

**INTELLIGENT TRANSPORTATION SYSTEMS - PROJECT APPLICATION**  
**CMAQ Funding Available for Federal Fiscal Year 2020, 2021 and 2022**

**General Instructions:**

This Excel-based Project Application form must be used to request federal Congestion Mitigation and Air Quality (CMAQ) funds available through the Maricopa Association of Governments (MAG) for qualified ITS Projects. The following funding amounts are estimated to be available:

- Federal Fiscal Year 2020 - \$13.9 million
- Federal Fiscal Year 2021 - \$15.0 million
- Federal Fiscal Year 2022 - \$15.5 million

The maximum amount requested per project application will be as follows:

- A maximum of \$2.0 million for a project with a single agency,
- A maximum of \$3.5 million for a project with one agency and one partner agency (a total of two agencies), and
- A maximum of \$5.0 million for a project with one lead agency and two or more partner agencies (a total of three or more agencies).

Approved projects will be included in the FY2018 - FY2022 MAG Transportation Improvement Program. This application form includes the following sheets to be filled by the submitting jurisdiction:

- Contact Information -- for agency submitting the application
- CMAQ Data
- ITS Project Information
- ITS Architecture
- Project Cost Estimate
- Budget & Signature
- Application Checklist

**TRANSMITTAL INSTRUCTIONS and SCHEDULE**

**The due date and time for project applications to be submitted to MAG is by 10:00 a.m. on Monday, September 16, 2019**

**Application Submittal Instructions:****1) Submit this Excel application electronically.**

To transmit the application electronically, please save the completed Excel file using the following file naming convention - Avondale-1.xlsx, Avondale-2.xlsx, Phoenix-1.xlsx etc.

**2) Submit a PDF that includes a printed, signed application & project map to MAG via email.**

To transmit the PDF version of the application, a) have the "Project Budget" sheet signed by the jurisdiction's designated representative, and b) a project map that includes the geographical coverage of the project, project features and project attributes. Scan the application, with the signed application and map, and save the PDF file using the following file naming convention - Avondale-1.pdf, Avondale-2.pdf, Phoenix-1.pdf etc.

**3) Submit all additional attachments of GIS coverage (shape file, geo database, or KMZ) to MAG via email.**

Additional GIS coverage material is not required, but it is highly encouraged to submit. If additional GIS coverage material is available, please see the tab labeled "GIS Submittal Instructions" for more details on GIS format instructions.

**Application Submittal Requirements:**

A successful transmittal of the application must include Application Submittal Instructions steps 1 and 2. Step 3 is optional, but is highly encouraged. Please submit the Excel file application, PDF file application and all associated attachments to this application to MAG via one of the two transmittal methods instructed below.

Submission deadline: **10:00 a.m. on Monday, September 16, 2019**

**INTELLIGENT TRANSPORTATION SYSTEMS - PROJECT APPLICATION**  
**CMAQ Funding Available for Federal Fiscal Year 2020, 2021 and 2022**

**Transmittal Instructions:**

Two methods are provided to transmit files to MAG as follows:

**Method 1 EMAIL:** To Email the application to MAG, please do the following:

1. Save the files to be transmitted to MAG in a place you can find
2. Click on the following hyperlink to open an email window, attach the application files and press the send button.

[EMAIL APPLICATION TO MAG](#)

**Method 2 DROPBOX:** If the application is to large to be sent by email or you would like immediate confirmation of your transmittal, please do the following:

1. Save all files to be transmitted to MAG in a place you can find
2. ZIP the files using the same naming convention as the spreadsheet
3. Click the following hyperlink to upload the files to Dropbox

[DROP THE APPLICATION IN THE BOX](#)

**Application Workshops and Open Working Group Meeting Schedule\***

Date	Time	Room	Event
Tuesday, August 06, 2019	1:30 - 3:00 PM	Saguaro	Workshop on MAG Transportation Programming and Federal Fund Project Applications
Tuesday, August 13, 2019	10:00 - 11:00 AM	Chaparral	Open Working Group - Federal Fund Project Applications
Tuesday, August 27, 2019	1:00 - 2:00 PM	Chaparral	Open Working Group - Federal Fund Project Applications

\* All meetings will be held on the 2nd floor of the MAG Offices at 302 N. 1st Avenue, Phoenix, AZ 85003

**MAG CONTACT INFORMATION**

Contact Name	Phone	E-Mail Address
Stephen Tate (TIP)	602-254-6300	<a href="mailto:State@azmag.gov"><u>State@azmag.gov</u></a>
Eric Nava (ITS)	602-254-6300	<a href="mailto:enava@azmag.gov"><u>enava@azmag.gov</u></a>

<b>Contact Information</b>	
1. Lead Agency	City of Scottsdale
2. Contact Name	Hong Huo, PE, PTOE
3. Phone	480-312-7935
4. E-Mail Address	hhuo@scottsdaleaz.gov
5. Mailing Address	9191 E San Salvador Dr, Scottsdale, AZ 85258

<b>CMAQ Data</b>	
This part of the form is used to gather project related data to calculate an CMAQ Score and also gather the minimum data needed for a listing of the project in the Transportation Improvement Program.	
<b>Federal Funding Eligibility</b>	
All ITS projects to be funded with Federal CMAQ funds must be located within a nonattainment area. Please use the map provided in the tab named "Map" to verify that the project is located in a nonattainment area.	
<b>1. Traffic Estimate and Roadway Characteristics</b>	
a. Current Average Daily Traffic (ADT) on the facility or the nearest parallel facility of a similar facility type:	32300
b. Please describe how the ADT was estimated:	ADT was collected during a 24-hour period using traffic counters.
c. When was the ADT estimate developed:	2018
d. Name of the roadway section used for the ADT estimate:	Hayden Rd: Thomas Rd - Osborn Rd
e. Starting limit of the roadway section:	Hayden Rd & McKellips Rd
f. Ending limit of the roadway section:	Hayden Rd & Shea Blvd
g. Length (miles):	9.5
h. Total number of through lanes on the roadway section:	6
i. Federal Functional Classification of the roadway section:	Principal Arterial - Other
	<a href="#">Link to ADOT Functional Classification Maps</a>

**CMAQ Data**

**2. Improvements in Traffic Management & Operations**

a. Enter the pre-improvement (current) average corridor traffic speed: 45

b. In the table, check the box that best describes the project (Check only one box):

	Before (pre-improvement) condition	After (post-improvement) condition	Expected increase in speed
<input type="checkbox"/>	Interconnected, pre-timed signals with old timing plan	Advanced computer-based control	17.5 percent
<input type="checkbox"/>	Non-interconnected signals with traffic-actuated controllers	Advanced computer-based control	16.0 percent
<input checked="" type="checkbox"/>	Interconnected, pre-timed signals with actively managed timing	Advanced computer-based control	8.0 percent
<input type="checkbox"/>	Interconnected, pre-timed signals with various forms of master control and various qualities of	Optimization of signal timing plans. No change in hardware	12.0 percent
<input type="checkbox"/>	Non-interconnected, pre-timed signals with old timing plan	Optimization of Signal Timing Plans	7.5 percent

NOTE: All ITS projects MUST involve eligible infrastructure improvements.

**3. Other Improvements (Check all that apply)**

- Traffic signal system improvements at a single agency
- Traffic signal system improvements that apply to more than one agency
- Includes improvements to coordination between arterial and freeway traffic operations
- Project conforms to local land use plans
- Adds features to traffic signals that would better accommodate seniors at pedestrian crossings

**4. Traffic Flow Improvement Due to Project (Not required for Traffic Mgmt & Operations Improvements)**

a. Enter the pre-improvement (current) average traffic speed of the corridor: (populated from #2a) 45

b. Enter the post-improvement average traffic speed of the corridor: 48

## ITS Project Information

Enter information in highlighted cells ONLY. Links to various websites are provided for additional information and help.

### 1. Project Title & Sponsor

a. Project Title	Hayden Rd Fiber Installation
b. Lead Agency	City of Scottsdale
c. Other Partnering Agencies	

### 2. Project Type

Prioritize SMO Buckets for the funding application

First Priority	Bucket #1 – ICM Corridors
Second Priority	Bucket #3 – Local Priority Corridors
Third Priority	(Please Select a Bucket)

### 3. Project Goals & Objectives

a. Project Goals	Provide robust communication from TMC to intersections to support real-time decision making and monitoring of traffic signal operations along ICM corridors.
b. Project Objectives	Construct 5.5 miles of fiber and conduits on selected segments on Hayden Rd from McKellips Rd to Shea Blvd to provide reliable communication from TMC to traffic signals.

### 4. Project Information

a. Project location description	<p>The project covers 5.5 miles of selected segments on Hayden Rd from McKellips Rd to Shea Blvd. Hayden Rd is a north-south corridor adjacent to Loop 101 that is identified as the main detour route for Loop 101. Currently there is no fiber on the segments. Wireless communication is provided through radio as a temporary solution, which constantly has connection or bandwidth issues. The project map is attached.</p> <p>Note: a PDF file of a map must be submitted to MAG as an attachment.</p>
b. Scope of the project	<p>The project proposes to install 5.5 miles of fiber and conduits on selected segments on Hayden Rd from McKellips Rd to Shea Blvd.</p>

## ITS Project Information

### 5. Identify Project Components in MAG Regional ITS Architecture

Service Area	Addressed in this Project? <small>(Dropdown: Y/N)</small>	<a href="#">Applicable ITS Service Packages</a>
Traffic Management	Yes	ATMS01, ATMS03, ATMS09
Maintenance and Construction	No	
Public Transportation		
Traveler Information		
Emergency Management		
Archived Data Management	No	

NOTE: Insert the relevant ITS Architecture flow diagram in the "ITS Architecture" worksheet.

### 6. Quantitative Criteria

Enter Quantitative Criteria for Bucket(s) selected in Section 2 "Project Type"

Average Daily Traffic (ADT) from 'CMAQ Data' tab in this funding application.	32,300
Crashes Per Mile Per Year (MAG Will Complete)	
Maximum Peak Period Travel Time Index (MAG Will Complete)	
Percentage network communication connectivity to traffic signals & ITS devices.	86%
Regional Priority Corridor Ranking (Enter shares of work in "Regional Priority - Top 100")	
Latest year of your agency's Operations/Management Center upgrade.	2014

### 7. Program Year Preference

Preferred Program Year 2022

ITS Project Information				
<b>8. Project Budget by SMO Strategy</b>				
Strategies for Bucket #1 – ICM Corridors	Federal Cost	Local Match (min 5.7%)	Total Cost	Share of Total Project
2-Real-time CCTV monitoring capabilities at all major-major arterial intersections on ICM corridors				0%
3-Vehicle and pedestrian actuated detection at all signalized intersections to support signal operations and real-time collection of data collection, including data on turning movement counts				0%
11-Regional Asset Upgrade/Replace Program - ICM Corridors & Priority Arterials	\$ 1,761,713.00			100%
<b>Total</b>	<b>\$ 1,761,713.00</b>	<b>\$ 106,487</b>	<b>\$ 1,868,200</b>	<b>100%</b>
<b>Cost Percentage</b>	<b>94.3%</b>	<b>5.7%</b>		
Strategies for Bucket #2 – Regional Priority Arterials	Federal Cost	Local Match (min 5.7%)	Total Cost	Share of Total Project
8-Real-time visual monitoring capability at all major-major intersections on Priority Arterials				
9-Additional detection at signalized intersections for real-time collection of data, including turning movement counts stored by individual agencies and archived in RADS				
10-Reliable communications between TMCs and major-major intersections to facilitate remote management of traffic operations - Adds both fiber and wireless infrastructure				
11-Regional Asset Upgrade/Replace Program - ICM Corridors & Priority Arterials				
<b>Total</b>				
<b>Cost Percentage</b>				
Strategies for Bucket #3 – Local Priority Corridors	Federal Cost	Local Match (min 5.7%)	Total Cost	Share of Total Project
12-Local priority ITS projects	\$ 1,761,713.00			100%
<b>Total</b>	<b>\$ 1,761,713.00</b>			<b>\$ 106,487</b>
<b>Cost Percentage</b>	<b>94.3%</b>	<b>5.7%</b>		

## ITS Project Information

### 9. System Maintenance and Operations

a. Current staff resources available to support ITS operations at the local agency (in FTEs)	6
b. Additional staff resources required for fully utilizing features added by project (in FTEs)	0
c. Agency's estimated current annual ITS operations & maintenance (O & M) budget	\$2,878,000
d. Estimated additional annual O & M funds required for features added by this project	\$10,000
e. Estimated DATE from when required additional local O & M funds will be available	07/2023
f. Other comments	

### 10. Systems Engineering Analysis Requirement

**Commitment to address the federal requirement for Systems Engineering Analysis:**

Agency's intent to follow the process described in the 'V' diagram during the project development process.

[ADOT Systems Engineering Checklist](#)

**The project sponsor/lead agency of this application intends to incorporate the Systems Engineering Analysis in the project's scope of work, following guidance on the ADOT's System Engineering Checklist.**

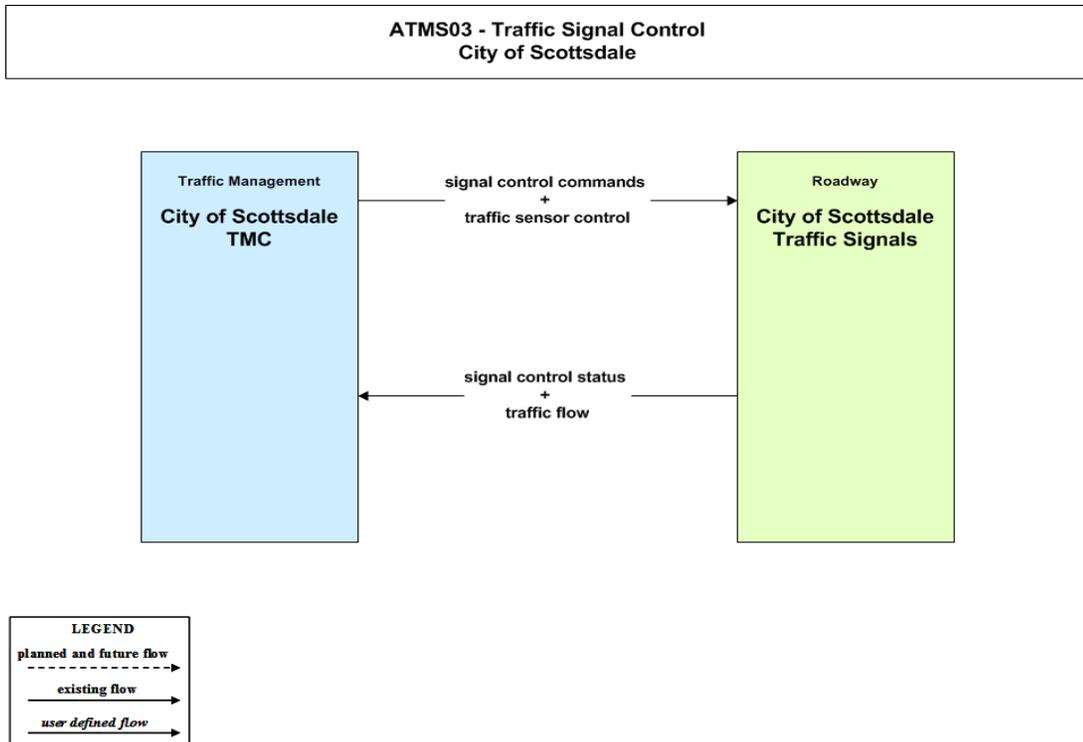
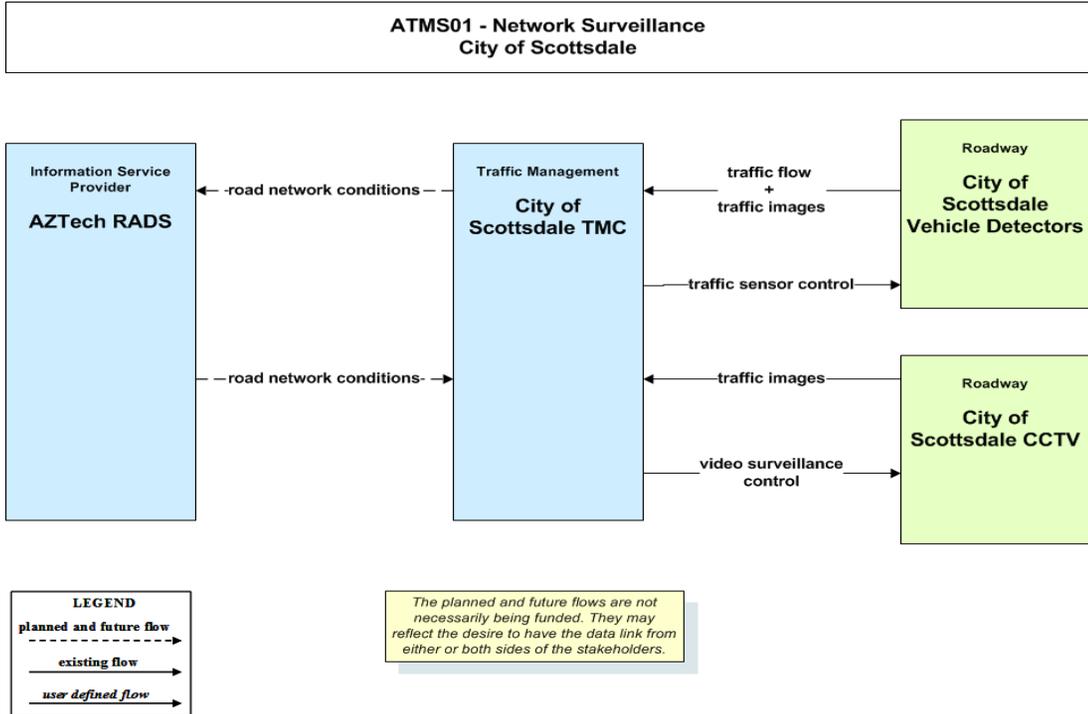
Yes, the agency intends to follow the process.

## ITS Architecture Flow Diagram

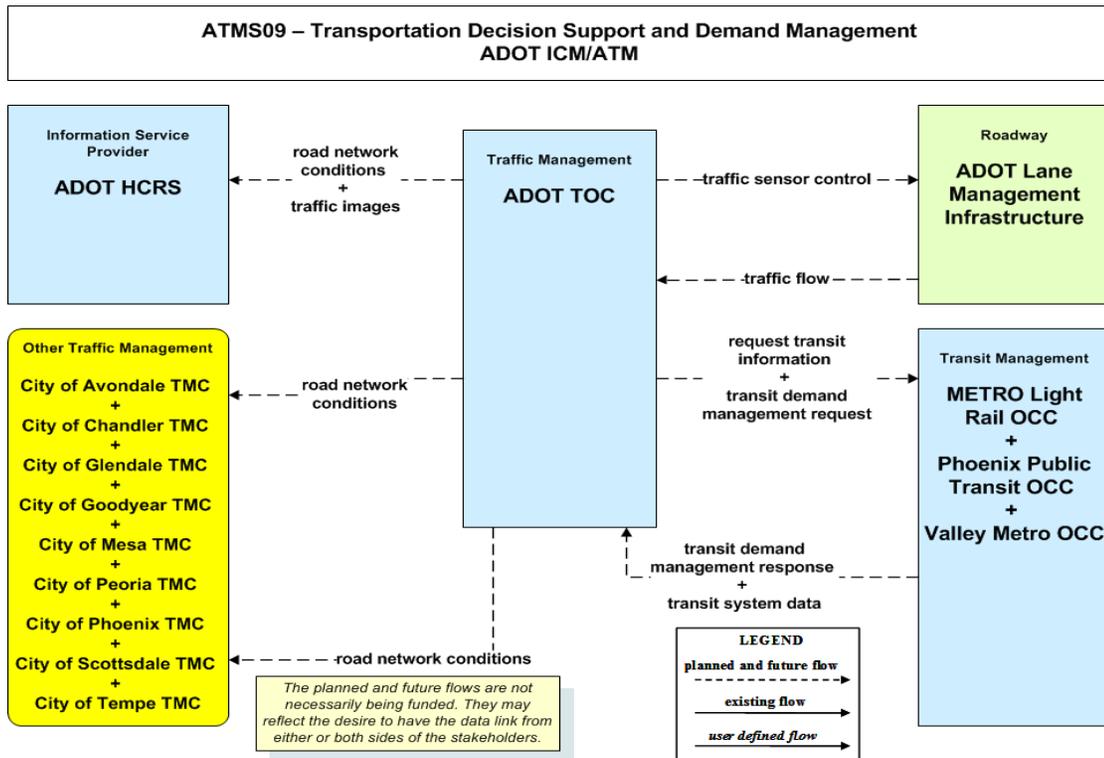
All relevant ITS Architecture Flow Diagrams MUST be inserted below for the relevant ITS Service Packages addressed by the proposed ITS project. This is to ensure that the project complies with the Regional ITS Architecture and meets a federal requirement for all federally funded ITS projects.

Find the relevant Service Packages addressed by the project in the MAG ITS Architecture (found in the link below). Copy and paste the graphic in the space provided.

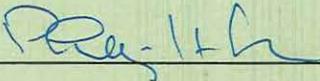
[MAG Regional ITS Architecture](#)



**ITS Architecture Flow Diagram**



PROJECT COST ESTIMATE WORKSHEET (Cost Estimates Are Required Regardless of Programming)										
DESIGN	REQUESTED PROGRAMMING (Complete if Item will be programmed in the MAG TIP)	Location Description	Hayden Rd - McKellips Rd to Shea Blvd							
		Work Description	Install 5.5 miles of conduits and fiber.							
		Funding Source	Local							
		Preferred Year to Program Work	2022							
	COST ESTIMATE FOR DESIGN		UNITS	QUANTITY	UNIT COST	TOTAL	USES FEDERAL AID	FEDERAL	LOCAL	
	PRELIMINARY ENGINEERING (15% plans) (Required for Budget)	Topographic Survey	LS	1	10,000	\$ 10,000.00	No	-	10,000	
		Project Assessment Report or Detailed Workplan	LS	1	10,000	\$ 10,000.00	No	-	10,000	
		Systems Engineering Analysis (must address FHWA requirements)	LS	1	10,000	\$ 10,000.00	No	-	10,000	
		Federal Project Environmental Determination	LS	1	20,000	\$ 20,000.00	No	-	20,000	
		HAZMAT Assessment	LS	1	5,000	\$ 5,000.00	No	-	5,000	
SUBTOTAL - PRELIMINARY ENGINEERING COSTS				\$	55,000.00	-	-	55,000		
FINAL DESIGN (30, 60, 95, 100% plans) (Required for Budget)	Right-of-Way Acquisition	LS	1	220,000	\$ 220,000.00	No	-	220,000		
	Plans, Specifications, Cost Estimates, Bidding	LS	1	-	\$ -	No	-	-		
	Geotechnical Report	LS	1	-	\$ -	No	-	-		
	Drainage Report	LS	1	-	\$ -	No	-	-		
	SWPPP	LS	1	-	\$ -	No	-	-		
SUBTOTAL - FINAL DESIGN COSTS				\$	220,000.00	-	-	220,000		
TOTAL PRELIMINARY ENGINEERING AND DESIGN COST AVAILABLE FOR PROGRAMMING					\$	275,000.00	-	-	275,000	
PROCUREMENT	REQUESTED PROGRAMMING (Complete if Item will be programmed in the MAG TIP)	Location Description	Hayden Rd - McKellips Rd to Shea Blvd							
		Work Description	Install 5.5 miles of conduits and fiber.							
		Funding Source	CMAQ							
		Preferred Year to Program Work	2020							
	COST ESTIMATE FOR PROCUREMENT		UNITS	QUANTITY	UNIT COST	TOTAL	USES FEDERAL AID	FEDERAL	LOCAL	
	PROCUREMENT COSTS	EA				\$ -	Yes	-	-	
		EA				\$ -	Yes	-	-	
		EA				\$ -	Yes	-	-	
		EA				\$ -	Yes	-	-	
		EA				\$ -	Yes	-	-	
EA					\$ -	Yes	-	-		
EA					\$ -	Yes	-	-		
EA					\$ -	Yes	-	-		
EA					\$ -	Yes	-	-		
TOTAL - PROCUREMENT					\$	-	-	-		
CONSTRUCTION	REQUESTED PROGRAMMING (Complete only if Construction will be programmed in the MAG TIP)	Location Description	Hayden Rd - McKellips Rd to Shea Blvd							
		Work Description	Install 5.5 miles of conduits and fiber.							
		Funding Source	CMAQ							
		Preferred Year to Program Work	2022							
	COST ESTIMATE FOR CONSTRUCTION		UNITS	QUANTITY	UNIT COST	TOTAL	USES FEDERAL AID	FEDERAL	LOCAL	
	UTILITY RELOCATIONS (Required for Budget, May be 0 if no Utilities)  The cost of utility relocation for the transportation project are eligible for federal aid if the costs/activities involved are directly related to the transportation project. Generally, burying overhead utilities is cost prohibitive.	Relocate 69 kv (+) Poles	EA			\$ -	Yes	-	-	
		Relocate/Underground 12 kv lines	LF			\$ -	Yes	-	-	
		Relocate/Underground Irrigation Canal	LF			\$ -	Yes	-	-	
		SWG Relocations	LS			\$ -	Yes	-	-	
		Telephone/Cable TV Relocations	LS			\$ -	Yes	-	-	
		Upgrade Railroad Crossings	LS			\$ -	Yes	-	-	
		Other Utilities	LS			\$ -	Yes	-	-	
		Other Utilities	LS			\$ -	Yes	-	-	
		SUBTOTAL - UTILITY RELOCATION COSTS				\$	-	-	-	
		CONSTRUCTION (Required for Budget)	Removal of Miscellaneous concrete	LS	1	16,900	\$ 16,900.00	Yes	15,937	963
	Removal of Asphalt		LS	1	6,000	\$ 6,000.00	Yes	5,658	342	
	Pathole Utilities		LS	1	10,000	\$ 10,000.00	Yes	9,430	570	
	Bare Pits		EA	8	15,000	\$ 120,000.00	Yes	113,160	6,840	
	New PVC Conduit (2 x 2" conduit directional Bare)		LF	31,000	30	\$ 930,000.00	Yes	876,990	53,010	
	Pull Box (No. 7)		EA	8	800	\$ 6,400.00	Yes	6,035	365	
	Pull Box (No. 9)		EA	10	2,500	\$ 25,000.00	Yes	23,575	1,425	
	Single Mode Fiber Optic Cable (144 Fibers)		LF	32,000	2	\$ 72,000.00	Yes	67,896	4,104	
	Fiber Optic Splice Closure (Splice and Termination)		EA	10	2,000	\$ 20,000.00	Yes	18,860	1,140	
	Patch Panel 12-SMFQ		EA	10	800	\$ 8,000.00	Yes	7,544	456	
	Ethernet Switch		EA	10	2,000	\$ 20,000.00	Yes	18,860	1,140	
	Concrete Sidewalk		SF	2,500	6	\$ 15,000.00	Yes	14,145	855	
	Concrete Curb		LF	1,000	15	\$ 15,000.00	Yes	14,145	855	
	Valley Gutter		SF	1,000	20	\$ 20,000.00	Yes	18,860	1,140	
	Landscape Restoration		LS	1	5,000	\$ 5,000.00	Yes	4,715	285	
	Asphalt Replacement		SY	500	60	\$ 30,000.00	Yes	28,290	1,710	
	Earthwork		SY	850	14	\$ 11,900.00	Yes	11,222	678	
	SUBTOTAL - CONSTRUCTION COST				\$	1,331,200.00	-	1,255,322	75,878	
	MOBILIZATION AND ADMINISTRATION COSTS		CONTRACTOR MOBILIZATION (Typically 8% of construction cost)			107,000	\$ 107,000.00	Yes	100,901	6,099
			TRAFFIC CONTROL (0-8% of construction cost)			107,000	\$ 107,000.00	Yes	100,901	6,099
			CONSTRUCTION SURVEY & LAYOUT (Typically 1% of construction cost)			15,000	\$ 15,000.00	Yes	14,145	855
CONSTRUCTION CONTINGENCIES (Typically 5% of construction cost)					68,000	\$ 68,000.00	Yes	64,124	3,876	
CONSTRUCTION ADMINISTRATION (Averaging 18% of construction cost)					240,000	\$ 240,000.00	Yes	226,320	13,680	
SUBTOTAL - MOBILIZATION & ADMINISTRATION COSTS				\$	537,000.00	-	506,391	30,609		
TOTAL UTILITIES, CONSTRUCTION AND MOBILIZATION FOR PROGRAMMING					\$	1,868,200.00	-	1,761,713	106,487	
ADOT REVIEW FEE	Please enter 'Yes' if your agency is certified accepted by ADOT for construction		Yes							
	ADOT REVIEW FEE	AGENCY TYPE	RATE	HOURS	TOTAL	USES FEDERAL AID	FEDERAL	LOCAL		
		Contracts and Specs \ Advertise Project	Non CA	55	100	\$ -	No	-	-	
		District \ Review Stage Submittals	Non CA	50	40	\$ -	No	-	-	
		Environmental Planning \ Issue Clearance	All	50	40	\$ 2,000.00	No	-	2,000	
		Right of Way \ Issue Clearance	Non CA	55	24	\$ -	No	-	-	
		Compliance Review\ Compliance Review	Non CA	175	40	\$ -	No	-	-	
		Project Management Group\ Project Management	Non CA	120	100	\$ -	No	-	-	
		Project Management Group\ Project Management	CA Only	120	60	\$ 7,200.00	No	-	7,200	
		Utilities and Railroad Sections\ Issue Clearance	Non CA	50	24	\$ -	No	-	-	
TOTAL COST ESTIMATE					\$	2,152,400	-	1,761,713	390,687	

Budget and Signature Page								
Phase	Location Description	Work Description	Year to be Programmed	Funding Source	Federal Amount	Local Amount	Total	Local Share
Design, excludes ADOT review fees	Hayden Rd - McKellips Rd to Shea Blvd	Install 5.5 miles of conduits and fiber.	2022	Local	\$ -	\$ 275,000	\$ 275,000	100.0%
Construction	Hayden Rd - McKellips Rd to Shea Blvd	Install 5.5 miles of conduits and fiber.	2022	CMAQ	\$ 1,761,713	\$ 106,487	\$ 1,868,200	5.7%
<b>Total Programmed</b>					<b>\$ 1,761,713</b>	<b>\$ 381,487</b>	<b>\$ 2,143,200</b>	<b>17.8%</b>
ADOT Design Review Fee					\$ -	\$ 9,200	\$ 9,200	100.0%
<b>Total Cost</b>					<b>\$ 1,761,713</b>	<b>\$ 390,687</b>	<b>\$ 2,152,400</b>	<b>18.2%</b>
<b>Signature: To be signed and scanned with PDF copy that is sent to MAG via email</b> As the jurisdiction's manager/administrator or designated representative, I certify that the information contained in this application is accurate and complete and that the local funds for this project will be included in the sponsoring MAG member agency's local current CIP/TIP or budget document if the project is selected for federal funding.								
Signature: 								
Name: Phillip Kercher								
Title: Traffic Engineering and Operations Manager								
Date: 9/11/2019								

# Hayden Road Fiber Installation

BLETREE RANCH RD

92ND ST

96TH ST

100TH ST

104TH ST

108TH ST

112TH ST

VIA DE VENTURA

INDIAN BEND RD

LINCOLN DR

McDONALD DR

JACKRABBIT RD

CHAPARRAL RD

CAMELBACK RD

INDIAN SCHOOL RD

OSBORN RD

THOMAS RD

OAK ST

McDOWELL RD

ROOSEVELT ST

McKELLIPS RD

64TH ST

68TH ST

SCOTTSDALE RD  
(7200 E)

MILLER RD  
(7600 E)

HAYDEN RD  
(8000 E)

GRANITE REEF RD  
(8400 E)

PIMA RD  
(8800 E)

## Legend

 Proposed Fiber On Hayden Rd

