

Invitation No.: 601-20  
 Location: Statewide  
 Commodity: DIGITAL INFRASTRUCTURE ASSETS AND STRATEGY  
 Pricing: <http://www.dot.state.oh.us/Divisions/ContractAdmin/Contracts/PurchDocs/601pricing.xls>

## REQUEST FOR INFORMATION (RFI) – DIGITAL INFRASTRUCTURE ASSETS AND STRATEGY

State of Ohio, Department of Transportation  
 Office of Contract Sales, Purchasing Services  
 Jack Marchbanks, Ph.D., Director

**Submission Deadline (Opening Date):**  
 Tuesday, July 9, 2019 at 2:00 p.m. eastern time

Submitted by:

Company Name: \_\_\_\_\_

Federal Tax ID No.: \_\_\_\_\_

<b>Physical/Mailing Address:</b>
Street Address:
P.O. Box:
City:
St:
Zip:
<b>Contact Person and Phone Number:</b> (authorized to answer questions about your company's bid)
<b>E-Mail Address (required):</b> (person who filled out bid)
<b>E-Mail Address (required):</b> (for notification of future bid opportunities)

Telephone Number	800 Number	Fax Number

**VENDORS MUST SUBMIT ANY QUESTIONS, CLARIFICATIONS, OR INQUIRIES REGARDING THIS RFI VIA  
 THE FOLLOWING WEBSITE:**

<http://www.dot.state.oh.us/Divisions/ContractAdmin/Contracts/Pages/PurchasePBQ.aspx>

## INTRODUCTION

This is a Request for Information (RFI) regarding Ohio's digital infrastructure assets and strategy, and does not constitute a commitment, implied or otherwise, that the Ohio Department of Transportation (ODOT) will take procurement action in this matter.

This RFI is designed to provide Respondents with the information necessary for the preparation of an appropriate response. It is not intended to be comprehensive, and each Respondent is responsible for determining all factors necessary for submission of a comprehensive response. Responses should be based on the material contained in this RFI or any other relevant information the Respondent thinks is appropriate. By submitting a response, each Respondent agrees that it will not bring any claim or have any cause of action against the ODOT, the State of Ohio, or any employee of ODOT or the State, based on any misunderstanding concerning the information provided or concerning ODOT's failure, negligent or otherwise, to provide the Respondent with pertinent information as intended by this RFI. Information submitted in response to this RFI will become property of ODOT/DriveOhio. The State of Ohio will not pay for any information herein requested nor is it liable for any cost incurred by the vendor.

## RFI Confidentiality

All Respondents are strongly discouraged from including in a RFI any information that the Respondent considers to be a "trade secret," as that term is defined in Section 1333.61(D) of the Ohio Revised Code. All information submitted in response to this RFI is public information under Section 149.43 of the Ohio Revised Code unless a statutory exception exists that exempts it from public release. If any information in the RFI is to be treated as a trade secret, the RFI must:

- Identify each and every occurrence of the information within the RFI with an asterisk before and after each line containing trade secret information and underline the trade secret information itself.
- Check the "This RFI Does include information considered a 'trade secret'" box on the Respondent Information Page.
- Include a page immediately after the Respondent Information Page that lists each page in the RFI that includes trade secret information and the number of occurrences of trade secret information on that page.

To determine what qualifies as trade secret information, refer to the definition of "trade secret" in the Ohio Revised Code, which is reproduced below for reference:

- "Trade Secret" means information, including the whole or any portion or phase of any scientific or technical information, design, process, procedure, formula, pattern, compilation, program, device, method, technique, or improvement, or any business information or plans, financial information, or listing of names, addresses, or telephone numbers, that satisfies both of the following:
  - It derives independent economic value, actual or potential, from not being generally known to, and not being readily ascertainable by proper means by, other persons who can obtain economic value from its disclosure or use.
  - It is the subject of efforts that are reasonable under the circumstances to maintain its secrecy.

## **BACKGROUND**

### **1. MISSION**

The State of Ohio is seeking to create a leading, world class internet infrastructure throughout the State, and to make sure that the State leverages its current assets to provide last mile solutions to underserved areas. To meet this goal, the State of Ohio is requesting qualified respondents to submit information as to how they would access the assets controlled by the State and how respondents will otherwise meet the underlying objective of providing world class infrastructure and last mile solutions.

Specifically, this Request for Information (RFI) is intended to identify the entities that are interested in accessing the rights-of-way controlled by the Ohio Department of Transportation for fiber-optic and telecommunications purposes and to identify which rights-of-way that each entity would like to access. After Entities submitting proposals should consider how they may meet the objectives stated later in this RFI when accessing the right-of-way and determine which of those objectives, or other possible objectives, could be accomplished were the State to provide the specific access being sought.

This RFI follows an objectives-based approach, in contrast to a requirements-based RFI in which much detail is contained. The State's initial objectives, scope and potential outcomes are described later in this RFI as a general framework of response, however given the uniqueness of this potential opportunity, the State welcomes alternative and additional ideas. All ideas and information that Respondents share with the State will be welcome. Respondents should be prepared to provide insight into investment and partnering models, technology and best practices as they relate to the design, implementation and ongoing use of broadband assets across the State. However, the response need not be solely limited to the stated opportunities in this RFI. Any across-the-board, value-added, future outlook and comprehensive, integrated solutions that address other aspects of this opportunity and related issues are welcome.

No funds have been appropriated by the Ohio Legislature to enter into an agreement with a supplier of goods and services described in this RFI. However, the State would consider reallocating some of its current spend for telecommunications to the project.

### **2. PURPOSE:**

The purpose of this Request for Information (RFI) is to assist ODOT in gathering information to support the continued advancement and enhancement of the state's digital infrastructure, and connecting underserved areas with last mile broadband service. This is a Request for Information (RFI), and does not constitute a commitment, implied or otherwise, that the Ohio Department of Transportation (ODOT) will take procurement action in this matter. The State is interested in the following outcomes:

- 2.1.** Providing Broadband Coverage of Rural and Underserved Communities – driving ubiquitous access to broadband services, wired or wireless to all Ohioans regardless of where they are located in the State.
- 2.2.** Creating a robust, world class network across the state of Ohio.
- 2.3.** Enablement of Next-Generation Transportation Capabilities – including autonomous vehicles, smart roadways and transportation systems, and creation of an integrated data exchange for transportation users, partners, developers and providers.
- 2.4.** Driving Economic and Workforce Development Statewide – including the support of incubating new businesses in the State and supporting the creation of opportunities for existing

businesses of all sizes, reinventing Ohio's economy as a high-tech leader while leveraging the State's manufacturing legacy and creating high value, high paying jobs.

**2.5.** Extending and Enhancing State Connectivity – utilizing the power of advanced networking to drive efficiencies, connectedness, economies of scale and collaboration.

**2.6.** Obtaining Revenue that can be put towards future projects – capitalizing on the value of the rights-of-way in highly desirous locations to install fiber and telecommunications equipment to meet the above objectives in areas that are less desirable.

**2.7.** Any other purpose with an optimal public benefit.

### **3. EXISTING ASSETS:**

The State of Ohio owns a variety of valuable assets that could be used or leveraged directly or indirectly to advance the purposes listed above. The following list includes seven different state assets, five under the purview of ODOT and two under the purview of other state agencies. These assets are described in further detail so that respondents can provide unique possible answers as to how those assets may be leveraged as part of a larger digital infrastructure and connectivity plan. This is not meant to be an exhaustive list of State owned or controlled assets that could be used. If you are aware of or believe that other State assets could be utilized, please make us aware in your response.

In addition to assets wholly owned, regulated and controlled by the State, other public assets may be available for use or leveraged directly or indirectly to advance the purposes listed above. Examples of these types of assets would be real estate holdings in the name of the State, but controlled by the Ohio Turnpike and Infrastructure Commission (OTIC). Other available OTIC assets may include 241 miles of installed fiber optic cable, 60 miles of installed Dedicated Short-Range Communications (DSRC) roadside units, as well as 34 communications towers along the Ohio Turnpike. Availability of these assets would be subject to separate agreements with the controlling public agency. If you are aware of or believe that other public or private assets could be utilized, please make us aware in your response.

#### **3.1. ODOT Right of Way**

Ohio's network of roads, bridges and highways is the state's most valuable physical asset. Ohio has the nation's 4th largest interstate system, 2nd largest inventory of bridges, and 6th highest number of vehicle miles traveled.

Because we are essentially the crossroads of America, we are within a one day's drive of 60% of the US and Canadian population. Our transportation system touches the lives of every man, woman and child in the Buckeye State every day and represents an investment of tens of billions of dollars by taxpayers over many generations.

ODOT controls limited access and non-limited access rights of way. Limited access right of way is typically reserved for interstate highways or their look-alike. On limited access right of way ODOT has sole authority and discretion to allow occupancy/use. To date, outside of perpendicular or transverse crossings, ODOT has allowed few entities longitudinal access to its limited access rights-of-way.

Non-limited access right of way is typically utilized on state routes (that do not look like an interstate). Outside of municipal boundaries, ODOT has sole authority and discretion to allow occupancy/use. Inside of municipal boundaries, the municipality typically controls such access. Within non-limited access rights of way ODOT has to date allowed a variety of utilities to locate longitudinally by permit.

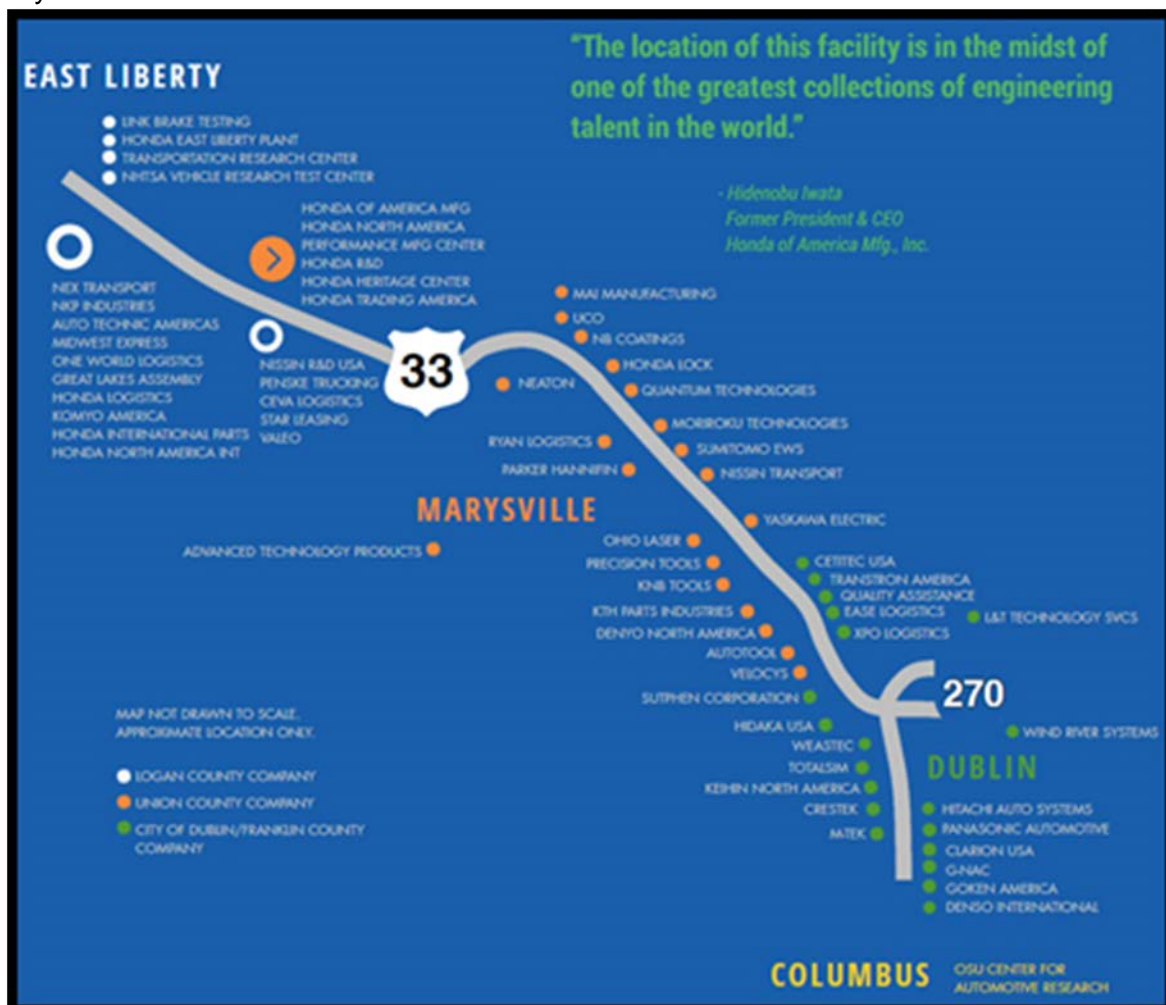
### 3.2. U.S. 33 Smart Corridor

The 33 Smart Mobility Corridor is a 35-mile highway corridor just northwest of Columbus, Ohio. The Corridor crosses three counties (Franklin, Union, and Logan), and connects the cities of Marysville and Dublin to Honda's North America Campus and points beyond. The 33 Smart Mobility Corridor is home to one of the largest concentration of manufacturers, R&D firms, and logistics companies in Ohio.

With investment in infrastructure, including a redundant 35-mile, 432 strand fiber optic cable system with over 60 roadside equipment sites and collaborative partnerships with The Ohio State University, the 33 Smart Mobility Corridor will soon become the primary test-bed of AV/CV technology in the Midwest, if not the world.

The 33 Smart Mobility Corridor is home to some of the most technologically-advanced automotive research facilities in the United States. Discover more about our region's Automotive Assets.

The 33 Corridor Fiber Collaborative, along with Columbus' successful Smart Cities bid, has positioned the 33 Smart Mobility Corridor and the Columbus Region as a technology leader in the broadband economy.

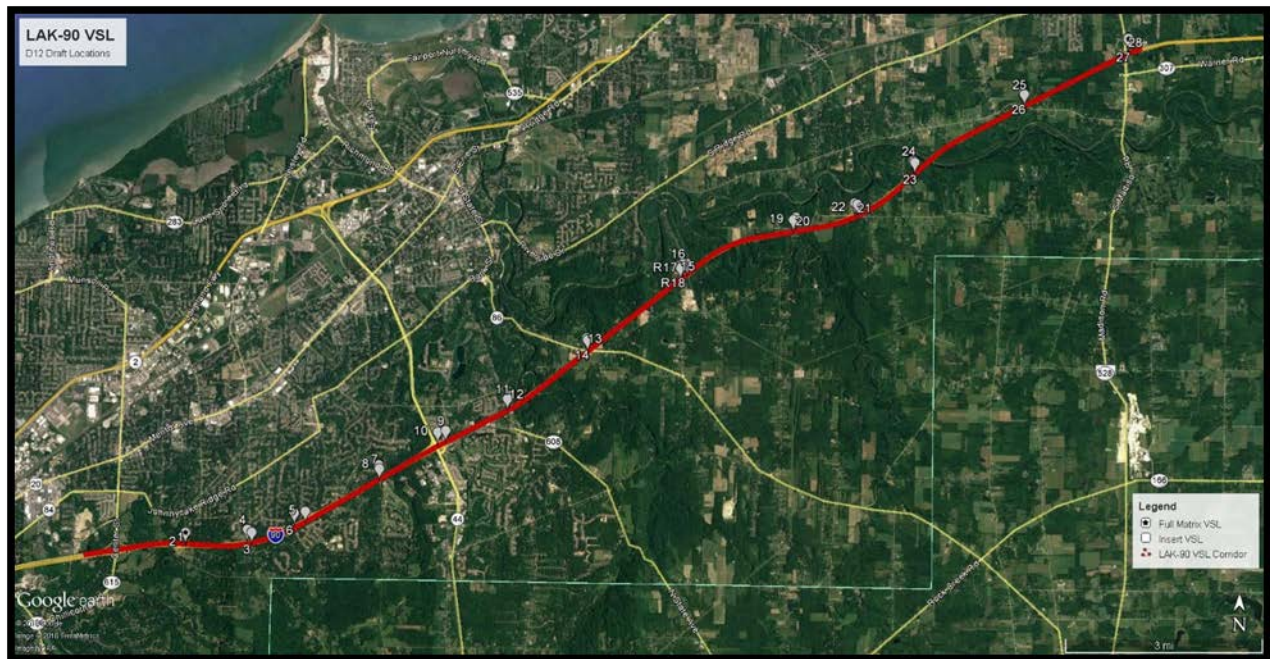


<https://www.33smartcorridor.com/>

### 3.3. I-90 The Lake-Effect Corridor

The I-90 corridor, more specifically dubbed “The Lake-Effect Corridor”, is 60 miles in length and covers all I-90 west of Cleveland. The implemented roadway currently consists of a section approximately 12 miles in length and is in an area that had historically had more accidents, due to snow conditions causing poor visibility. The 12-mile section of roadway has devices such as variable speed limit signs, dynamic message signs, speed sensors, road-weather information systems, and CCTV cameras installed. The area can be seen below. Connectivity to the Statewide Traffic Management Center is required to change the variable speed limit signs when conditions warrant.

In Spring 2020 ODOT will install 15.5 miles of 72 strands of fiber network (PID 110298). The installation will have additional capacity for subsequent air-blown/pushable fiber installs, similar in size to the conduit used on the Smart Corridor. The project will tie in to all existing infrastructure and support one new CCTV on a pole.



### 3.4. ODOT Intelligent Transportation System (ITS)

ODOT ITS includes Dynamic Message signs, ramp meters, CCTV cameras, traffic signals and other devices located throughout the state. These devices are utilized to gather roadway condition information as well as provide motorists with direction regarding the roadway system. For more information including specifications, please follow this link. <http://www.dot.state.oh.us/Divisions/Operations/Traffic/miscellaneous/Pages/IntelligentTransportationSystemsITS.aspx>

For specific asset locations, refer to <http://www.ohgo.com/akron?lt=39.60007781274752&ln=-82.97991899414062&z=7&ls=camera,sign,sign-dms,sign-ddms,sign-queue,truck-parking>

### 3.5. MARCS

MARCS (Multi-Agency Radio Communication System) is an 700/800 MHz radio and data network that utilizes state-of-the-art trunked technology to provide statewide interoperability in digital clarity to its subscribers throughout Ohio and a 10-mile radius outside of Ohio. The MARCS system provides statewide, secure, reliable public service wireless communication for public safety and first responders.

The MARCS development contract required 97.5% mobile voice and data in street coverage. 99.71% aggregate voice coverage was realized, and 98.13% aggregate data coverage was achieved. This allows maximum statewide interoperability and enhanced safety and protection for public safety service providers through secure digital transmissions.

The MARCS network operates on three system components:

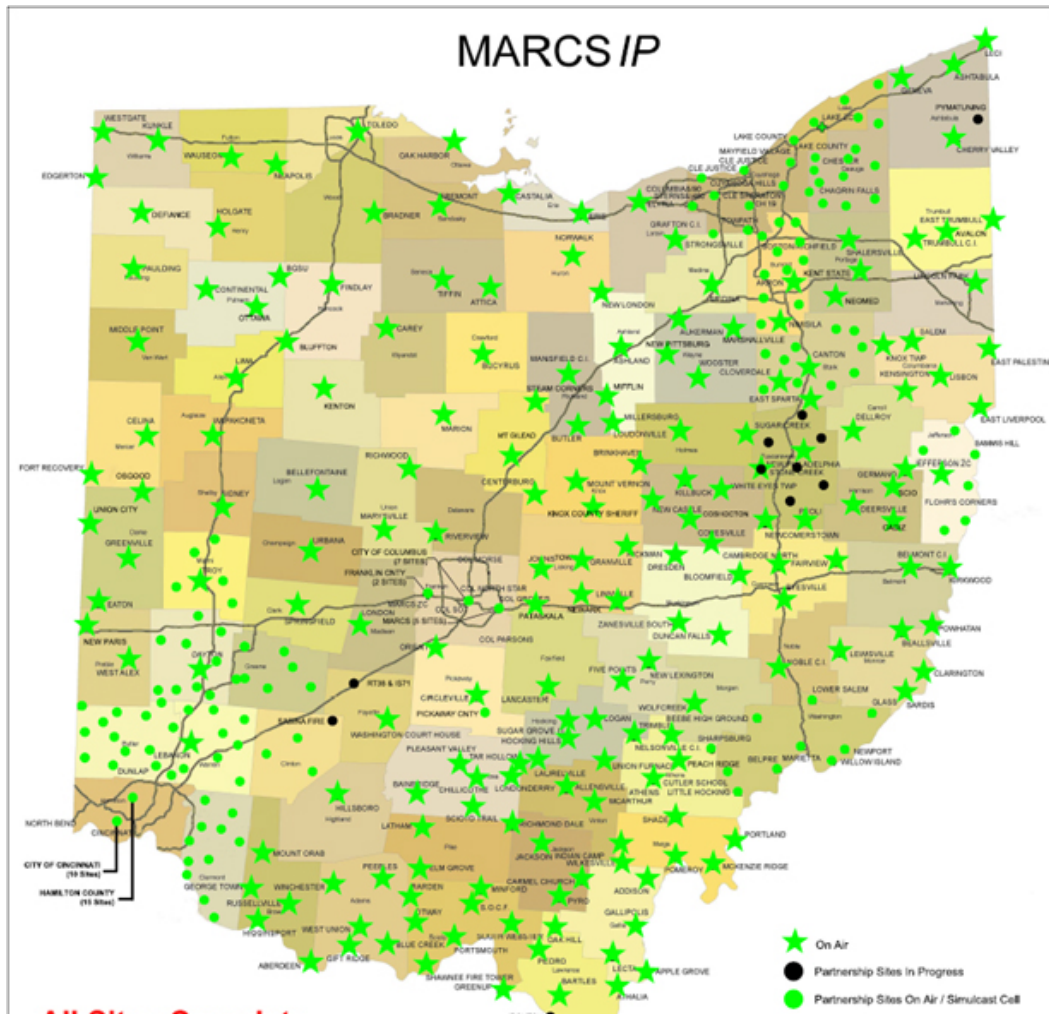
Mobile Voice – operating on the 700/800 MHz digital trunked technology

Computer Aided Dispatch (CAD) - providing GPS-based auto vehicle location, resource recommendation and GDM display

Mobile Data – CAD updates, Records Management, GPS-Based Vehicle Location, LEADS inquiries

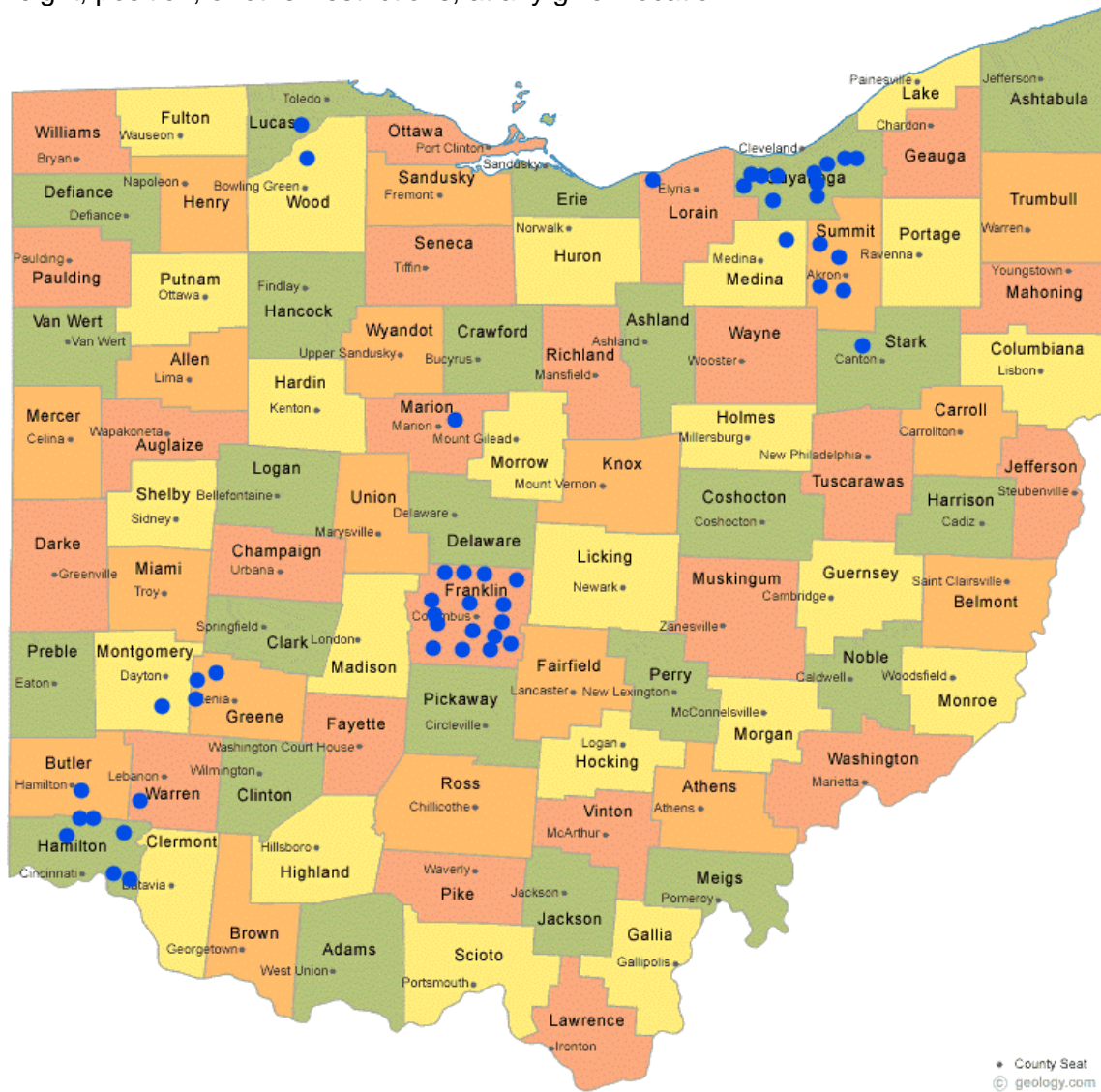
There are currently over 120,000 voice units and over 1,800 mobile data units on the MARCS system with over 2,800 public safety/public service agencies statewide. This includes local, state and federal agencies.

<https://das.ohio.gov/Divisions/Information-Technology/MARCS-Services>



### 3.6. ODOT Cell Towers:

ODOT has 51 macro site cell towers located within ODOT controlled right of way or land. Each site has access to power and fiber backbone. While ODOT does not own any of these vertical structures (cell towers), ODOT does have colocation rights. However, there may be physical limitations of space, weight, position, or other restrictions, at any given location.



### ● ODOT Cell Tower Sites



### 3.7. OARnet

The OARnet fiber-optic network backbone was launched into service in November 2004. It uses one of the most cost-efficient and advanced-technology solutions to directly connect member organizations to the network.

#### *Reach*

The OARnet backbone network features more than 2,240 miles of fiber-optic cable, currently featuring six major rings that extend across the state to most of Ohio's population.

One network ring circles the Columbus metropolitan area, another connects several communities just northwest of Columbus, and yet another reaches northwest to Lima and Toledo. A fourth ring drops down to Dayton and Cincinnati, a fifth stretches up to Cleveland, Youngstown and Akron, and a sixth, circles southeast through Athens and Portsmouth. In addition to the backbone, OARnet operates several local networks that support research and education, including rings in Toledo, Springfield, Central Ohio, Cleveland, Northeast Ohio, Youngstown and Tuscarawas County.

Beyond the in-state reach of the OARnet network, partnerships with other Regional Optical Networks (RONs) extend OARnet connectivity to Michigan's Merit research and education network, the Pittsburgh Supercomputing Center, and the OmniPoP research collaboration network in Chicago.

OARnet also maintains a global reach through its Cleveland connection to Internet2, the United States' most advanced nationwide research and education network. Internet2 is a non-profit, advanced networking consortium of U.S. universities, corporations, government agencies, research laboratories and international organizations that brings together research and academia with technology leaders in industry, government and international communities.

Across the state, the OARnet backbone uses 34 Points of Presence (PoPs), facilities that house servers and routers, to provide an interface point for other networks, and 13 Regen sites, places where the optical signals are reamplified and reshaped for optimum long-distance transmission.

#### *Capacity*

The network backbone lines to Akron, Cincinnati, Cleveland, Columbus, Dayton and Toledo provide those communities with Ethernet capacity of 100 gigabits per second, while the remainder of the network backbone provides bandwidth of 10 gigabit per second. **Because OARnet was publicly funded, its non-public use is limited to 10%.**

#### *Architecture*

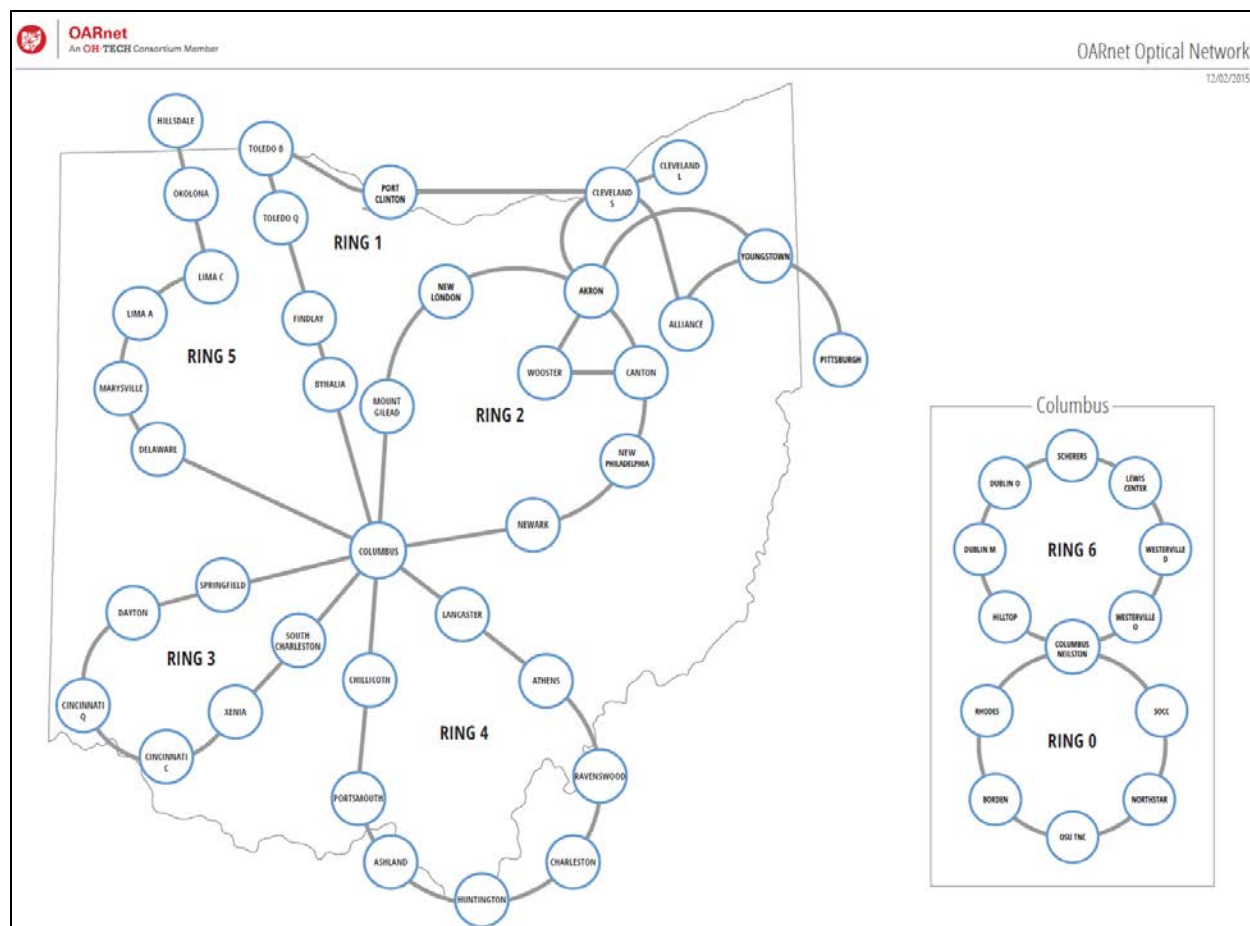
Unlike traditional networks, the OARnet network can support many networks. With the newest hardware and software upgrades in progress, the updated rings will be capable of supporting 40 independent networks on separate lambdas to transport up to 100-gigabit Ethernet speeds. The transport technology Dense Wavelength Division Multiplexing (DWDM) with ITU Grid frequencies, as well as ITU G.709 transport protocol specification, serves as the core technology for the network.

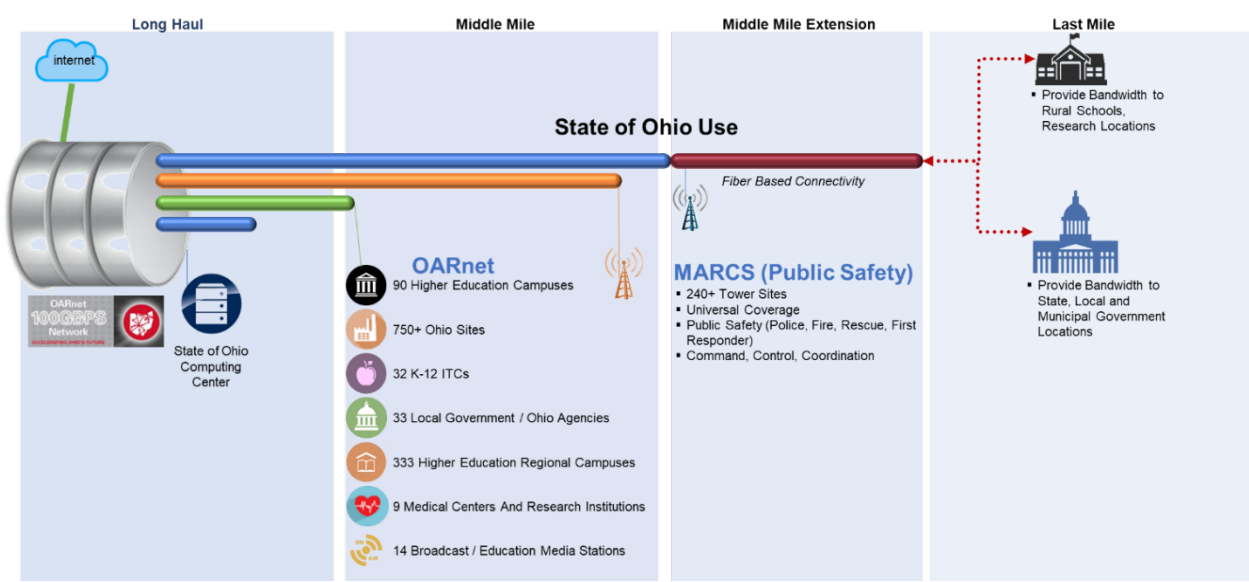
At the transport layer, the network is based on the Cisco ONS 15454 MSTP multiservice transport platforms. The ROADM optic input/output multiplexers with adaptive configuration are part of the

solution. Such multiplexers allow creating 40 optical channels per one optical pair. Each of these optical channels can be of 10, 100 or 200 Gbps data transmission speeds, depending upon the transponder modules installed in the multiplexer. Depending on the optical equipment installed, the network provides multi-degree switching capabilities at the individual wavelength level. Mesh and multi-ring network topologies can now be deployed using the complete flexibility of service routing at all nodes in the network. At the network layer, OARnet employs Juniper MX series backbone routers.

Although "IP everywhere" is the expectation for networks, the OARnet network can transport alternate network protocols, such as SANS and native HDTV.

The network uses MPLS to allow a level of granularity in routing that was previously unavailable. By using MPLS in the core, packets are routed to their correct destinations. Intra-state and commodity traffic uses tradition IP while Internet2 traffic uses Label Switching to identify Internet2-eligible traffic.





Site	Code	City, State, Zip	Site	Code	City, State, Zip
1	akrnf	Akron, OH 44308	36	fndyb	Findlay, OH 45840
2	akrnq	Akron, OH 44308	37	fndyw	Findlay, OH 45840
3	alncw	Alliance, OH 44601	38	hlsdh	Hillsdale, MI 49242
4	ashla	Ashland, KY 41101	39	hntna	Huntington, WV 25701
5	athna	Athens, OH 45701	40	limaa	Lima, OH 45801
6	bllsw	Richwood, OH 43344	41	limac	Lima, OH 45807
7	cadzh	Cadiz, Ohio 43907	42	lncsa	Lancaster, OH 43130
8	chlca	Chillicothe, OH 45601	43	lwscq	Lewis Center, OH 43035
9	chrla	Charleston, WV 25301	44	mrthh	Marietta, Ohio 45750
10	clevb	Cleveland, OH 44114	45	mtglw	Cardington, OH 43315
11	clevl	Cleveland, OH 44103	46	myvia	Marysville, OH 43040
12	clevq	Cleveland, OH 44113	47	nldnw	New London, OH 44851
13	clevs	Cleveland, OH 44114	48	nwpha	New Philadelphia, OH 44663
14	clmbb	Columbus, OH 43215	49	nwrka	Heath, OH 43056
15	clmbe	Upper Arlington, OH 43220	50	oklnc	Okolona, OH 4355
16	clmbh	Columbus, OH 43223	51	pctnw	Port Clinton, OH 43452
17	clmbn	Columbus, OH 43215	52	ptmoa	Portsmouth, OH 45662
18	clmbo	Columbus, OH 43221	53	pttss	Pittsburgh, PA 15213
19	clmbq	Columbus, OH 43215	54	rvnwa	Western, WV 26164
20	clmbr	Columbus, OH 43215	55	schrđ	Columbus, OH 43085
21	clmbs	Columbus, OH 43221	56	scta	S Charleston, OH 45368
22	clmbt	Columbus, OH 43201	57	spfdv	Springfield, OH 45505
23	clmby	Columbus, OH 43215	58	spfdw	South Charleston, OH 45368
24	cmbrh	Cambridge, Ohio 43725	59	toldb	Toledo, OH 43615
25	cncnc	Cincinnati, OH 45202	60	toldh	Toledo, OH 43614
26	cncno	Cincinnati, OH 45202	61	toldq	Toledo, OH 43604
27	cncnq	Cincinnati, OH 45202	62	toldt	Toledo, OH 43606
28	cntna	Canton, OH 44702	63	wstra	Wooster, OH 44691
29	dblnm	Dublin, OH 43017	64	wstvd	Westerville, OH 43081
30	dblno	Dublin, OH 43017	65	wstvo	Westerville, OH 43081
31	dlwra	Delaware, OH 43015	66	xenia	Xenia, OH 45385
32	dlwrc	Delaware, OH 4301	67	yntwn	Youngstown, OH 44504
33	dytnq	Dayton, OH 45402	68	yntwq	Youngstown, OH 44503
34	dytnw	Dayton, OH 45435	69	yntws	Youngstown, OH
35	evndc	Evendale, OH 45241	70	yntww	Youngstown, OH 44503
			71	yntwy	Youngstown, OH 44503

<https://www.oar.net/>



## RFI Procedure

Responses to this RFI should utilize the template in the RFI Questionnaire Section. All responses must be emailed as PDF or Word documents to:

ODOT Office of Contracts:  
[contracts.purchasing@dot.ohio.gov](mailto:contracts.purchasing@dot.ohio.gov)

Responses are due no later than: **2:00 p.m. Tuesday, July 9, 2019**

## RFI Questionnaire

- A. Respondent Information: Please fill out the information on page 1 of this RFI.
- B. This RFI does include information considered a 'trade secret:' **Yes/No**
- C. **QUESTIONS PRESENTED**
- 1) What solutions would you recommend and where would you wish to place your solution?
    - a. E.g., underground, in ODOT right of way, along I-70 but not U.S. 40, etc.
  - 2) Given the assets provided above, what asset(s) would you leverage and how would you use those assets?
    - a. Are there additional assets that you would recommend be leveraged including items such as the State of Ohio Fleet?
    - b. How would your system(s) interact with the assets?
  - 3) What are your goals and how will achievement of your goals benefit both the public and Ohio government (ODOT, Municipalities, Counties, etc.), goals? how will your concept help you reach your goals and our purpose(s)?
  - 4) What will you provide directly in return and/or what direct public purpose will be served?
    - a. I.e., will you propose free access, a # of strands, a lease of space, conduit to be dedicated for any use by the State or its partners, etc.
  - 5) In what ways should we be looking at our assets as a revenue generating commodity?
    - a. Are you aware of schemes being used by other governments in the U.S. or elsewhere that have provided successful monetization of government property like right of way?
    - b. Do you have an in-kind contribution solution?
    - c. What timeframes for recoupment of cost would you foresee?
  - 6) Describe existing partnerships with entities utilizing your products/ services within the context of the solutions you are recommending. Are there existing governments using your solution?
  - 7) If you have a recommended solution, describe the availability and implementation time. Are there barriers that you recommend be addressed by ODOT to implement your solution? Law changes? Installation of access points to power?
  - 8) What security issues do you foresee with your solution?
  - 9) Describe your willingness to form teams composed of multiple manufacturers or vendors to achieve the goals of your proposed solution.