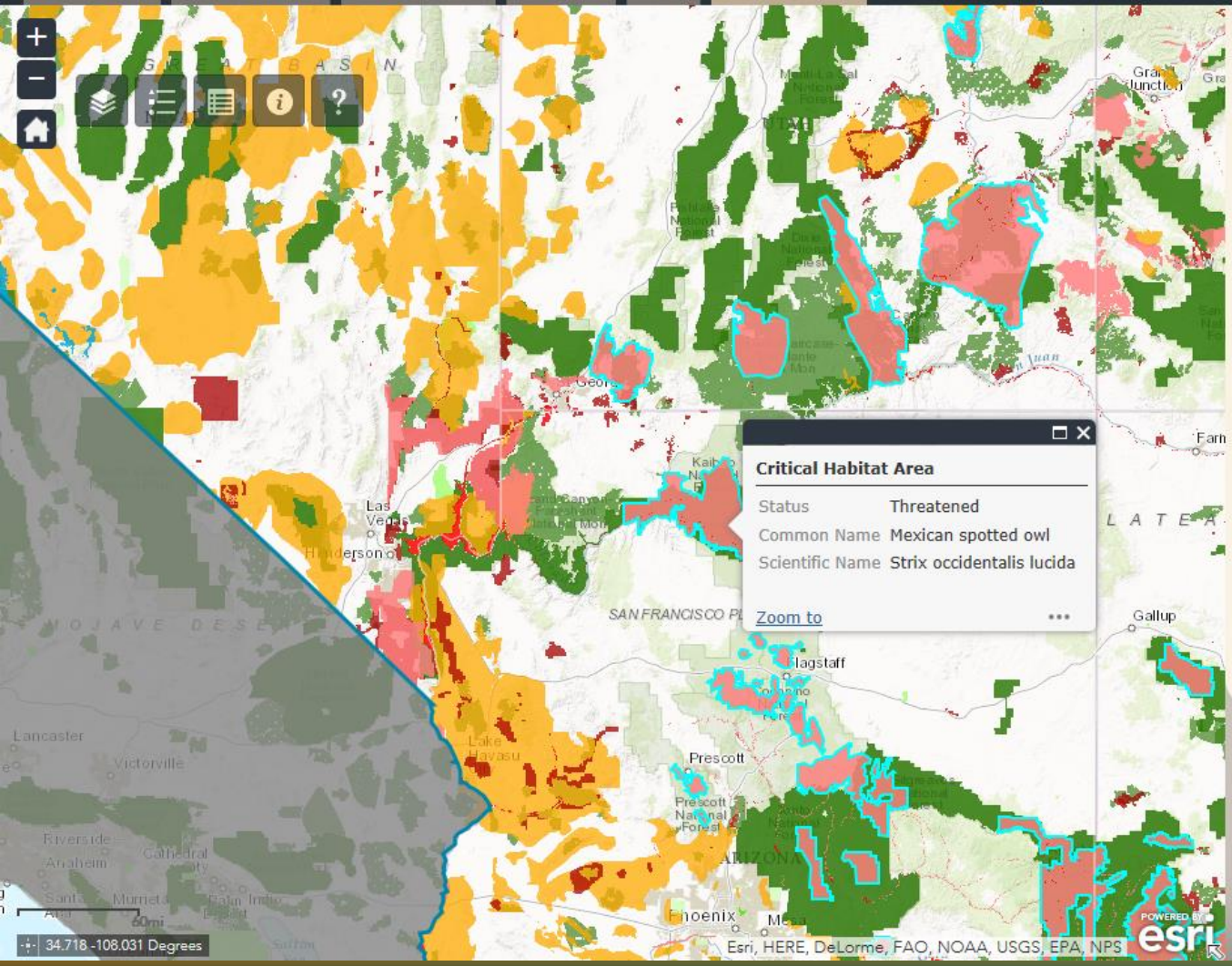


Environmental Concerns

The National Environmental Policy Act (NEPA) requires an Environmental Impact Statement (EIS) for major transportation projects that may significantly affect teh quality of the human environment. The EIS is a document that details the complete development process of a transportation project, including consideration of reasonable alternatives, analysis of potential impacts resulting from the alternatives, and demonstration of compliance with any other applicable environmental laws and executive orders.

The data on this map provides an overview of potential environmental concerns. Critical habitat areas, protected wilderness areas, and other areas of concern that should be studied.

Number of Critical Habitat by Type	
Endangered	*959*
Threatened	*145*
Proposed Endangered	*1*
Resolved Taxon	*1*
Recovery	*1*

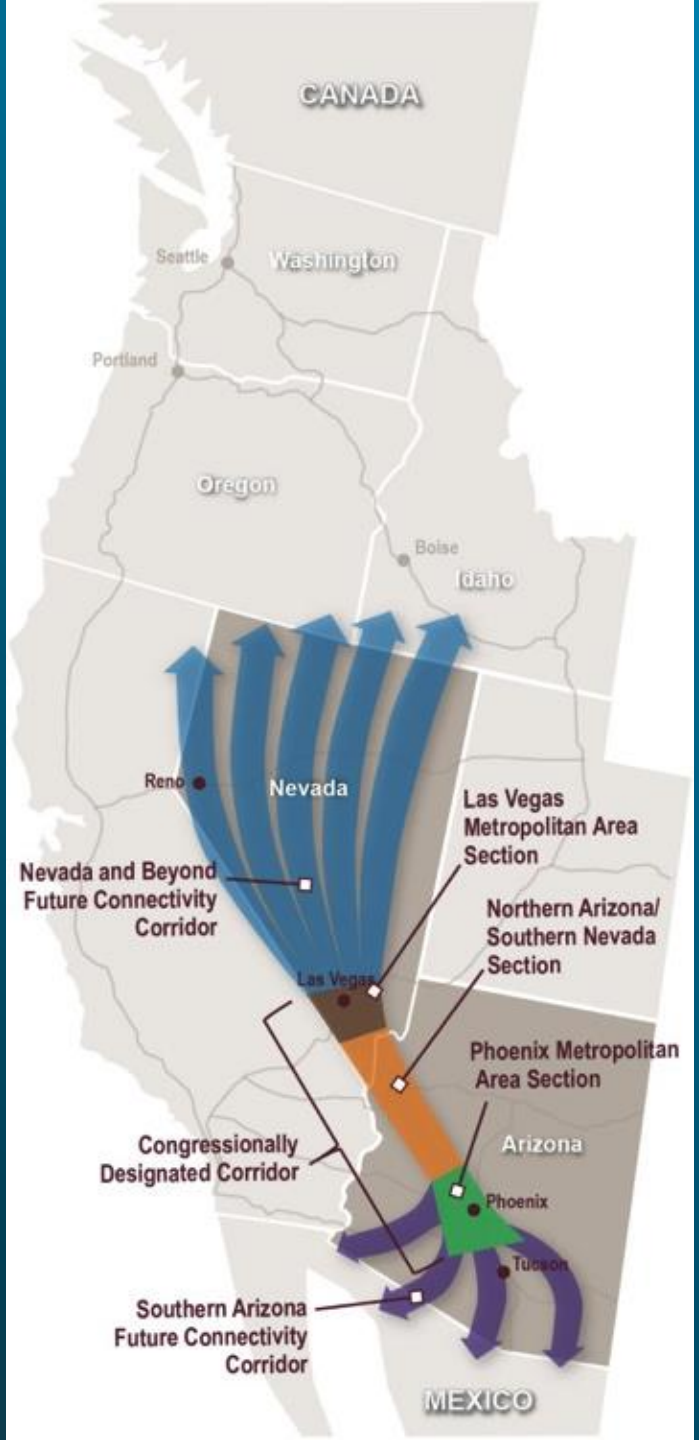
Source: U.S. Fish & Wildlife Service

Report with Risk Register

- **Vision***: Intermountain Transportation* ***vision*** *that will focus on moving people and freight efficiently*
- **Constraints and Opportunities**
- **Stakeholder expectations**
- **GIS data layers**
- **Public engagement and communication best practices**
- **Lessons Learned**

I-11 and Intermountain West Corridor Study

Joint project by the Arizona DOT and Nevada DOT, in association with the Federal Highway Administration, Federal Railroad Administration, MAG, and Regional Transportation Commission of Southern Nevada.



- Completed in September 2014.
- NDOT currently constructing the first segments of I-11.
- ADOT conducting a statewide EIS for I-11

Risk Register

Expedite planning and environmental review of key transportation projects

- Proof of concept for the Risk Register is: ~450 miles
- International border crossing at Nogales to Las Vegas (Connecting Las Vegas to Phoenix)

Risk Register

Thematic Area	Subject	Categories
Land	Land ownership	BLM
		National Forest
		National Monument
		National Park
		Other Protected
		Military
		Native American
		State Trust
		State Park
		Park
		Railroad Right of Way (ROW)
	Topography	0-15%
		15% - 20%
		20% +
	Land Cover	Developed
		Forest
		Barren/Scrub/Grassland
		Pasture/Crops
		Water/Wetlands
	Future Land Use	Open Space/Undevelopable
		Remaining Uses
	Hydro	Lakes/Rivers/Streams
Environmental	ACEC	Areas of Critical Environmental Concern (ACEC)
	Critical Habitat	Critical Habitat
	Superfund Sites	Superfund Sites
	National & State Parks	National & State Parks
	Herd Management	Herd Management
Population	Proximity to population	Population
	Proximity to housing	Housing
Infrastructure	Electricity	Electrical lines
	Education Institutions	Proximity
	Public Policy	Overall Tax Base
		Select Tax Credits/Exemptions
		Infrastructure Investment

Moving Forward

NEXT STEPS

Resources

http://www.azmag.gov/information_services/shrp2-expediting-project-delivery-grant.asp

Interactive Tools
MAG Region & Arizona
http://ims.azmag.gov/

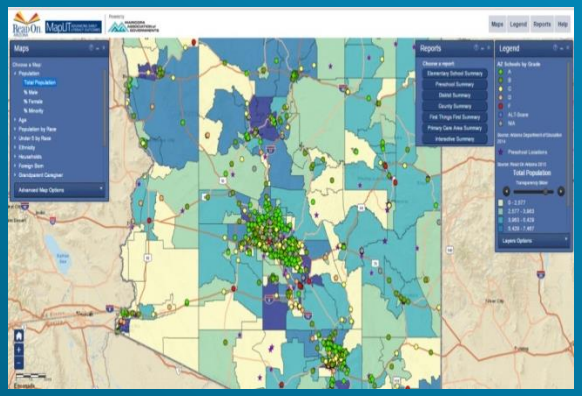
Story Map
GIS data sets & Common formats
http://arcg.is/1MThxpp

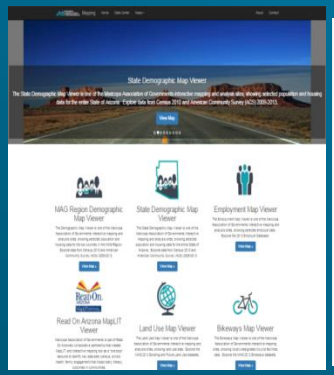
Risk Register
Detailed AZ datasets

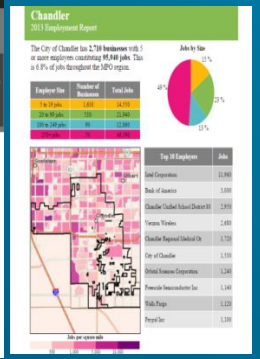
Lessons

- Engagement & Partnerships
  - Need end to end support – all levels
  - Open format for sharing of information - Current projects, needs, practices

- Beyond transportation
  - MPO's are regional resources with data warehouses – need to develop analytics
  - Essential to expand to other areas of expertise:
    - Economic Development
    - Social infrastructure
  - Question Why? Prepare to be surprised !!!
  - Information sharing forums – SHRP2 webinars, SANDAG meetings, etc.







SHRP2 Project: Next Steps

- July – August 2016
  - Review Draft Report and Risk Register by Intermountain West Technical Staff and other key stakeholders
  - Finalizing GIS Platform, Tools and Resources supporting report
- August – September 2016
  - Refine Report with Risk Register
  - Present to stakeholders
- September 30, 2016
  - SHRP2 Project Completed and Submitted to FHWA

SHRP2 SOLUTIONS
TOOLS FOR THE ROAD AHEAD

MARICOPA ASSOCIATION of GOVERNMENTS

MAG Team Members

Anubhav Bagley
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Jami Dennis
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Tim Strow

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U.S. Department of Transportation
Federal Highway Administration

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS
AASHTO

SHRP2 SOLUTIONS
TOOLS FOR THE ROAD AHEAD

Quick Reference Guide for expediting project delivery of Local Public Agency (LPA) Federal-Aid Projects

Marinela Papa–Konomi
Arizona Department of Transportation

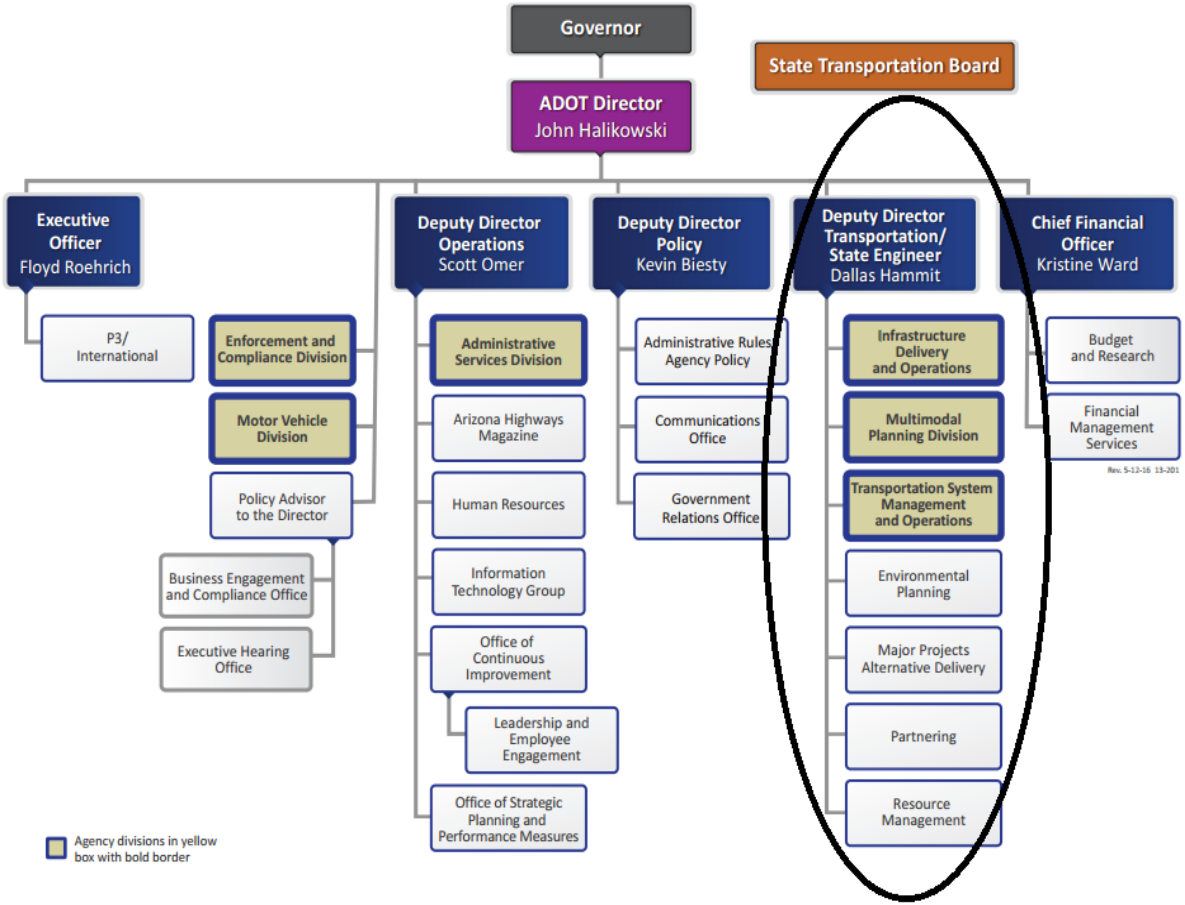
July 19,2016

U.S. Department of Transportation
Federal Highway Administration

American Association of State Highway and Transportation Officials
AASHTO

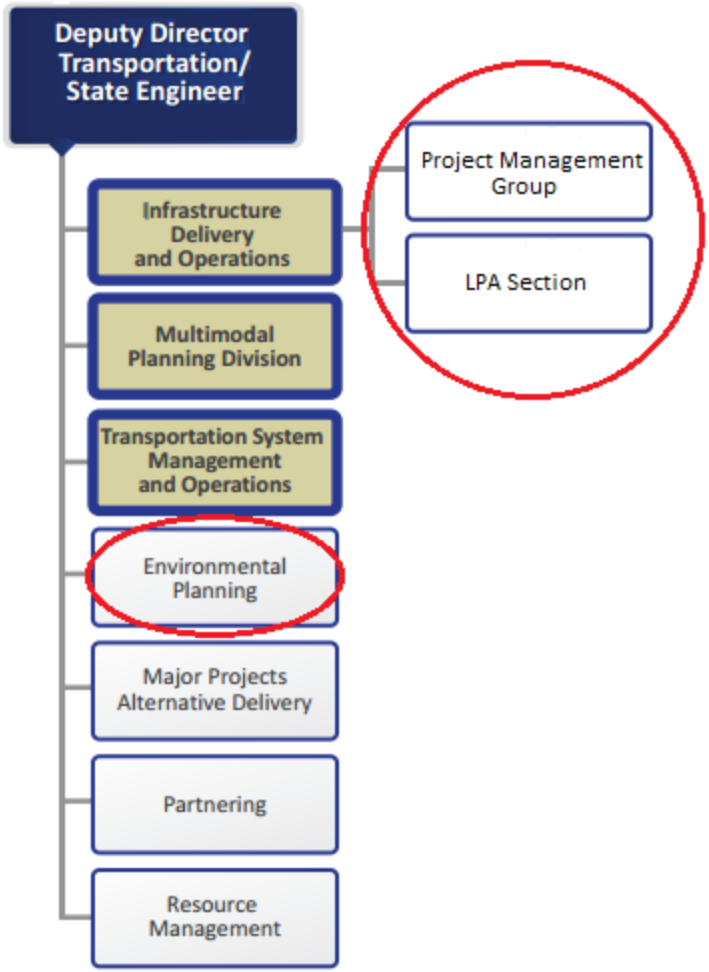
Overview - ADOT Process for FAHP

ADOT Organization Chart



- ADOT administers the Federal-Aid Highway Program (FAHP) for LPAs.
- FHWA delegates the administration authority to ADOT through the *FHWA and ADOT Stewardship and Oversight Agreement for Arizona, 2015*

Overview – ADOT Process for FAHP



- The *LPA Section* is tasked with implementing the administration of FAHP for LPAs within ADOT
- ADOT does not administer all aspects of the development of LPA projects, but **is responsible for all NEPA compliance.**
- ADOT *Environmental Planning* completes NEPA
- ADOT *Project Management Group* administered 107 projects for LPAs during FY16
- 126 LPAs eligible for FAHP in Az

Example - Communication Breakdown

Sample LPA Project

2013 –

November - LPA (County) initiates project

December 9 – FHWA authorizes project

2014 –

August 19 – County asked for the status of the environmental clearance. PM sent an email to EPG. There was no awareness of the project at Environmental Planning (Env).

September 9 – Env LPA Team Leader informed the PM that they need to provide a SOW and basic project information to prepare a clearance.

November 14 – Env LPA Team Leader sent an email to the LPA Section Program Manager informing him that Env had been waiting for the a scope of work.

November 14 – LPA Section Manager provided the SOW to Env LPA Section

November 25 – Draft CE was prepared and sent to LPA Section for project info confirmation

December 15 – CE was approved

Overview - SHRP2 , C19 Report

- ADOT is a recipient of SHRP2 Implementation Assistance Program “Round 2” for Expediting Project Delivery (C19)
- SHRP2 research focused on:
  - *Renewal*- accelerate renewal
  - *Safety* – prevent or reduce the severity of highway crashes
  - *Reliability* – preventing and reducing the impact of nonrecurring congestion
  - ***Capacity*** – develop approaches and tools for systematically integrating environmental … into the analysis, planning , and design of new highway capacity
- ADOT’s grant was based on focus area “***Capacity”*** and SHRP2 research report S2-C19-RR-1, *Expedited Planning and Environmental Review on Highway Projects (Report C19)*
- The report identified 24 strategies for addressing 16 common constraints to speed up delivery of transportation projects.

Purpose of ADOT 's SHRP2 Grant

- ADOT's grant was based on two constraints outlined in Report C19:
  - Constraint 16 – ***"unusually large scale and complex program"***
    - The LPA FAHP is a large scale and complex program
  - Constraint 5 – **"ineffective internal communication"**
    - Ineffective internal and external communication impacts the delivery of the LPA FAHP
- ADOT's purpose of the grant was to provide an additional tool in expediting LPA project delivery.
- Time lost with project basics = time lost on environmental

SHRP2 Grant Implementation

- **July 2014** – ADOT and FHWA organized an Assessment Workshop discussing *Expediting Project Delivery*
  - Attendees : ADOT staff, LPA PMs, FHWA staff
  - Identified: Strengths, Challenges and Opportunities of LPA Project Delivery at ADOT
- **November 2014** – ADOT developed an Action Plan to implement SHRP2 for *Expediting Project Delivery*
  - Included summary of challenges and opportunities identified in the workshop, proposed work steps and management team
- **February 2015 – 2016** –Joint Management Team was formed, procure consultant services, identify current ADOT policies , processes, conduct interview, research, develop work product – **Quick Reference Guide**

Identification of issues

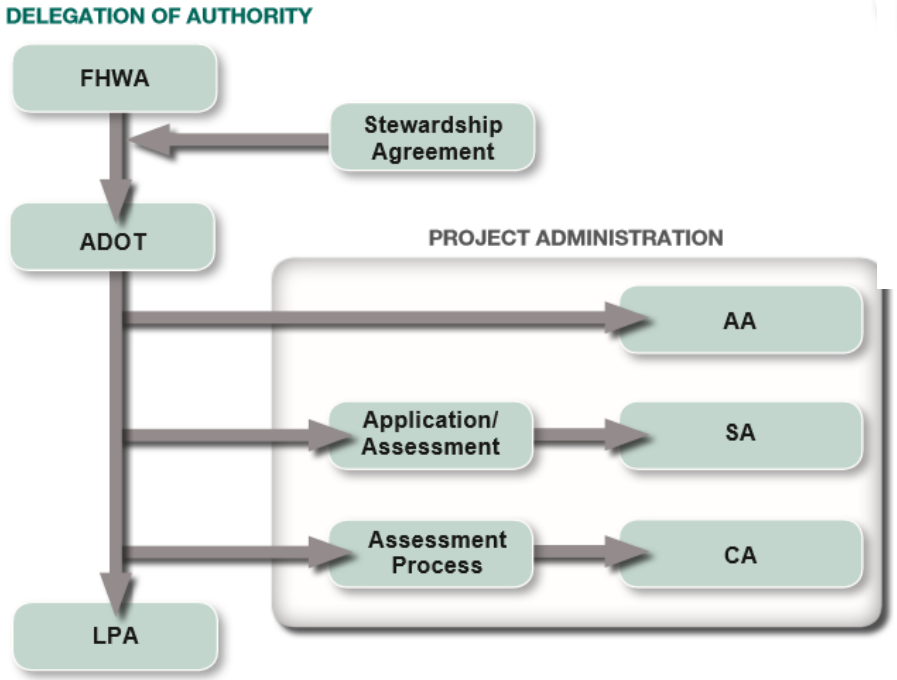
- ADOT LPA Section has developed the **Local Public Agency Project Manual** which provides information and guidance for FAHP delivery
- The LPA Project Manual is a large on line document
- Staff involved on the project sometimes is unaware of the overall process; they work in segments.
- Common questions : What is the first step? What is next? Who should I contact? Who is responsible?
- Inadequate internal and external communication
- Many questions go to the last person worked with:
  - Can the LPA consultant communicate with ADOT directly?
  - The technical specialist needs more information from the consultant. The consultant in turn submits a task mod to the LPA. The work on the project stops until the funds are available !!!

Goal of the QRG

- The **Quick Reference Guidance (QRG)** was developed to present simplified strategies of the project development process.
- The **QRG** is an additional tool in expediting LPA project delivery , in particular the environmental review.
- The **QRG** quickly conveys key point of the ADOT Local Public Agency Projects Manual.
- The **QRG** serves the LPA PMs, ADOT PMs, consultants, and everyone involved in the LPA projects.
- Throughout the **QRG** responsible parties are identified with different colors.
- Throughout the **QRG** communication and coordination between all the players is emphasized.

Delegation Authority for LPA projects

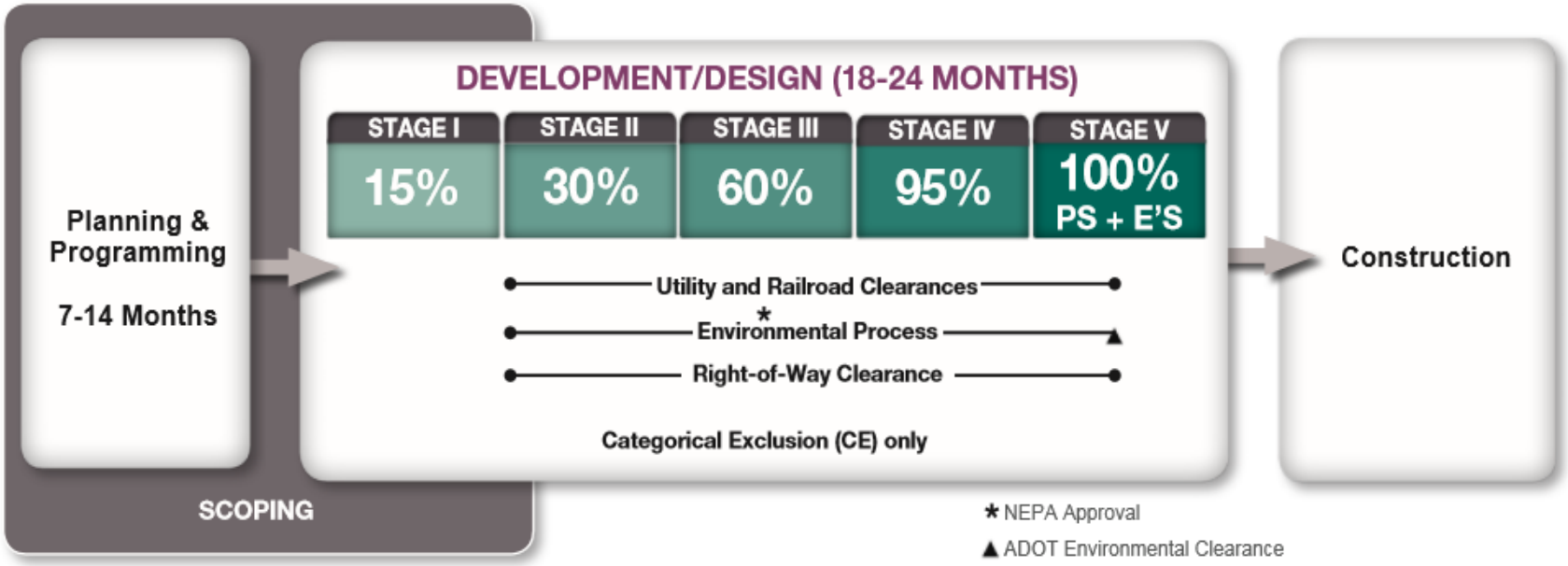
- The **QRG** identifies the flow of the delegation authority.
- ADOT delegates administration of FAHP either through Self – Administration Agreement (SA) or Certification Acceptance Agreement (CA).



KEY POINT: There is no delegation of NEPA approval (Categorical Evaluations (CEs)) from FHWA to the LPA. FHWA delegates that authority only to ADOT for certain NEPA approvals (CEs).

Overview- ADOT Project Development Process

- The **QRG** presents an overview of the anticipated timelines for the project development process including NEPA Approval and ADOT Environmental Clearance.



NEPA Approval and ADOT Environmental Clearance

- The **QRG** clarifies the definitions and actions involved with the NEPA Approval and ADOT Environmental Clearance

NEPA APPROVAL AND ADOT ENVIRONMENTAL CLEARANCE:

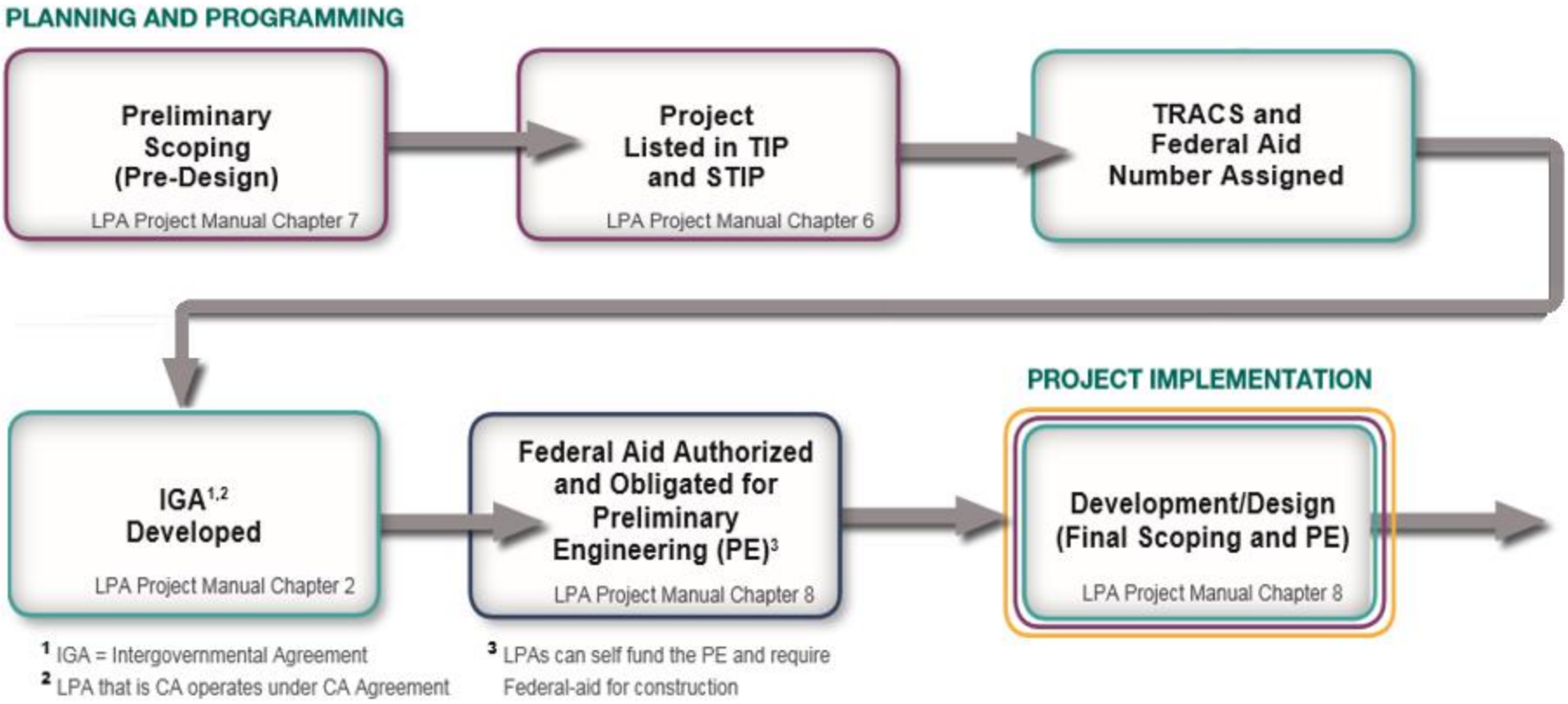
NEPA Approval and the **ADOT Environmental Clearance** for final approval of environmental actions are separate approval steps.

NEPA Approval is the completion of the federal NEPA process as indicated by the approval of a CE, Environmental Assessment (EA), or Environmental Impact Statement (EIS). The NEPA Approval date is also the date after which FHWA can authorize right-of-way (ROW) acquisition and construction funding.

ADOT Environmental Clearance is an internal ADOT approval document sent from Environmental Planning to ADOT Contracts and Specifications Section for an ADOT construction administered project, to certify that the environmental process and documentation is complete, has been approved by the responsible agencies, and that the project is ready to advertise for bid.

The Environmental Clearance can be issued concurrently or after the NEPA Approval date.

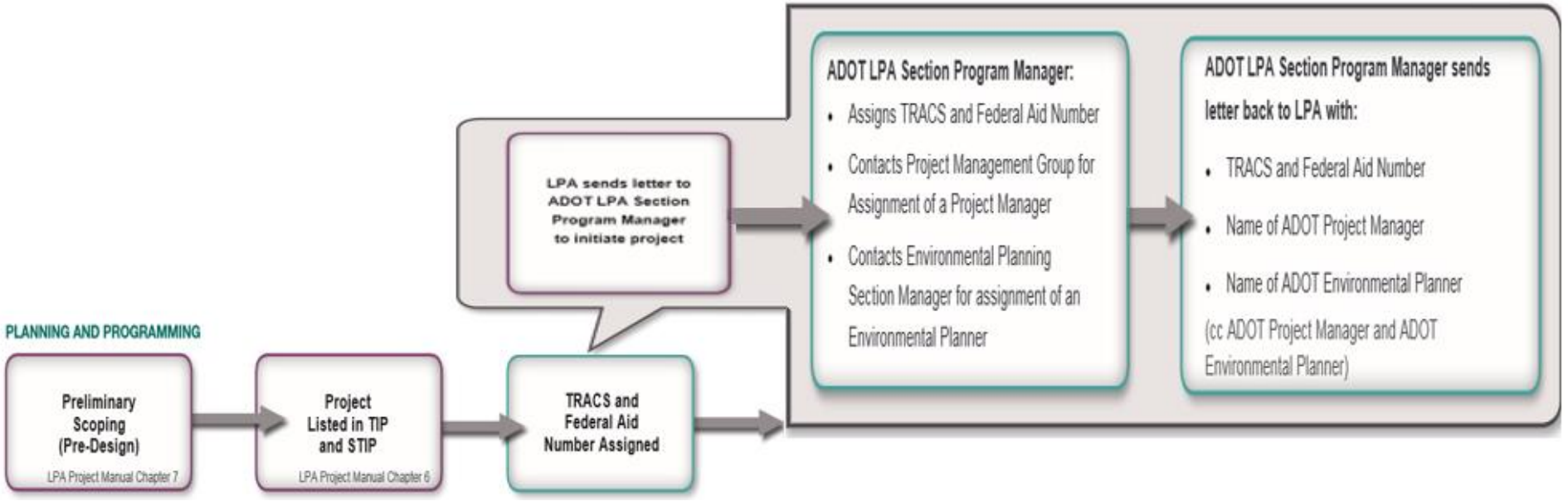
Initiating ADOT Administered LPA project Existing process



[1] IGA = Intergovernmental Agreement
[2] LPA that is CA operates under CA Agreement
[3] LPAs can self fund the PE and require Federal-aid for construction

Initiating ADOT Administered LPA project New process

- The **QRG** introduces a ***New Step*** in the process:
  - Notification of ADOT Environmental Planning of the project initiation and identification of the ADOT Environmental Planner.



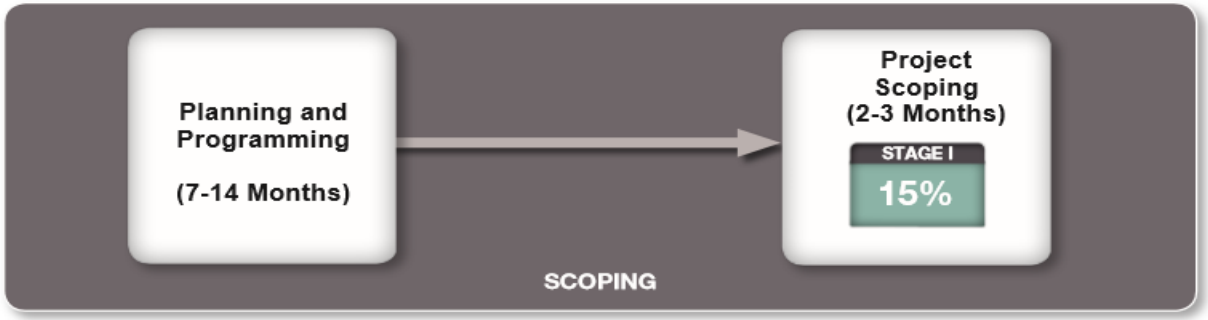
ADOT IGA and Consultant Procurement

- The **QRG** highlights that consultant procurement is dependent on the type of project administration
- The **QRG** introduces a ***New Step*** in the process: ADOT Environmental Planner can review the consultant proposal

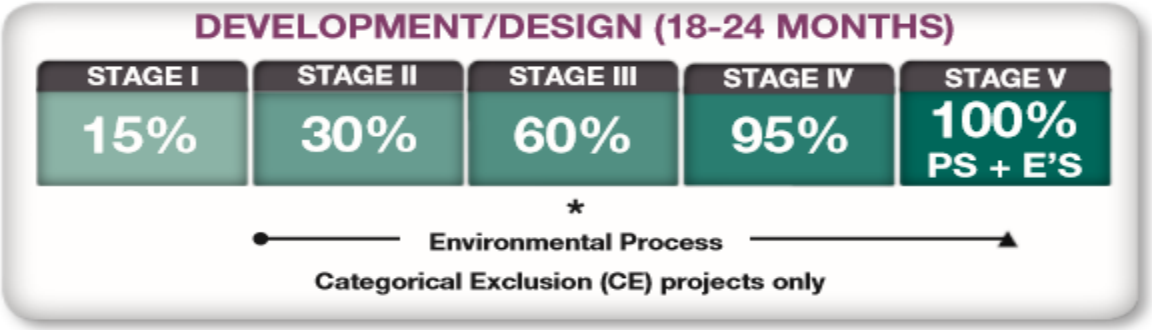
KEY POINT: In addition to the ADOT PM and LPA PM, ADOT Environmental Planners can review proposals from an environmental perspective. Though not required, LPAs that are CA and SA can send their project's scope of work to ADOT Environmental Planning for review to ensure that it is not under or over-scoped.

Assistance During Scoping Phase

- The **QRG** stresses that ADOT Environmental Planning involvement in LPA projects ***can begin as early as preliminary scoping*** during planning and programming phase.
- ADOT encourages LPAs to conduct preliminary scoping early and as thoroughly as possible to evaluate cost estimates before the projects are included in a TIP to ensure that sufficient funding is secured.
- ADOT Environmental Planning can be contacted during scoping pre-TIP and post-TIP to provide assistance on NEPA requirements.

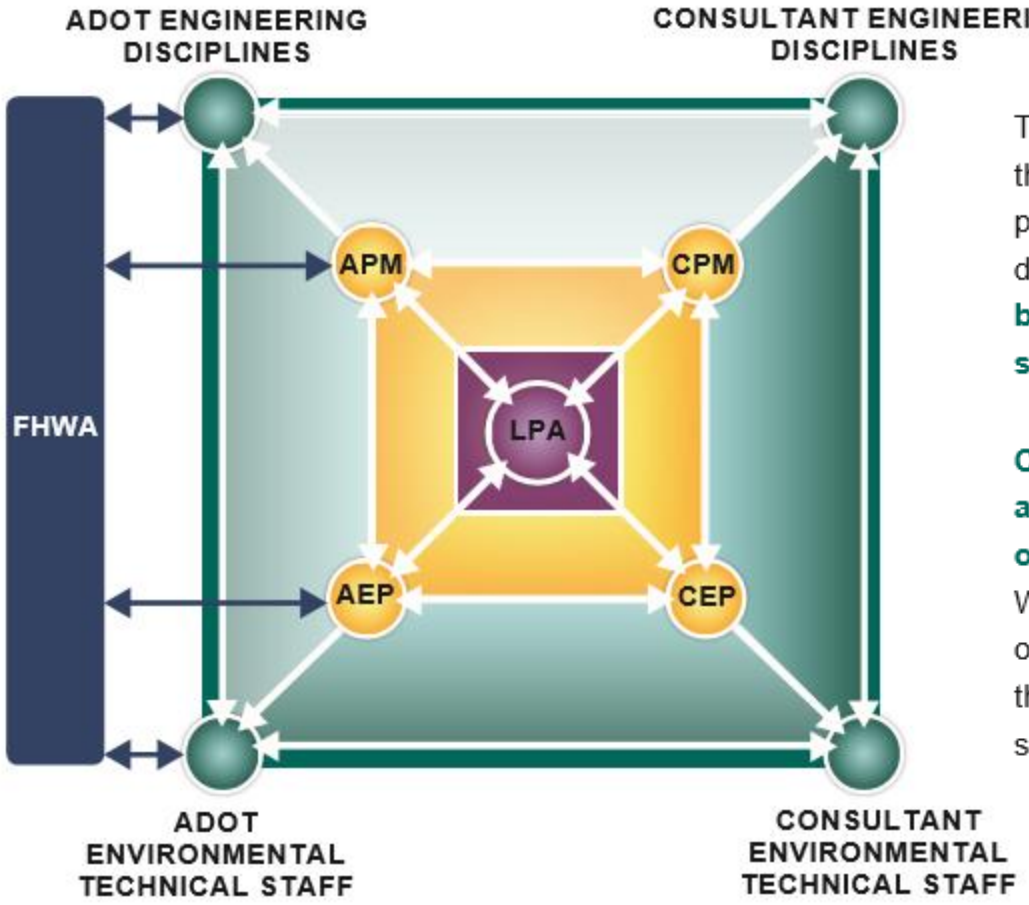


Assistance During Development Phase



- Preliminary Engineering , the environmental process, and NEPA approval occur within the Development/Design Phase
- Various environmental analysis may be required and coordination between disciplines is essential.
- Identifying and managing the project critical path, meaning accounting for the "other environmental laws" such as NHPA, ESA, CWA, Section 4(f), is also essential, because these typically dictate the environmental component of a project schedule.

Coordination and Communication



There are many different stakeholders that make up the project team, and each play a key role throughout the LPA project development process. **Communication between all players is essential in order to stay on schedule and within budget.**

Coordination and communication between all key players should be constant and ongoing throughout project development. When a project requires a change of scope or an environmental issue arises, notify the design team. These issues may affect schedule, budget, and/or scope.

Coordination, Communication, Documentation, QA/QC

- The **QRG** introduces a ***New Step*** in the process:
  - Creating a communication protocol upfront for all projects, so all team members know the communication chain.
- The **QRG** lays out the steps to be taken when communication breakdown occurs.
- The **QRG** emphasizes the importance of record keeping and documentation through out the project development process.
- LPAs and consultants are encouraged to consult the ADOT Environmental Planning Quality Control Plan.

http://azdot.gov/business/environmental-planning/additional-resources

- The approach to project should always be to keep quality in mind from the beginning.

Summary

- The SHRP2 identified constraints in expedited project delivery
- ADOT challenge – expediting environmental review
- ADOT SHRP2 project team took an holistic approach to the solution – Creating the **QRG**
- QRG - to improve all project components to deliver expedited environmental review for LPA program by:
  - providing an additional tool in expediting LPA project delivery.
  - simplifying strategies of the project development process

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SHRP2 C19, *Expediting Project Delivery*

Accelerated Bridge Program, Vermont Agency of Transportation

Presented By: Jennifer Fitch, P.E., VTrans
Aaron Guyette, P.E., VHB

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Presentation Outline

- Origins of the ABP
- Overview of Structures Organization
  - Project Initiation and Innovation Team (PIIT)
  - Accelerated Bridge Program (ABP)
- C19 Timeline: Past, Present, and Future
- C19 Key Strategies and Outcomes
- Future Action Items
- Three Years of Proven Performance

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Origins of the Accelerated Bridge Program

Minimizing Impacts to Expedite Project Delivery

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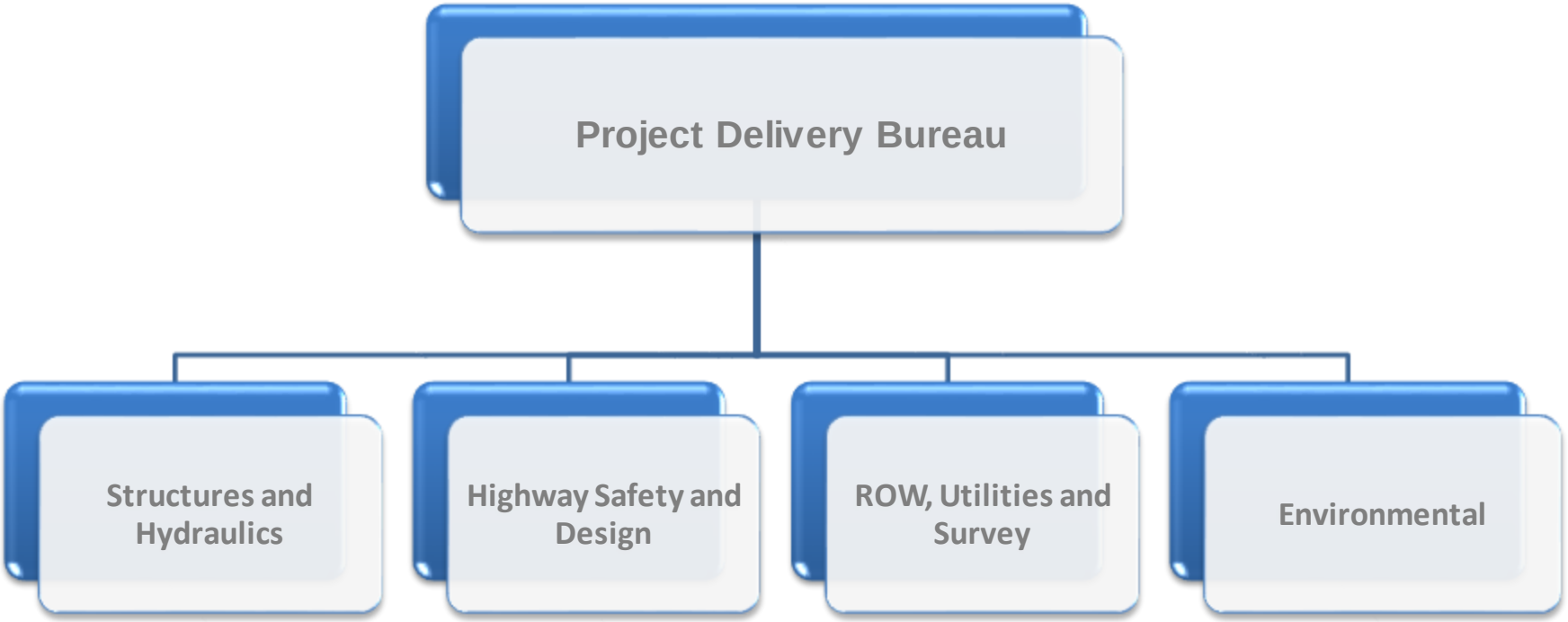
PDB Organizational Chart



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Setting the Stage for Expediting Project Delivery

- Significant increase in funding allocated to the Bridge program
  - 2009 American Recovery and Reinvestment Act
- Aging population necessitates replacement
- Tropical Storm Irene
- Legacy Projects

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Structures Reorganization

Dedicating Staff and Cultivating Proficiency

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Structures Reorganization

- The Structures Section reorganized in 2012 to streamline project delivery
  - Project Initiation and Innovation Team (PIIT)
  - Accelerated Bridge Program (ABP)

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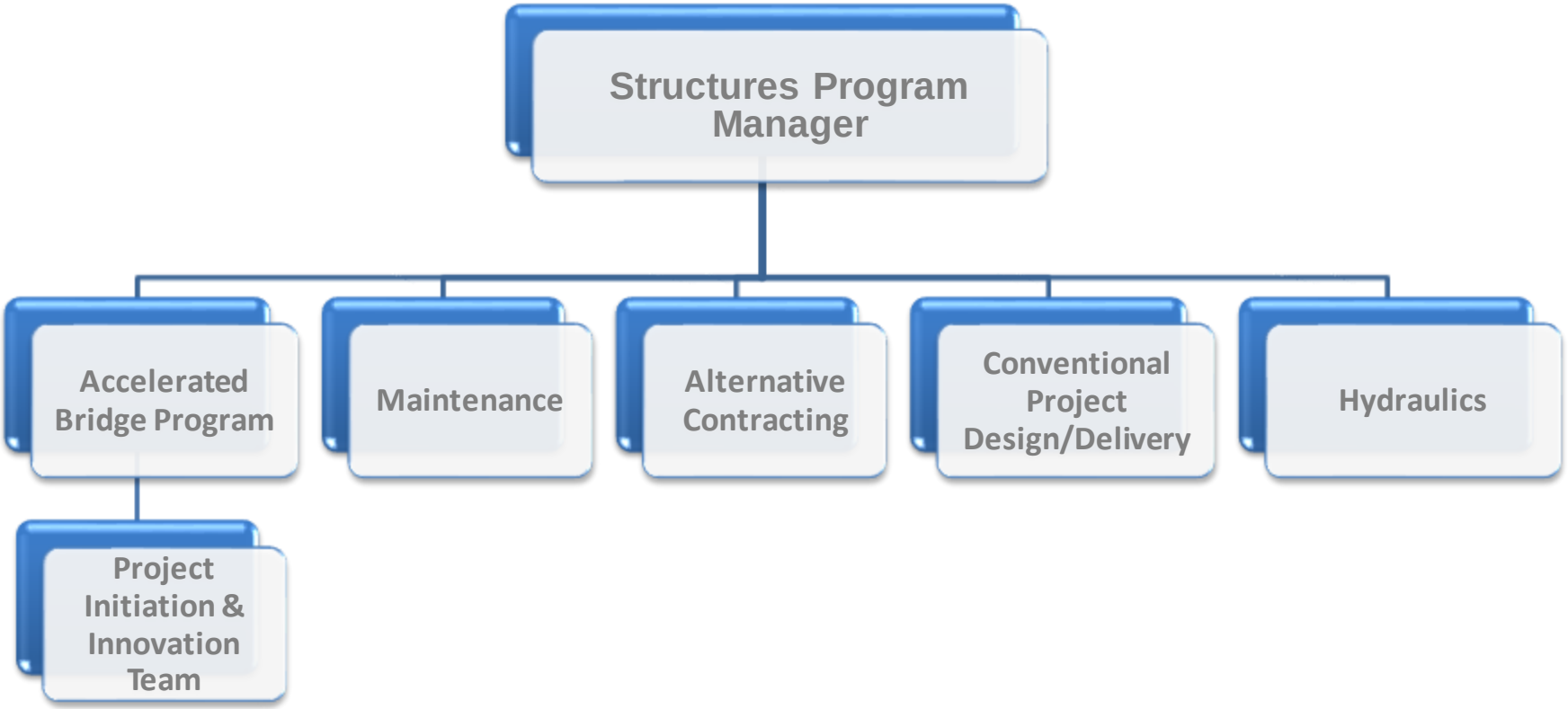
Structures Organizational Chart



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Project Initiation & Innovation Team (Scoping)

- All bridge projects start here
  - Full Replacement
  - Rehabilitation
  - Major Maintenance
    - Painting
    - Membrane and Paving
    - Deck Patching
- Approximately 20-30 projects initiated and scoped per year
- Large investment in early public outreach and consensus building

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Accelerated Bridge Program (ABP)

- Initiated and endorsed by Secretary Searles in January 2012
- Programmatic approach to accelerating projects
  - Minimize Project Impacts
  - Short Term Road Closures
  - Utilize Prefabricated Bridge Elements and Systems (PBES)
- Jump Started – Tropical Storm Irene – 14 Bridge Replacement projects delivered within 24 months
- 24 month performance goal from project defined to procurement (80% to meet 24 months)

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Challenges and Opportunities

- Program not yet ingrained in the Agency's organization
- Struggling with resource allocation to meet the 24 month development schedule
- Managing Internal and External Stakeholder and Customer Expectations
- Need to document successful approaches to expediting project delivery

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SHRP2 SOLUTIONS

TOOLS FOR THE ROAD AHEAD

SHRP2 C19 Timeline: Past, Present and Future

Leveraging Strategies to Remove Impediments and Deliver Projects

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SHRP2 C19 Background

- In 2012, SHRP2 published a report entitled, "Expedited Planning and Environmental Review of Highway Projects."
- In October 2013, VTrans was selected as a recipient of the SHRP2 C19 grant.
- These funds were used to develop an action plan that identifies, describes, and evaluates the leading constraints to expediting project delivery and strategies to overcome these barriers.

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C19 Desired Outcomes

- Evaluate risks to timely project delivery
- Identify opportunities to expediting projects with special emphasis on the strategies described in the *Expediting Project Delivery* report
- Identify resource demands for the ABP and how this may differ from conventional project delivery
- Analyze the VTrans organizational structure for opportunities for increased efficiencies
- Identify potential process improvements
- Build relationships with internal and external partners

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5 Key Strategies for Expediting Project Delivery

- Strategy 3: Context Sensitive Design/Solutions (Objective: Improve public involvement and support)
- Strategy 8: Expediting Internal Review and Decision-Making (Objective: Streamline decision-making)
- Strategy 10: Highly Responsive Public Engagement (Objective: Improve public involvement and support)
- Strategy 21: Strategic Oversight and Readiness Assessment (Objective: Improve internal communication and coordination)
- Strategy 22: Team Co-Location (Objective: Improve internal communication and coordination)

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SHRP2 C19 Timeline

- October 2013, VTrans was selected as a recipient
- July 2014, Program/Process Review
- September 2014, C19 Workshop
- June 2015, Action Plan Approved
- Summer/Fall 2015, Peer to Peer Exchanges
- Fall 2015-Present, Implement Action Items
- January 2016, External and Internal Stakeholder Interviews

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C19 Action Plan Drawing Upon Key Strategies

ABP Process/ Program Review
July 23 & 24, 2014

→

Expediting Project Delivery Assessment Workshop
September 3 & 4, 2014

→

Develop action plan with deliverables and performance measures
June, 2015

→

Implement Action Items
June, 2016

Action Item

Project Initiation Process Improvements

- Develop an Operations Questionnaire ☑
- Add Collaboration Phase ☑
- Heightened stakeholder Coordination ☑

Action Item

Documenting the PIIT/ABP Process

- Document the PIIT and ABP Process ☑
- Develop performance measures for the PIIT and ABP ☐
- Document Resource Demands ☐

Action Item

Public Outreach

- Public Involvement Plan ☐
- Website Development ☐
- Early Coordination with Stakeholders ☑
- Outreach Products ☑
- Tools to Engage the Public ☑

Action Item

Data Management

- GIS Application Research ☐

Action Item

Scanning Tour

- Conduct Scanning Tour ☑

Action Item

Generate Final Report of Findings

- Prepare final report ☐

C19 Key Strategies and Outcomes

Focused Approach to Maximize Success

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Strategy 3: Context Sensitive Design Solutions

- Dedicated scoping team to ensure consistency
- Community and Operations Questionnaires
- Addition of "Collaboration Phase" during project definition
- Proper Selection of selected alternatives (avoidance, minimization, and mitigation)

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Strategy 8: Expediting Internal Review and Decision Making

- Dedicated PIIT and ABP Teams
- Batching of scoping projects for resource ID
- Heightened Communication and Collaboration (**Emphasizing Partnerships)**
  - Collaboration Phase during Project Definition
  - Team Meetings
  - Construability Review Meetings
  - Pre-closure Contractor Meeting
- Concurrent Activities and Decision Tree

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Strategy 10: Highly Responsive Public Engagement

- Providing Financial Incentives on TH Projects (ACT 153)
- Public Meetings throughout the life of the project
- Effective Public Engagement
  - Audience Response Systems
- Public Involvement Plans
- Project Outreach Coordinators
- Customer Satisfaction Surveys

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Strategy 21: Strategic Oversight and Readiness Assessment

- Creating a Culture that Values Innovation
- Strong and Effective Project Management
- Developing Key Planning Documents
  - Traffic Management Plans
  - Public Involvement Plans
  - Risk Registry
  - Credible Schedules and Spending Profiles
- Standardized Design Details and Special Provisions for ABC

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Strategy 22: Team Co-Location

- Resource Groups Housed Together
- Dedicated Utility Relocation Specialists
- Project Development Team Meetings
- Constructability Review Meetings

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Future Action Items

Setting the Stage for Continuous Process Improvements

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Our C19 Journey Has Just Begun

- Numerous Takeaways from the Program/Process Review, Peer to Peer Exchanges, and Stakeholder Interviews
- Peer Exchanges with MassDOT, NYSDOT and MaineDOT
  - Diverse Group from VTrans in Attendance
  - Program Overviews
  - Accelerated Program Emphasis Areas
  - Shared New Initiatives, Innovations, and Lessons Learned
  - Takeaways

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Our C19 Journey Has Just Begun

- Explore Enhancements in the PIIT process
  - Leverage expertise in VTrans to help refine recommended alternatives
  - Develop truncated scoping report for Preventative Maintenance and Emergency Projects
  - Explore effective methods to engage upper lever management on high risk and high cost projects
  - Develop prescreening GIS tool for resource ID

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Our C19 Journey Has Just Begun

- Expand the Use of Alterative Contracting Methods
  - Best Value, Detail-Build, and Proposal Only
- Expediting ROW Acquisition
  - Modify project schedule to meet with property owners during preliminary plan development
  - Use “Block Out Approach” and begin “Plans and Titles” during preliminary plan development
- Explore Strategies for timely delivery of Utility Relocation
  - Consider integrating relocation order through the contract and make it the contractors responsibility

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Our C19 Journey Has Just Begun

- Strengthen Partnerships with Construction
  - Develop construction expertise in ABC
  - Assign resident engineer during design
  - Seek approval from Construction on the design construction schedule prior to PS&E
  - Augment Construction Staff with Structures Design Staff
  - Embed Construction Staff in the Structures Program during winter months
  - Establish effective feedback loop of lessons learned
  - Consider the timing and sequencing of bridge closures

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Our C19 Journey Has Just Begun

- Effective and Clear Traffic Management
  - Determine how to integrate portions of the TMP into the contract plans and special provisions
  - Establish protocol and approval process for closing roads
  - Create or utilize existing tools to determine if there are any conflicts with other ongoing construction projects
  - Develop FAQs for road closures on TH projects

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Our C19 Journey Has Just Begun

- Effective and Clear Traffic Management
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Our C19 Journey Has Just Begun

- Enhanced Quality and Customer Service
  - Develop Plan Quality Certification
  - Consider pairing new consultant with seasoned designer
  - Develop and disseminate quality surveys for bidders following project award
  - Consider Local Advisory Committees for projects with significant public interest
  - Consider holding Regional Concerns Meetings for Interstate projects during TAC meetings

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Accelerated Bridge Program

Three Years of Proven Performance

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ABP by the Numbers

- 22 projects have been delivered through 2014
- 6 are under construction this summer
- The 28 projects represent $55 million in construction costs
- Another 10 ABP projects will be delivered in 2017

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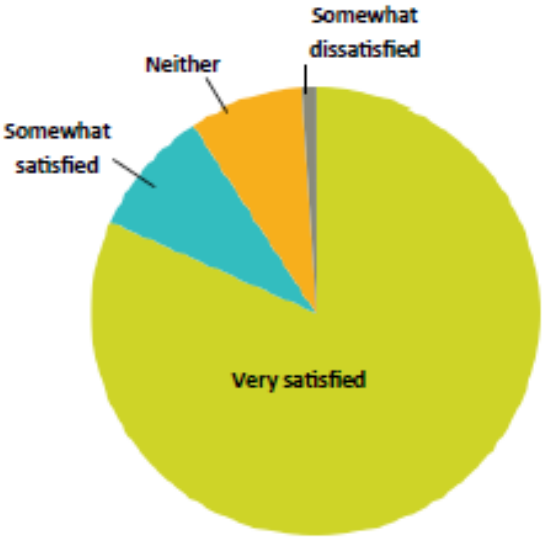
Q8 The Stowe VT 108 Bridge Project used an innovative construction method called Accelerated Bridge Construction, which uses prefabricated bridge elements and road closures to reduce onsite construction time. Conventional construction typically uses temporary bridges and takes one to two years to complete. How satisfied were you with the Accelerated Bridge Construction?

Answered: 109 Skipped: 6

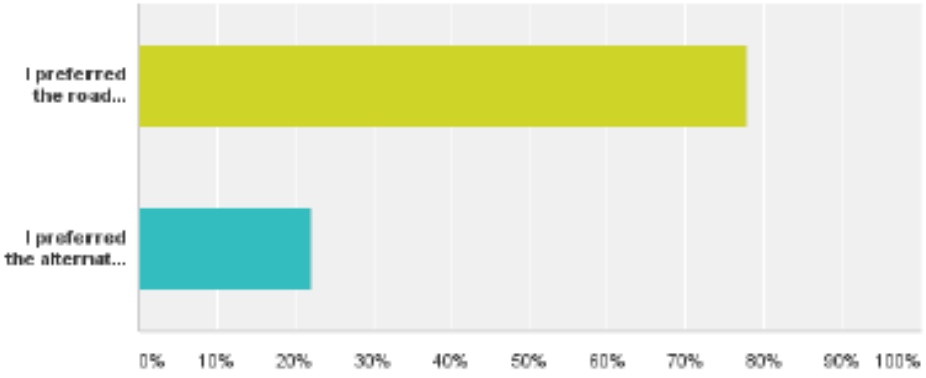


VERMONT AGENCY OF TRANSPORTATION

WATERBURY WORKS

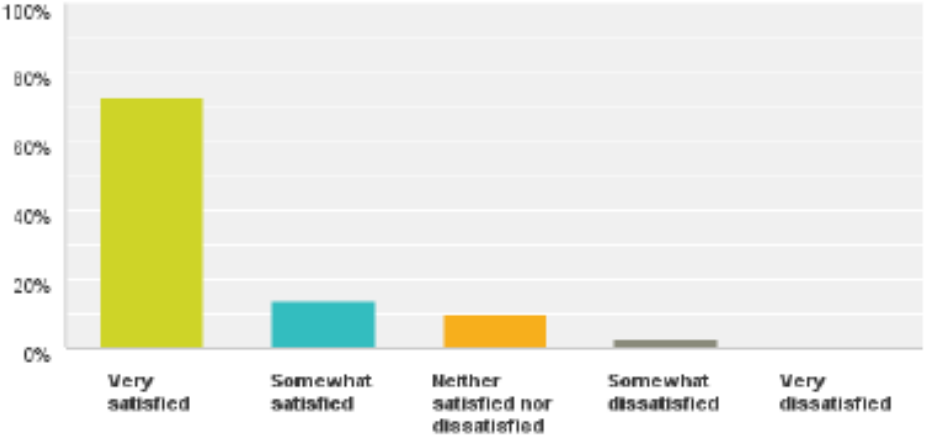
Q9 How would you rate your level of satisfaction with the road closure compared to alternating one-way traffic following the bridge closure period?

Answered: 108 Skipped: 7



Q12 Overall, how satisfied were you with how VTrans delivered this project?

Answered: 108 Skipped: 7



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Panel: Questions and Answers

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SHRP2 SOLUTIONS

TOOLS FOR THE ROAD AHEAD

Thank you!