### **APPLICATION OVERVIEW**

<u>What</u>: The Call for Projects for the FY 2024-2027 Regional Transportation Operations and Technology Set-Aside <u>Funding Available</u>: at least \$16,000,000

### Call Dates: June 1, 2023 until July 7, 2023, 5 pm

Application Submittals: submit the items below to Jerry Luor (jluor@drcog.org)

- REQUIRED: a <u>single PDF document</u> containing 1) this application (before saving to PDF, press Ctrl-A to select all, and F9 to update all formulas), 2) one location map/graphic, 3) cost estimate (your own or the CDOT <u>cost</u> <u>estimate form</u>), 4) CDOT/RTD concurrence response (if applicable), 5) completed CDOT SEA-Local Agency Template, 6) project support form(s), and 7) any <u>required</u> documentation based on the application text (i.e., FHWA emissions calculators). Please <u>DO NOT</u> attach additional cover pages, embed graphics in the application, or otherwise change the format of the application form.
- 2. OPTIONAL: Submit **one additional** PDF document containing any supplemental materials, if applicable.
- 3. REQUIRED: Submit a single zipped GIS shapefile of your project. At a minimum, the shapefile should consist of project limits and planned equipment locations.

#### Other Notable items:

- <u>Eligibility</u>: Projects must align with the eligibility guidelines in the <u>Policies for FY2024-2027 TIP Set-Aside</u> <u>Programs</u>. Proposed work on roadways must primarily be located on the <u>DRCOG Regional Roadway System</u> to be eligible for funding (the DRCOG RRS can also be viewed within the <u>DRCOG Data Tool</u>).
- <u>Call-for-Projects Pre-Application Webinar</u>: To be eligible to submit an application, at least one person from your agency must have attended the Regional Transportation Operations and Technology Set-Aside Pre-Application Webinar on April 26, 2023.
- <u>Application Data</u>: To assist sponsors in filling out the application, DRCOG has developed the <u>DRCOG Data Tool</u>. A link to the instructions is also included. Additionally, sponsors may download datasets to run their own analyses from this same site.
- <u>Project Affirmation</u>: The application must be affirmed by either the applicant's City or County Manager, Chief Elected Official (Mayor or County Commission Chair) for local governments, or agency director or equivalent for other applicants.
- <u>Evaluation Process</u>: DRCOG staff will post all applications. DRCOG staff will assemble an evaluation panel to review and make recommendations for funding, including a ranked waiting list. The recommended list of projects will be presented to the Regional Transportation Operations Working Group and Advanced Mobility Partnership Working Group prior to action by the DRCOG committees and Board.
- If you have any questions or need assistance, contact <u>gmackinnon@drcog.org</u> or <u>jluor@drcog.org</u>.

### **APPLICATION FORMAT**

The Regional Transportation Operations and Technology set-aside application contains two parts: *project information* and *evaluation questions*.

### **Project Information**

Applicants enter **foundational** information for the *project/program/study* (hereafter referred to as *project*), including a problem statement, project description, and concurrence documentation from CDOT and/or RTD, if applicable. This section is not scored.

### **Evaluation Questions**

This part includes four sections (A-E) for the **applicant to provide qualitative and quantitative responses** to use for scoring projects. The checkboxes and data entry fields should <u>guide</u> the applicant's responses. They are not directly scored but provide context as reviewers consider the full response to each question. Applicants may access the <u>DRCOG</u> <u>Data Tool</u> as well as other relevant data resources.

**Scoring Methodology**: Each section will be scored on a scale of 0 to 5, <u>relative</u> to other applications received. All questions will be factored into the final score, with any questions left blank receiving 0 points. The four sections are weighted and scored as follows:

5	The project implements or advances several <b>Primary</b> initiatives.
4	The project implements or advances one <b>Primary</b> initiative
3	The project implements or advances several <b>Secondary</b> initiatives.
2	The project implements or advances one <b>Secondary</b> initiative.
1	The project implements or advances one or more <b>Tertiary</b> initiatives.
0	The project implements no initiatives.

5	The project benefits will <b>substantially</b> address a <b>major</b> subregional problem and benefit people and businesses in multiple communities.
4	The project benefits will <b>significantly</b> address a <b>major</b> subregional problem primarily benefiting people and businesses in one community.
3	The project benefits will either <b>moderately</b> address a <b>major</b> subregional problem or <b>significantly</b> address a <b>moderate</b> -level subregional problem.
2	The project benefits will moderately address a moderate-level subregional problem.
1	The project benefits will address a <b>minor</b> subregional problem.
0	The project does not address a subregional problem.

#### 

The TIP set-aside's investments should implement the 2050 Metro Vision Regional Transportation Plan (2050 MVRTP) regional project and program investment priorities, which contribute to addressing the Board-adopted Metro Vision objectives and the federal performance-based planning framework required by the Federal Highway Administration and Federal Transit Administration as outlined in current federal transportation legislation and regulations. Therefore, projects will be evaluated on the degree to which they address the six priorities identified in the 2050 MVRTP: safety, active transportation, air quality, multimodal mobility, freight, and regional transit. It is anticipated that projects may not be able to address all six priorities, but it's in the

applicant's interest to address as many priority areas as possible. Relevant quantitative data is required to be included within narrative responses. The table below demonstrates how each priority area will be scored.

5	The project provides demonstrable <b>substantial</b> benefits in the 2050 MVRTP priority area and is determined to be in the <b>top fifth</b> of applications based on the magnitude of benefits in that priority area.
4	The project provides demonstrable significant benefits in the 2050 MVRTP priority area.
3	The project provides demonstrable <b>moderate</b> benefits in the 2050 MVRTP priority area and is determined to be in the <b>middle fifth</b> of applications based on the magnitude of benefits in that priority area.
2	The project provides demonstrable modest benefits in the 2050 MVRTP priority area.
1	The project provides demonstrable <b>slight</b> benefits in the 2050 MVRTP priority area and is determined to be in the <b>bottom fifth</b> of applications based on the magnitude of benefits in that priority area.
0	The project does not provide demonstrable benefits in the 2050 MVRTP priority area.

Score	% non-Federal Funds
5	36% and above
4	31 - 35.9%
3	26 - 30.9%
2	21 - 25.9%
1	17.21 - 20.9%*
0	17.21%

\*(includes 100% eligible projects with no match)

5	Substantial readiness is demonstrated and all known obstacles that are likely to result in project delays have been mitigated.
4	Significant readiness is demonstrated and several known obstacles that are likely to result in project delays have been mitigated.
3	<b>Moderate</b> readiness is demonstrated and some known obstacles that are likely to result in project delays have been mitigated.
2	<b>Slight</b> readiness is demonstrated and some known obstacles that are likely to result in project delays have been mitigated.
1	Few mitigation or readiness activities have been demonstrated.
0	No mitigation or readiness activities have been demonstrated.

### Project Information

		-					
1.	Project Title		Aurora Traffic Communications Infrastructure Improvements				
2.	Project Locatio Provide a map, Page 1)	on as appropriate (see	ooint: N/A oint: N/A ographic A	vint: N/A nt: N/A graphic Area: Various Locations within City of Aurora. See location			
3.	Project Sponse financially respor	Or (entity that will be sible for the project)	City of	Aurora			
4.	Project Conta	ct Person:					
Na	me: Jim Paral				Title: Senior Engi	neer. Public Wo	orks Engineering
Pho	one: 303-739-7	328			Email: jmparal@a	auroragov.org	
5.	Required Cond CDOT Right-of system, access service? Does	currence and Project -Way, involve a CDO s RTD property, or re- this project directly i	Support: T roadway quest RTD nvolve otl	Does this p y, connect f ) involveme her local ag	Does this project touch <i>y</i> , connect to a CDOT Derivolvement to operate per local agency partners		] No a completed Peer Agency for each partner.
		If this project is lis <u>MVRTP</u> ), provide	sted in the the stagir	e <u>DRCOG 20</u> ng period: C	050 Metro Vision R Click or tap here to	egional Transp enter text.	ortation Plan (2050
6.	What planning document(s) identifies this project?	Local/Regional pla	ocal/Regional plan: Planning Adopting Provide applicab		ning Document Title: City of Aurora Fiber Optic Master Plan oting agency (local agency Council, CDOT, RTD, etc.): N/A ride date of adoption by council/board/commission, if icable: N/A		
Pro doc refe	vide link to ument(s) and erenced page	Please describe p review/engageme date:	ublic ent to	N/A			
nun or p doc the	mber if possible, provide cumentation in e supplement	Other pertinent d	letails:	The prep agency p were also City and CDOT.	eparation of this document included coordination with i / partners such as Aurora IT and Aurora Water. Discussio ilso held with external agencies such as the City of Cente ad County of Denver, Arapahoe County, RTD, E-470, and		
7.	Identify the pr	oject's key phases and should correspond with	nd the ant	ticipated so	chedule of phase n	nilestones.	)
	Phases to be included:	Major phase milestones:			Anticipated completion date (based on October 2023 DRCOG approval date): (MM/YYYY)		
		🛛 Precor	nstruction		Construction	🗆 Both	
<u>F</u> (	<u>REQUIRED</u> OR ALL PHASES	Intergovernment (Assumed proces execution is NOT	Intergovernmental Agreement (IGA) executed with CDOT/RTD(Assumed process is 4-9 months; any work performed beforeexecution is NOT reimbursable)			06/2024	
		Design contract N	lotice to P	Proceed (N	TP) issued (if using	a consultant):	N/A
	Design Design scoping meeting held		ld with CD0	OT (if no consultan	t):	N/A	
		FIR (Field Inspection Review):			N/A		

	FOR (Final Office Review):	N/A	
	Environmental contract Notice to Proceed consultant):	N/A	
	Environmental scoping meeting held with	CDOT (if no consultant):	N/A
	Initial set of ROW plans submitted to CDOT:		NI / A
□ Right-of-Way	Estimated number of parcels to acquire:	Enter Number	N/A
	ROW acquisition completed:	N/A	
	Required clearances:	10/2025	
	Project publicly advertised:	1/2026	
□Study	Kick-off meeting held after consultant NTP (or internal if no consultant):		N/A
⊠Equipment Purchase (Procurement)	RFP/RFQ/RFB (bids) issued:		10/2025
□Other Phase not Listed Describe: Describe	First invoice submitted to CDOT/RTD:		3/2026

8. Problem Statement: What specific subregional problem/issue will the transportation project address? Currently, the City of Aurora traffic signal communication infrastructure consists primarily of radio systems. This radio system is used to connect to traffic signals and ITS devices throughout the City and utilizes an architecture that generally consists of multiple north-south backbone links. These links are getting overloaded as the system continues to grow with the City. The system is constrained by aging equipment and bandwidth limitations. Due to these factors, the signal system communication can be at times unreliable and CCTV video is unstable. This project will provide increased reliability through a combination of fiber optics and reconfigured radio topology that will relieve pressure on the current system.

9. Identify the project's key elements. A single project may have multiple project elements.

#### Roadway

nouway	
☑Operational Improvements	Safety Improvements
□General Purpose Capacity (2050 MVRTP) □Managed Lanes (2050 MVRTP) □Pavement Reconstruction/Rehab □Bridge Replace/Reconstruct/Rehab	Active Transportation Improvements Bicycle Facility Pedestrian Facility
Grade Separation	⊠ Air Quality Improvements
□Roadway □Railway	Improvements Impacting Freight
□Bicycle □Pedestrian	<b>Multimodal Mobility</b> (i.e., accommodating a broad range of users)
Regional Transit <sup>1</sup>	Complete Streets Improvements
<ul> <li>Rapid Transit Capacity (2050 MVRTP)</li> <li>Mobility Hub(s)</li> <li>Transit Planning Corridors</li> </ul>	□ Study
5	

□Transit Facilities (Expansion/New)

**Other**, briefly describe: Click or tap here to enter text.

<sup>1</sup>For any project with transit elements, the sponsor must coordinate with RTD to ensure RTD agrees to the scope and cost. Be sure to include RTD's concurrence in your application submittal.

10. Define the scope and specific elements of the project (including any elements checked in #9 above).
<u>DO NOT</u> include scope elements that will not be part of the DRCOG funded project or your IGA scope of work (i.e., adjacent locally funded improvements <u>or</u> the project merits and benefits). Please keep the response to this question tailored to details of the scope only and no more than five sentences.

The project will fund the fiber components (materials and construction) including new Ethernet field switches at nine traffic signals at I-225 ramp terminals and three traffic signals along Alameda, new core fiber Ethernet communications equipment at the Aurora Municipal Center and the North Satellite Complex, and fiber conduit and cabling for lateral connections to the traffic signals. Additional radio field components (materials only) of this project will include new 5.8 GHz and 900 MHz radio deployments at signals adjacent to the new signals on fiber to leverage the proposed fiber optic communications systems for last mile transport. Specific locations are shown on the location map. Additionally, the existing radio equipment at project intersections will be redeployed to the southeastern portion of the City. This redeployment of existing operational radio equipment allows the radios to be used to their fullest life span, extends the return of investment for the initial purchase, reduces the amount of waste that will need to be recycled or sent to landfills, and saves taxpayer dollars. Radio components will include the radio, mounting hardware, surge protection, midspan Power over Ethernet (PoE) injectors, power supplies, cabling, and connectors. The design portion of this project will be completed prior to FY 26 using local funds and radio deployment and relocation work will be conducted by City forces.

**11.** What is the current status of the proposed scope as defined in Question 10 above? *Note that overall project readiness is addressed in more detail in Section E below.* 

Previously, the City of Aurora conducted a study to evaluate proposed communications. The result of which was the City of Aurora Fiber Optic Master Plan. The scope of this project adheres to the recommendations contained in the Fiber Optic Master Plan. The City has also been working with CDOT on an agreement to lease fiber from CDOT for City use.

**12.** Would a smaller DRCOG-allocation than requested be acceptable, while maintaining the original intent of the project?

🗆 Yes 🖾 No

If yes, smaller meaningful limits, size, service level, phases, or scopes, along with the cost, **MUST** be defined.

Smaller DRCOG funding request: N/A

Outline the differences between the scope outlined above and the reduced scope: N/A

Project Financial Information and Funding Request (All funding amounts in \$1,000s) <u>To update the formulas below, enter your information, highlight the formulas, and press F9 or right-click and select Update Field.</u>

<b>Total amount of Federal Funding Request (in \$1,000's)</b> (Not to exceed <b>82.79% of the total project cost</b> )	\$736	78.89% of total project cost	
Match Funds (in \$1,000's) List each funding source and contribution amount.	Contribution Amount	% Contribution to Overall Project Total	
City of Aurora	\$197	21.1%	
Click or tap here to enter text.	\$Match Amount	0.0%	
Click or tap here to enter text.	\$Match Amount	0.0%	
Click or tap here to enter text.	\$Match Amount	0.0%	
Click or tap here to enter text.	\$Match Amount	0.0%	
Click or tap here to enter text.	\$Match Amount	0.0%	
<b>Total Match</b> (private, local, state, regional, or federal)	\$ 197	21.1%	
Project Total	\$ 933		

<b>Funding Breakdown (in \$1,000s)</b> (by program year) <sup>1</sup> (Total funding should match the Project Total from above) To update the formulas below, enter your information, highlight the formulas (or Ctrl-A), and press F9. OR close and reopen the file.						
	FY 2024         FY 2025         FY 2026         FY 2027         Total					
DRCOG Requested Funds	\$0	\$0	\$736	\$0	\$ 736	
CDOT or RTD Supplied Funds <sup>2</sup>	\$0	\$0	\$0	\$0	\$ 0	
Local Funds (Funding from sources other than DRCOG, CDOT, or RTD)	\$0	\$0	\$197	\$0	\$ 197	
Total Funding	\$ 0	\$ O	\$ 933	\$ O	\$ 933	
Phase to be Initiated	Select Phase	Select Phase	Construction	Select Phase		
Notes:	<ol> <li>Fiscal years are October 1 through September 30 (e.g., FY 2024 is October 1, 2023 through September 30, 2024). The proposed funding plan is not guaranteed if the project is selected for funding. While DRCOG attempts to accommodate applicants' requests, final funding will be assigned at DRCOG's discretion. Funding amounts must be provided in year of expenditure dollars using a recommended 3% inflation factor.</li> <li>Only enter funding in this line if CDOT and/or RTD specifically give permission via concurrence letters or other written source.</li> </ol>					
Affirmation:	By checking this box, the applicant's Chief Elected Official (Mayor or County Commission Chair/City or County Manager/Agency Director) has certified it allows this application to be submitted for potential DRCOG-allocated funding and will follow all local, DRCOG, state, and federal policies and regulations if funding is awarded.					

### **Evaluation Questions**

### A. Deployment of RTO&T Initiatives in RTO&T Strategic Plan

Select the initiatives to be deployed or advanced by this proposed project. It is possible to select more than one initiative.

30%

WEIGHT

Primary initiatives	
Develop a Regional Situational Awareness platform.	$\boxtimes$
Develop processes to share traffic camera view and control between jurisdictions and public safety.	$\boxtimes$
Develop a Regional Performance Monitoring Data Archive platform.	$\boxtimes$
Develop strategies and processes to coordinate performance-based management.	
Deploy additional supporting transportation surveillance and control systems and infrastructure.	
Develop Traffic Incident Management standard operating procedures.	
Standardize and implement transit signal priority performance management and system optimization procedures.	$\boxtimes$
Secondary initiatives	
Develop evacuation and recovery plans and exercises.	$\boxtimes$
Develop processes to coordinate traveler information messaging across the region.	$\boxtimes$
Develop active work zone monitoring and management in the field.	$\boxtimes$
Deploy additional safety-focused technology applications	$\boxtimes$
Expand the Regional Performance Monitoring Data Archive platform.	$\boxtimes$
Expand the Regional Situational Awareness platform.	$\boxtimes$
Expand transit signal priority deployment.	$\boxtimes$
Tertiary initiatives	
Develop a Regional Multimodal Traveler Information platform.	$\boxtimes$
Develop a process to monitor regional parking availability, capacity and pricing.	
Develop a multimodal trip planner and reservation/ payment system.	
Develop and deploy dynamic ride-sharing.	
Develop and implement curbside management standards.	
Develop continuity of operations plans.	

#### Describe how this project will deploy, advance or achieve the selected initiatives.

This project advances Primary Initiatives 1 through 3 and 7. To advance primary initiatives 1, 2, and 3, this project will improve the ability for Aurora to perform real-time monitoring of the signal system. Aurora can monitor information such as the CCTV and ATSPM data with more reliability. This information can then be shared with a regional platform. This project will advance primary initiative 7 by providing more reliability to corridors that currently have TSP or will have TSP in the future.

This project advances secondary initiatives 1 through 7. To advance secondary initiative 1, the project will provide more redundancy and reliability across the system. Currently, the wireless communication system is overburdened. Entire sections of the network can be cut off from communications if only one intersection is taken off line. This project will provide additional redundancy and reliability considerations in the case of a power outage or incident at a small number of intersections.

To advance secondary initiative 2, communications plays a key role for real-time data gathering in the field, allowing the data to be confirmed through video surveillance, and coordination with other stakeholders throughout the region. By having reliable communications infrastructure deployed, the City will be better able to strategize with other regional stakeholders to effectively manage recurring traffic congestion, incident response, and traveler information. Providing timely and consistent traveler information affects the safety, travel time, route selection, and mode of travel for residents and visitors. None of this would be possible without a sustainable communications system.

To advance secondary initiative 3, work zone safety and corresponding monitoring and management strategies are bolstered by dependable and expanded communications to the infrastructure resident at work zones. The

communications need to be flexible to support the work zone infrastructure since there are daily changes in traffic patterns, narrowed rights-of-way, and other construction activities that can create a combination of factors often resulting in accidents. These accidents in turn cause excessive delays that are compounded by the constrained driving environment in work zones. Utilizing work zone monitoring and management strategies that are supported by communications helps to keep drivers, motorcycles, bicyclists, pedestrians, construction workers, and emergency responders aware of what is happening at each work zone so pertinent information can be shared using DMS, social media, and websites. Timing plans and detection zone changes due to construction activity can be altered remotely from the TMC through good communications along with remote video monitoring by TMC personnel.

To advance secondary initiative 4, communications is an essential component for supporting ITS and traffic operations functionality. The previous write-ups have addressed safety as it pertains to traveler information and work zones but there is a wide array of applications that the City will be in a good position to deploy once dependable communications is in place. These may include newer sensor technologies, AI-capable devices, data analytics capabilities, and connected vehicle technologies that make traffic systems more efficient, optimize traffic patterns, reduce congestion, and make roads safer for Vulnerable Road Users (VRU). Advanced sensors that can identify VRUs and improve safety by alerting drivers can be deployed but are reliant on a solid communications system to ensure they are operational and can be accessed remotely to troubleshoot any operational issues.

Similar to the primary initiatives, this project advances secondary initiatives 5 and 6 by providing reliability to the network and thus improving Aurora's ability to collect CCTV and ATSPM data. In the future, this data could be shared with the Regional Performance Monitoring Data Archive platform. Similar to primary initiative 6, this project will advance secondary initiative 7 by providing more reliability to corridors with TSP.

This project will advance tertiary initiative 1 by providing a more reliable access to the data around the traffic signal network. This data could ultimately be shared across the web-based platforms.

The Regional Transportation Operations and Technology Strategic Plan emphasizes a data management concept that requires interagency information sharing. Describe in detail how this project will share data with other regional entities.

The scope of this project will provide Aurora the ability to poll high-resolution ATSPM data from intersections that will be on fiber. Upon the development of a regional platform and interagency agreements, this data could be shared.

#### **B.** Regional Impact of Proposed Project

weight 25%

Provide **<u>qualitative</u>** and **<u>quantitative</u>** responses to the following questions on the subregional impact of the proposed project. Be sure to provide all required information for each question. Quantitative data from is available from the <u>DRCOG Data Tool</u>.

#### 1. Why is this project regionally important? Relevant quantitative data in your response is required.

The proposed project will benefit a large portion of Aurora traffic signals including signals that are located along DRCOG roadways. Travelers from the City of Aurora and from neighboring jurisdictions will benefit from the positive impacts of this project. Approximately 109,363 households are within 0.5 miles of the project key locations. However, the impact is expected to be greater than that due to surrounding impacts (i.e. the "downstream" intersections of a new backbone and spur radio locations will also benefit due to the reallocation of bandwidth on the total system). For example, there are 115 signals (107 on DRCOG roadways) located southeast of the proposed lliff fiber connection. This installation of this project along lliff Ave will improve the communications to the 115 downstream signals that are beyond the reach or limits of this project. Additionally, there are seven signals near at-grade RTD R-line crossings along Sable Ave near Alameda Ave. The installation of the fiber along Alameda will directly improve the communications at these critical R-line intersections.

## 2. How will the proposed project address the specific transportation problem described in the **Problem Statement** (as submitted in Project Information, #8)? Relevant quantitative data in your response is <u>required</u>.

This project would provide direct relief to Aurora's aging and overburdened communication system. The installation of new fiber optic connections would provide high quality data back to the City. The new radio systems along critical corridors will ease pressure on the system and instill reliability into the currently overloaded system. Additionally, the existing radio equipment at project intersections will be redeployed to the southeastern portion of the City. The fiber installation and radio deployments at adjacent signals results in reducing the overburdened Chambers and Peoria corridors by 30 signals and 12 signals, respectively. ATSPM data uses approximately 11.4 MB per day per controller. This results in approximately 342 MB per day and 137 MB per day specifically on the Chambers and Peoria corridors, respectively. By installing Improved communication system will result in better signal operations. Past experience on projects that improve signal timing plans conservatively result in greater than 10% reductions in delay and travel times. Additionally, an improved communication and response times.

**3.** Does the proposed project benefit multiple municipalities and/or subregions? If yes, which ones and how? Also describe any funding partnerships (other subregions, regional agencies, municipalities, private, etc.) established in association with this project.

This project addresses City of Aurora signals including those on DRCOG roadways. While the project directly benefits the City of Aurora, the resultant data obtained from this project can be shared with DRCOG to advance the RTO&T primary, secondary, and tertiary initiatives. Upgrading the communication system will result in improved traffic incident management coordination by adjusting signal timings remotely and utilizing real-time CCTV video to monitor incidents.

City of Aurora has an agreed upon partnership with CDOT at I-225 ramp signals to fiber. These improvements will directly provide Aurora with the ability to manage CDOT traffic along the I-225 corridor.

There are seven signals near at-grade R-line crossings along Sable Ave near Alameda Ave. Currently as configured, these intersections go through seven connection points or hops between Alameda Ave, Peoria, and North Satellite Facility. As proposed, these intersections will be able to connect to fiber at Alameda and Ailene with only one connection point thereby reducing any network latency. The new fiber connection along Alameda Ave will directly improve the management of signals along the RTD R-line as the comm connection will be more reliable. This improvement will allow for continuous, real-time monitoring as well as decreased response times to any issues.

#### 4. Disproportionately Impacted and Environmental Justice Communities

This data is available in the DRCOG Data Tool. Completing the below table and referencing <u>relevant</u> quantitative data in your response is <u>required</u>.

To update the formulas below, enter your information, highlight the formulas (or Ctrl-A), and press F9. OR close and reopen the file.						
	DI & EJ Population Groups	Number within ½ mile	% of Total	Regional %		
	a. Total population	109,363	-	-		
Use 2015-2019	b. Total households	40,443	-	-		
American	c. Low-income households	38,979	36%	20%		
Community	d. Individuals of color	74,378	68%	33%		
Survey Data	e. Adults age 60 and over	17,878	16%	13%		
	f. Children age 5-17	26,464	24%	16%		
(Use a 0.5 mile	g. Individuals with limited English proficiency	19,514	18%	3%		
[Equity data tab]	h. Individuals with a disability	12,464	11%	9%		
	i. Households that are housing cost-burdened	17,977	44%	32%		
	j. Households without a motor vehicle	3,220	8%	5%		

For Lines c. – i. use definitions in the <u>DRCOG Title VI Implementation Plan</u>. For Line j., as defined in C.R.S. 24-38.5-302(3)(b)(I): "'cost-burdened' means a household that spends more than thirty percent of its income on housing."

Describe how this project will improve access and mobility for each of the applicable disproportionately impacted and environmental justice population groups identified in the table above, *including the <u>required</u> quantitative analysis:* 

The table above reflects the DI&EJ populations groups within 0.5 mile of the critical project locations. However, this project is expected to benefit additional intersection locations, thus the effected population groups is expected to be larger than shown in the table above. Each of the households and/or groups listed above will be able to access and utilize the signals within the Aurora network, and thus will benefit from any system wide or corridor improvements.

- 5. How will this project move the subregion toward achieving the shared <u>regional transportation outcomes</u> established in <u>Metro Vision</u> in terms of...
  - Land Use, community, urban development, housing, employment? (Improve the diversity and livability of communities. Contain urban development in locations designated for urban growth and services. Increase housing and employment in urban centers. Diversify the region's housing stock. Improve the region's competitive position.)
    - As indicated by DI&EJ community percentages above, this project will impact those communities.
  - Multimodal transportation, safety, reliability, air quality? (Improve and expand the region's multimodal transportation system, services, and connections. Operate, manage, and maintain a safe and reliable transportation system. Improve air quality and reduce greenhouse gas emissions. Reduce the risk of hazards and their impact.)
    - The communication upgrades associated with project will provide additional signal reliability across the network. The additional reliability can provide high-resolution ATSPM data and also allow Aurora Traffic Engineering to perform real-time monitoring of the traffic signal system as well as multi-modal travel times. A secondary benefit to this monitoring is improving air quality by reducing air pollution generated by vehicle queuing. Additionally, this project will improve the communication to signals adjacent to the R-line, allowing Aurora to perform real-time monitoring and reduce response time to any issues at these intersections.
  - Connection/accessibility to particular locations supporting healthy and active choices? (Connect people to natural resource and recreational areas. Increase access to amenities that support healthy, active choices. Improve transportation connections to health care facilities and service providers. Improve access to opportunity.)

• N/A

#### 6. <u>Items marked with an asterisk (\*) below are available in the DRCOG Data Tool</u>.

- Is there a DRCOG designated urban center within ½ mile of the project limits?\*
   ☑ Yes □ No If yes, please provide the name: Iliff Center, Florida Center, Aurora City Center, 13<sup>th</sup> Avenue Center, Fitzsimons Center.
- Does the project connect two or more urban centers?\*
   □ Yes ⊠ No If yes, please provide the names: Click or tap here to enter text.
- Is there a transit stop or station within ½ mile of the project limits?\* Bus stop: ⊠ Yes □ No If yes, how many: 191 Rail station: ⊠ Yes □ No If yes, how many: 6
- Is the project in a locally-defined priority growth and development area and/or an area with zoning that supports compact, mixed-use development patterns and a variety of housing options?
   ☑ Yes □ No

If yes, provide a link to the relevant planning document: "Aurora Places" Comprehensive Plan can found here: <u>https://www.auroragov.org/cms/One.aspx?portalId=16242704&pageId=16535137</u>

If yes, provide how the area is defined in the relevant planning document:

As seen on Aurora Places page 25, several of our major arterials whose signals would be upgraded as part of this project, include Mississippi Avenue, Alameda Avenue, Colfax Avenue, Mississippi Avenue, and Iliff Ave, directly serve either "City Corridor", or "Urban District" placetypes. These placetypes, as further described on the table on page 26 of "Aurora Places" are envisioned to have primary landuses of multifamily residential, single-family attached residential, restaurant, and commercial retail; and office and institution as either a primary or supporting landuse. Per document page 29 of "Aurora Places", the Urban District landuse would "prioritize mixed-used buildings with ground-floor commercial and multistory residential housing above to bolster commercial and social activity"; "provide easy-short pedestrian and bicycle connections to surrounding districts and neighborhoods"; "incorporate an accessible, well-connected transit hub to connect Urban Districts to the rest of the city and the region"; and "develop urban districts with a complete grid of streets creating relatively small urban blocks." The City Corridor placetype, as described on document page 45, lists defining features as "front commercial buildings along primary streets to ensure visibility and accessibility. Avoid street frontages dominated by parking lots or buildings set back large distances from the street"; "use single-family attached units where the City Corridor abuts a residential placetype to promote an appropriate transition"; and "design centers around a central organizing feature or gathering places <to> to> convey a sense of community."

Provide households and employment data* [Population and Employment tab]	2020	2050
Jobs within ½ mile	83,282	102,460
Households within ½ mile	37,172	51,467

Describe how this project will improve transportation options in and between key geographic areas including DRCOG-defined urban centers, multimodal corridors, mixed-use areas, Transit Oriented Development (transit near high-density development), or locally defined priority growth areas, *including the <u>required</u> quantitative analysis*:

#### N/A

 Describe how this project will improve access and connections to key employment centers or subregional destinations. In your answer, define the key destination(s) and clearly explain how the project improves access and/or connectivity.

N/A

8.	Congestion Mitigation Process Mobility Score				
	Completing the below table and referencing <u>relevant</u> quantitative data in your response is <u>required</u> . <b>In the DRCOG</b>				
	Data Tool, use a 0.02 mile buffer distance.				
	Provide congestion mobility parameters* [Congestion Mobility Score tab]	2021			
	Sum: length-weighted score	100.14			
	Sum: miles	8.86			
	Congestion Mobility Score	11.30			
	(The Congestion Mobility Score will automatically calculate based on values	s entered. If this has	not updated, select the box and click F9)		

### C. Metro Vision Regional Transportation Plan Priorities

**Qualitative and quantitative** responses are REQUIRED for the following items on how the proposed project contributes to the project and program investment priorities in the adopted 2050 Metro Vision Regional Transportation Plan. To be considered for full points, you must fully answer all parts of the question, including incorporating quantitative data into your answer. (see scoring section for details). Quantitative data from is available from the <u>DRCOG Data Tool</u>. Checkboxes and data tables help to provide context and guide responses, but do not account for the full range of potential improvements and are not directly scored, but are required to be completed. Not all proposed projects will necessarily be able to answer all questions, however it is in the applicant's interest to address as many priority areas as possible. Provide improved travel options for all modes. (drawn from 2050 MVRTP priorities; federal travel time reliability, infrastructure condition, & transit asset management performance Multimodal measures; & Metro Vision objective 4) Mobility Examples of Project Elements: combinations of improvements that support options for a broad range of users, such as complete streets improvements, or an interchange project that incorporates transit and freight improvements, etc. What modes will project improvements directly address?  $\Box$  Walking  $\Box$  Bicycling  $\boxtimes$  Transit  $\Box$  SOV  $\Box$  Freight  $\Box$  Other: Click or tap here to enter text. List the elements of this project which will address the above modes (i.e., sidewalk, shared use path, bus stop improvements, new general purpose or managed lanes, etc.): Through the demonstrated partnership with RTD, the fiber and radio upgrades will allow for more reliable monitoring of the operational status of TSP corridors such as SH 30 (Havana Street) as well as future TSP corridors. Additionally, the proposed project will improve communication at the seven intersections adjacent to R-line along Sable Ave near Alameda Ave. This will improve the monitoring of these critical intersections as well as expand the technology capabilities. Will the completed project be a complete street as described in the Regional Complete Streets Toolkit? Complete Streets Typology is available in the DRCOG Data Tool. □ Yes ⊠ No If yes, describe how it implements the Toolkit's strategies in your response. Click or tap here to enter text. Does this project improve travel time reliability and reduce delay? ٠  $\boxtimes$  Yes  $\square$  No Does this project improve asset management of roadway infrastructure, active transportation facilities, and/or transit facilities or vehicle fleets?  $\boxtimes$  Yes  $\square$  No Does this project implement resilient infrastructure that helps the subregion mitigate natural and/or humanmade hazards?  $\Box$  Yes  $\boxtimes$  No Question: Describe how this project will help increase mobility choices for people, goods, and/or services. Please include quantitative information, including any items referenced above, in your response. Note that the proposed roadway operational improvements must be primarily on the DRCOG <u>Regional Roadway System</u> and/or <u>Regional</u> Managed Lanes System. The communication improvements will provide system reliability and the ability for Aurora to perform real-time monitoring of multi-modal operations. This will ultimately reduce delays and provide more reliability, thus promoting the use of transit. Question: Describe how this project will help improve asset reliability and availability. Please include quantitative information in your response (for example, reduce mean time to repair and increase mean time between failures). In terms of malfunctions and repairs, a robust communications system will support monitoring of field equipment

and the communications network itself. Support for SNMP-related polling and traps to monitor the health status of equipment allows for immediate notification of impending or actual problems in real-time thereby increasing the speed of equipment repairs when failures occur or are about to occur. This results in an increase in uptime (i.e., availability) and would allow the City to minimize unplanned downtime. Question: Describe how this project will reduce delays and improve travel time reliability. Please include quantitative information in your response (for example, vehicle-hours traveled and travel time index).

This project will provide real time monitoring of traffic signals as well as decrease network latency system-wide. These improvements will optimize signal operations resulting in a reduction of vehicle queuing and improvement to air quality. Past experience on projects that improve signal timing plans conservatively result in greater than 10% reductions in delay and travel times.

	Air Quality	ir Quality Improve air quality and reduce greenhouse gas emissions. (drawn from 2050 MVRTP priorities; state greenhouse gas rulemaking; federal congestion & emissions reduction performance measures; Metro Vision objectives 2, 3, & 6a) Examples of Project Elements: active transportation, transit, or TDM elements; vehicle operational improvements; electric vehicle supportive infrastructure; etc.					
•	Does this pr	oject reduce conges	tion?				
	🛛 Yes 🗆 N	lo					
•	Does this pro	oject reduce vehicle	miles traveled (VI	MT)?			
	🗆 Yes 🖾 N	lo					
•	Does this pr	oject reduce single-	occupant vehicle (	SOV) travel?			
	🗆 Yes 🖾 N	lo					
	Emissic	ns Reduced	СО	NOx	VOCs	PM 10	CO <sub>2</sub> e
	(kg/day) 143.95 13.38 6.51 10.12 18,019						
	(kg/day)143.9513.386.5110.1218,019Use the FHWA CMAQ Calculators or a similar reasonable methodology to determine emissions reduced. Base your calculations on the year of opening. Please attach a screenshot of your work (such as the FHWA calculator showing the inputs and outputs) as part of your submittal packet.						

Question: Describe how this project helps reduce congestion and air pollutants, including but not limited to carbon monoxide, ground-level ozone precursors, particulate matter, and greenhouse gas emissions. Please include quantitative information, including any items referenced above, in your response.

This project will provide real time monitoring of traffic signals as well as decrease latency system-wide and help eliminate clock drift. These improvements will optimize signal operations resulting in a reduction of vehicle queuing and emissions across the signal system.

This project is expected to reduce emissions by the amount detailed in the table above. The FHWA CMAQ Calculator was used, specifically the Traffic Signal Synchronization tab. This project will implement improvements at locations across Aurora and thus the calculator tool was applied to multiple corridors across the signal system. The calculator is applicable to this project because improved communications and transmission of real-time ATSPM data will allow regular monitoring and optimization of signal timing at these intersections. Aurora Engineering will be able to reliably monitor the signal system from the Aurora Municipal Center due to the fiber optic backbone communications link between the AMC and the signal servers and North Satellite Facility. To make the assumptions more conservative, the table above equates to approximately 25% of the full output from the FHWA CMAQ Calculator.

	Regional Transit	Expand and improve the subregion's transit network. (drawn from 2050 MVRTP priorities, Coordinated Transit Plan, RTD's Regional Bus Rapid Transit Feasibility Study) Examples of Project Elements: transit lanes, station improvements, etc. Note: For any project with transit elements, the sponsor must coordinate with RTD to ensure RTD agrees to the scope and cost. Be sure to include RTD's concurrence in your application submittal.
	<u>Items marke</u>	ed with an asterisk (*) below are available in the DRCOG Data Tool.
•	Does this pr <u>MVRTP</u> )?*	oject implement a portion of the regional bus rapid transit (BRT) network (as defined in the <u>2050</u>
	🗆 Yes 🖾 N	Io If yes, which specific corridor will this project focus on: Click or tap here to enter text.
•	Does this pr	oject involve a regional transit planning corridor (as defined in the <u>2050 MVRTP</u> )?*
	🗆 Yes 🖾 N	Io If yes, which specific corridor will this project focus on: Click or tap here to enter text.
•	Does this pr	oject implement a mobility hub (as defined in the <u>2050 MVRTP</u> )?
	🗆 Yes 🖾 N	10
•	Does this pr	oject improve connections between transit and other modes?
	🗆 Yes 🖾 N	Io If yes, please describe in your response.
•	Does this pr	oject improve transit travel time reliability?
	🛛 Yes 🗆 N	Io If yes, please describe in your response.
•	Does this pr □ Yes ⊠ N	oject add and/or improve transit access to or within a DRCOG-defined urban center?* Io
Q	uestion: Desc	ribe how this project improves connections to or expands the subregion's transit system, as outlined
in	the <u>2050 MV</u>	RTP. Also describe how this project improves transit travel time reliability. Please include quantitative
in	formation, inc	luding any items referenced above, in your response. Note that rapid transit improvements must be
0	n the <u>Regional</u>	<u>Rapid Transit System.</u>
	The commu	nications upgrades as part of this project will provide real time monitoring to the City of Aurora,
	including m	onitoring of TSP corridors, ultimately reducing delays along major transit corridors. Additionally, the
	proposed p	roject will improve communication at the seven intersections adjacent to R-line along Sable Ave near
	Alameda Av	e. The new fiber connection along Alameda Ave will directly improve the management of signals
	along the R <sup>-</sup>	TD R-line as the communications connection will be more reliable. This improvement will allow for
	continuous,	real-time monitoring as well as decreased response times to any issues.

		Increase the safety for all users of the transporta	ation system.		
	Safety	(drawn from 2050 MVRTP priorities, Taking Action on Regional Visio	on Zero, CDOT Strategic	Transportation Safety Plan, & federal safety	
	ourory	performance measures)			
		Examples of Project Elements: bike/pedestrian crossing improveme	nts, vehicle crash count	ermeasures, traffic calming, etc.	
It	ems marked v	<u>with an asterisk (*) below are available in the DRCC</u>	<u>DG Data Tool</u> .		
•	Does this p	roject address a location on the <u>DRCOG High-Injury</u>	<u>y Network or Crit</u>	ical Corridors or corridors defined	
	in a local Vi	sion Zero or equivalent safety plan?*			
	🛛 Yes 🗆	No			
•	Does this n	roject implement a safety countermeasure listed ir	the counterme	asure glossary?	
		No	e de la councerne	<u>isure grossury</u> .	
•	Will this pro	oject result in a reduction of average roadway clea	rance time and ir	cident clearance time and/or	
	secondary	incidents?			
	🗆 Yes 🖂	No			
٠	Will this pr	oject result in a reduction of first responder struck-	-bys?		
	🗆 Yes 🖂	No			
	Provide the	current number of crashes involving motor vehicles bicyclists	and nedestrians*		
	(using the 20	16-2020 period – in the DRCOG Data Tool, use a 0.02 mile buffer dist	ance)	Sponsor must use industry accepted crash	
	[Crash Severi	ty 2016-2020 tab]		modification factors (CMF) or crash	
	NOTE: if cons	tructing a new facility, report crashes along closest existing alternativ	e route	reduction factor (CRF) practices (e.g., CMF	
	Fatal	crashes	2	<u>Clearinghouse, NCHRP Report 617, or</u>	
	Seriou	is Injury crashes	59	<u>DiExSys</u> methodology).	
	Other: Non-Serious Injury and Property Damage Only crashes 2,120				
	Estimated r	eduction in crashes applicable to the project scope		Provide the methodology and sources	
	(per the five	e-year period used above)		below:	
	Fatal	crasnes reduced	Enter Data	Click or tan here to enter text	
	Seriou	is injury crashes reduced	Enter Data		
	Other	: Non-Serious Injury and Property Damage Only crashes	Enter Data		

Question: Describe how this project will implement safety improvements (roadway, active transportation facility, etc.), particularly improvements in line with the recommendations in <u>Taking Action on Regional Vision Zero</u>. Please include quantitative information, including any items referenced above, in your response. *Note that any improvements on roadways must be primarily on the DRCOG <u>Regional Roadway System</u>.* 

This project will implement improvements on Critical Corridors, as identified in the Taking Action on Regional Vision Zero Plan. Specific Countermeasures addressed include Signal Coordination (through more reliable communications to each impact signal), Traffic Incident Management (through ability to transmit real-time high definition ATSPM data), and ability to actively monitor deployed Traffic Signal Bike Detection. This project enables consideration of other technology-based Countermeasures like variable message signs and variable speed limit systems.

Question: Describe how this project will reduce average incident duration, secondary incidents and first responder struck-bys. Please include quantitative information in your response. A "responder struck-by" incident is a collision between a motor vehicle in transit and a responder working a roadway incident. The responder may be a nonmotorist, an occupant of a stopped response vehicle or an unoccupied response vehicle.

Upgrading the communication system will result in improved traffic incident management coordination by adjusting signal timings remotely and utilizing real-time CCTV video to monitor incidents.

	Freight	Maintain efficient movement of goods within and beyond the subregion. (drawn from 2050 MVRTP priorities; Regional Multimodal Freight Plan; Colorado Freight Plan, federal freight reliability performance measure: Metro Vision objective 14)
		Examples of Project Elements: bridge improvements, improved turning radii, increased roadway capacity, etc.
<u>lte</u>	ems marked	with an asterisk (*) below are available in the DRCOG Data Tool.
•	Is this proje	ect located in or impact access to a <u>Freight Focus Area</u> ?*
	$\boxtimes$ Yes $\square$	No If yes, please provide the name: I-70 Distribution Corridor
•	If this proje (see text lo	ect is located in a <u>Freight Focus Area</u> does it address the relevant Needs and Issues identified in the Plan Acated within each Focus Area)?
	🗆 Yes 🖂	No If yes, please describe in your response below.
•	Is the proje	ect located on the Tier 1 or Tier 2 Regional Highway Freight Vision Network?*
	🛛 Yes 🗆	No
•	Check any i	items from the <u>Inventory of Current Needs</u> which this project will address:
	Truck C	Crash Location 🔲 Rail Crossing Safety ( <u>eligible locations</u> )
	🗌 Truck D	)elay 🗵 Truck Reliability 🗆 Highway Bottleneck
	🗆 Low-Cle	earance or Weight-Restricted Bridge
	Please prov	vide the location(s) being addressed: Click or tap here to enter text.
•	Does this p	roject include any innovative or non-traditional freight supportive elements (i.e., curb management
	strategies,	cargo bike supportive infrastructure, etc.)?
	🗆 Yes 🖾	No If yes, please describe in your response below.
Qu im ite <u>Ro</u>	uestion: Des provements ems referenc padway Syste	cribe how this project will improve the efficient movement of goods. In your response, identify those identified in the <u>Regional Multimodal Freight Plan</u> , include quantitative information, and include any ed above. Note that any improvements on roadways must be primarily on the DRCOG <u>Regional</u> <u>em</u> .
W Di	hile this proj stribution Co	ect just touches one of the Freight Focus Areas listed in the Regional Multimodal Freight Plan (I-70 prridor), it will make travel time more reliable for all modes, including freight, along Chambers and ve improved communications, and many other "downstream" intersections including the 115

Peoria that have improved communications, and many other "downstream" intersections including the 115 intersection to the southeast of Iliff Ave. It will improve Highway Reliability for corridors with a truck travel time index greater than 3.0 in the AM peak, as identified on page 61 of the freight plan. Specifically, Aurora signals along most of the north-south Chambers and Peoria corridors). East-west freight networks at Colfax, Alameda, 6<sup>th</sup> Ave, Iliff, and Mississippi will have fiber optic communications links at I-225, which will improve east-west radio communications (i.e. "downstream") along these corridors. Communications improvements along these corridors can be expected to improve freight reliability.

Т	Active       Expand and enhance active transportation travel options.         (drawn from 2050 MVRTP priorities; Denver Regional Active Transportation Plan; & Metro Vision objectives 10 & 13)         Framples of Project Elements; shared use paths, sidewalks, regional trails, grade separations, etc.							
<u>lter</u>	Items marked with an asterisk (*) below are available in the DRCOG Data Tool.							
•	<ul> <li>Does this project close a gap or extend a facility on a <u>Regional Active Transportation Corridor</u> or locally-defined priority corridor?*</li> <li>Yes X No</li> </ul>							
•	Does this project in □ Yes ⊠ No	nprove pedestrian accessibility and connectivity in a	pedestrian focus are	<u>a</u> ?*				
•	Does this project in □ Yes ⊠ No	nprove active transportation choices in a <u>short trip c</u>	opportunity zone?*					
•	Does this project ir boulevard)? □ Yes ⊠ No If ye	nclude a high-comfort bikeway (like a sidepath, shar s, please describe in your response.	ed-use path, separate	d bike lane, bicycle				
Bic	vcle Use							
NOT	E: if constructing a new fo	cility, report bike usage along closest existing alternative route						
1	o update the formulas	below, enter your information, highlight the formulas (or Ctrl a Weakday Bigyslight:	-A), and press F9. OR close	and reopen the file.				
1.	Current Average Sing		Year	2050				
	Bicycle Use Calculatio	ns	of Opening	Weekday Estimate				
2.	Enter estimated addit after project is compl	ional average weekday one-way bicycle trips on the facility eted.	N/A	N/A				
3.	Enter number of the l different bicycling rou (Example: <b>{#2 X 50%</b>	bicycle trips (in #2 above) that will be diverting from a lite. } or other percent, if justified on line 10 below)	N/A	N/A				
4.	= Initial number of ne	w bicycle trips from project (#2 – #3)	0	0				
5.	Enter number of the made by another non	new trips produced (from #4 above) that are replacing a trip -SOV mode (bus, carpool, vanpool, walking, etc.).	N/A	N/A				
6.	= Number of SOV trip	s reduced per day (#4 - #5)	0.00	0.00				
7.	Enter the value of <b>{#6</b> (Values other than 2	<b>x 2 miles}</b> . (= the VMT reduced per day) miles must be justified by sponsor on line 10 below)	N/A	N/A				
8.	= Number of pounds	GHG emissions reduced (#7 x 0.95 lbs.)	0.00	0.00				
9.	N/A	tinctly greater for weekends, describe the magnitude of differe	nce:					
10.	If different values oth	er than the suggested are used, please explain here:						
	N/A							
Peo	destrian Use	ncility, report pedestrian usage along closest existing alternative route						
<u></u>	o update the formulas	below, enter your information, highlight the formulas (or Ctrl	-A), and press F9. OR close	and reopen the file.				
1.	Current Average Sing devices such as scoot	e Weekday Pedestrians (including users of non-pedaled ers and wheelchairs):	N/A, new facility no	ot part of this project				
	Pedestrian Use Calcul	ations	of Opening	Weekday Estimate				
2.	Enter estimated addit facility after project is	ional average weekday pedestrian one-way trips on the completed	N/A	N/A				
3.	Enter number of the r a different walking ro (Example: <b>{#2 X 50%</b>	new pedestrian trips (in #2 above) that will be diverting from ute } or other percent, if justified on line 10 below)	N/A	N/A				
4.	= Number of new trip	s from project (#2 – #3)	0	0				
5.	Enter number of the made by another non (Example: <b>{#4 X 30%</b>	new trips produced (from #4 above) that are replacing a trip -SOV mode (bus, carpool, vanpool, bike, etc.). } or other percent, if justified on line 10 below)	N/A	N/A				
6.	= Number of SOV trip	s reduced per day (#4 - #5)	0.00	0.00				
7.	Enter the value of <b>{#6</b> (Values other than .4	x.4 miles}. (= the VMT reduced per day) miles must be justified by sponsor on line 10 below)	N/A	N/A				

= Number of pounds GHG emissions reduced (#7 x 0.95 lbs.)	0.00	0.00				
If values would be distinctly greater for weekends, describe the magnitude of different	ence:					
N/A						
If different values other than the suggested are used, please explain here:						
N/A						
estion: Describe how this project helps expand the active transportation	on network, closes gap	os, improves comfort,				
/or improves connections to key destinations, particularly improvement	nts in line with the rec	commendations in the				
iver Regional Active Transportation Plan. Please include quantitative in	formation, including a	any items referenced				
ve, in your response.						
Not applicable to this project.						
	<ul> <li>Number of pounds GHG emissions reduced (#7 x 0.95 lbs.)</li> <li>If values would be distinctly greater for weekends, describe the magnitude of different N/A</li> <li>If different values other than the suggested are used, please explain here: N/A</li> <li>estion: Describe how this project helps expand the active transportation l/or improves connections to key destinations, particularly improvement to the response.</li> <li>applicable to this project.</li> </ul>	<ul> <li>Number of pounds GHG emissions reduced (#7 x 0.95 lbs.)</li> <li>If values would be distinctly greater for weekends, describe the magnitude of difference:</li> <li>N/A</li> <li>If different values other than the suggested are used, please explain here:</li> <li>N/A</li> <li>estion: Describe how this project helps expand the active transportation network, closes gapl/or improves connections to key destinations, particularly improvements in line with the reducer Regional Active Transportation Plan. Please include quantitative information, including a pove, in your response.</li> <li>applicable to this project.</li> </ul>				

D. Financial Leveraging			WEIGHT	5%
What percent of outside funding sources (non- federal funds) does this project have?	Enter score:	36%+ outside fund 31 - 35.9%	ling source	es 5 4
(Match percentage will automatically calculate based on values entered in the Funding Request table. If this has not updated, select the box to the right and click F9.) [*includes 100% eligible projects with no match]	21.1%	26 - 30.9% 21 - 25.9% 17.21 - 20.9%*		3 2 1
		17.21%	•••••	0

### E. Project Readiness

Provide responses to the following items to demonstrate the readiness of the project. DRCOG is prioritizing those projects that have a higher likelihood to move forward in a timely manner and are less likely to experience a delay.

WEIGHT 15%

#### **Subsection 1. Avoiding Pitfalls and Roadblocks**

a. Has a licensed engineer (CDOT, consultant, local agency, etc.) reviewed the impact the proposed project will have on utilities, railroads, ROW, historic and environmental resources, etc. and have those impacts and pitfalls been mitigated as much as possible to date before this submittal?

 $\boxtimes$  Yes  $\square$  No  $\square$  N/A (for projects which do not require engineering services)

If yes, please type in the engineer's name below which certifies their review and that impacts have been evaluated and mitigated as much as possible before your application is submitted:

#### Carlie Campuzano, P.E.

Please describe the status to date on each, including 1) anticipated/known pitfalls/roadblocks, and 2) mitigation activities taken to date:

- Utilities: SUE will be part of the design process
- Railroad: Part of this project will involve accessing existing Aurora fiber conduit on RTD ROW. Access is expected to be granted based on previous COA agreements with RTD.
- Right-of-Way: Part of this project will be installed in CDOT ROW. No new easements or ROW acquisition is expected, access will be covered through a new IGA (Aurora already maintains and operates the traffic signals in the vicinity of this CDOT ROW).
- Environmental/Historic: No conflicts expected
- Other: N/A
- b. Have additional project risks been identified?

 $\boxtimes$  Yes  $\Box$  No  $\Box$  N/A

If yes, please provide a brief description of the known risks and planned mitigation activities.

A Local Agency SEA form is required and attached to this application.

c. Is this application for a single project phase only (i.e., design, environmental, ROW acquisition, construction only, study, equipment purchase, etc.)?

igtimes Yes  $\ \Box$  No

If yes, are the other prerequisite phases complete?  $\ \Box$  Yes  $\ \boxtimes$  No  $\ \Box$  N/A

d. Will this project seek a Finding in the Public Interest as part of equipment procurement?

 $\boxtimes$  Yes  $\square$  No

If yes, please provide an explanation of the need fo	r a Finding in the Public II	nterest. Do not reference spec	ific
products trade names.			

The SEA process will be used to validate whether a synchronization based FIPI is acceptable to choose the radio and ethernet switch brands that Aurora is currently using.

e. Has all required ROW been identified? □ Yes ⊠ No □ N/A Has all required ROW already been acquired and cleared by CDOT?  $\Box$  Yes  $\boxtimes$  No  $\Box$  N/A Is existing equipment within ROW?  $\square$  Yes  $\square$  No  $\square$  N/A Will subsurface utility engineering be a factor in this project?  $\boxtimes$  Yes  $\square$  No Has subsurface utility engineering been accounted for in the project scoping, phasing and estimate?  $\boxtimes$  Yes  $\square$  No  $\square$  N/A f. Based on the current status provided in Project Information, guestion 11, do you foresee being able to execute your IGA by October 1 of your first year of funding (or if requesting first year funding, beginning discussions on your IGA as soon as possible), so you can begin your project on time?  $\boxtimes$  Yes  $\square$  No Does your agency have the appropriate staff available to work on this project?  $\boxtimes$  Yes  $\Box$  No If yes, are they knowledgeable with the federal-aid process?  $\square$  Yes  $\square$  No  $\square$  N/A g. Have other stakeholders in your project been identified and involved in project development?  $\boxtimes$  Yes  $\square$  No  $\square$  N/A If yes, who are the stakeholders? CDOT and RTD have submitted Peer Agency Support Forms. Please provide any additional details on any of the items in Subsection 1, if applicable. Part of this project will involve accessing existing Aurora fiber within existing conduit on RTD ROW. Access to this fiber is expected to be granted based on planning level discussions with RTD and collaboration between the two agencies to determine interrelated needs on various corridors. A peer agency form from RTD has been provided with this application. Part of this project will be installed on CDOT ROW. No new easements or ROW acquisition is expected. A peer agency form from CDOT has been provided with this application. Subsection 2. Local Match Availability a. Is all the local match identified in your application currently available and not contingent on any additional decisions, and if a partnering agency is also committing match, do you have a commitment letter?  $\boxtimes$  Yes  $\square$  No Please describe: City of Aurora has allocated the match funds and are currently available in a City account. b. Is all funding for this project currently identified in the sponsor agency's Capital Improvement Program (CIP)?  $\boxtimes$  Yes  $\square$  No Please describe:

City of Aurora has allocated the match funds.

Subsection 3. Systems Engineering Analysis Documentation

Systems Engineering Analysis (SEA) is a federally required process for deployment of transportation technology projects using funds from the Highway Trust Fund. CDOT established and administers a formal <u>SEA process</u> for transportation technology projects in the state, including local agency projects.

Please complete at least the first seven sections of the required <u>SEA-Local Agency Template</u>. Submit the completed form with this application.

#### Submit completed applications to jluor@drcog.org no later than 5pm on July 7, 2023.

Prior to submitting, press Ctrl+A to select all, then press F9 to update all formulas. You can then print to PDF.



### Project Cost Estimate

### Project Title: Aurora Traffic Communications Infrastructure Improvements

Project Location: Various signalized intersection within City of Aurora

Project Sponsor: City of Aurora

Item	Quantity	Unit Cost	Total Cost
North Satellite to AMC Agg Switches	2	\$7,000	\$14,000
North Satellite to AMC Core Switches	2	\$12,000	\$24,000
Traffic Signal Fiber Field Switches	12	\$5,500	\$66,000
Iliff Aurora Traffic Signal Connections	1100	\$72	\$79,200
Alameda Aurora Traffic Signal Connection	2600	\$72	\$187,200
6th Ave Aurora Traffic Signal Connection	1100	\$72	\$79,200
Colfax Aurora Traffic Signal Connection	800	\$72	\$57,600
Mississippi Aurora Traffic Signal Connection	1500	\$72	\$108,000
New Backbone (5.8 GHz) Radios near new fiber	13	\$2,300	\$29,900
New Spur (900 MHz) Radios near new fiber	18	\$500	\$9,000
Managed Ethernet Switches at Radio locations near fiber	20	\$4,500	\$90,000
Subtotal			\$744,100
2024 Inflation (7%)			\$52,087
2025 Inflation (7%)			\$52,087
Contingency (10%)			\$84,827
Project Total (Rounded)			\$933,000
Federal Runding Request		78.89%	\$736,000
Match Funds (City of Aurora)		21.11%	\$197,000

### FY2024-2027 REGIONAL TRANSPORTATION OPERATIONS AND TECHNOLOGY SET-ASIDE PROCESS: REQUEST FOR PROJECT SUPPORT FORM

Complete the sections with green headers below, then provide this form to the agency you are requesting support from. That agency will complete the blue section and return the form.

APPLICANT INFORMATION				
1. Who is requesting project sup	port? City of Aurora			
2. Project Sponsor: City of	2. Project Sponsor: City of 3. Other Project Partners:			
Aurora				
4. Contact Person: Carlie Campuz	zano Title: Traffic N	Manager		
Email: ccampuza@auroragov.c	org Phone: 303-7	39-7309		
PROJECT DESCRIPTION				
5. Project Title: Aurora Traffic Co	mmunications	Total Projec	t Cost: \$1,013,000	
Infrastructure Improvements		D		
Project Location: City Wide	-	roads, rivers	ts: (mileposts, intersecting s, etc.) City Wide	
County: Adams, Douglas,	Municipality(ies): City of	f Aurora	Project Length: City Wide	
Arapahoe				
Brief Description of Project: This p infrastructure upgrades. Fiber com at I-225 ramp terminals, new back Center (AMC) and the North Satell connections to the traffic signals a AMC and NSC. The backbone fiber existing Aurora IT fiber in RTD's R I traffic engineering at AMC and tra- recommendations contained in the	roject includes Aurora Tra aponents include new eth bone ethernet communic ite Complex (NSC), and fil nd to create a backbone of communications connect Line corridor, and will allo ffic operations at NSC. Th e Aurora Fiber Optic Mast	affic fiber opti ernet field sw ber conduit ar communicatio tion between w traffic data is strategies in ter Plan.	c communications and radio vitches at eight traffic signals ent at the Aurora Municipal and fiber cabling for lateral ons connection between the AMC and NSC will leverage to be transmitted between an this project adhere to the	
SUPPORT REQUEST				
<ul> <li>6. Based on who is requesting support (see #1), from whom are you are requesting support? If you are requesting support from multiple entities, please fill out and send a separate form to each.</li> <li>Local Agency, Specify:</li> <li>CDOT</li> <li>RTD</li> </ul>				
<ul> <li>7. Type of Support Requested:</li> <li>Material Participation (e.g. staff, resources, operations responsibilities, etc.) Specify: Staff participation in reviews and agreements for work within CDOT ROW to tie into CDOT fiber</li> <li>Financial Commitment:</li> <li>Local (non-DRCOG) Funds: Amount:</li> <li>State Funds: Amount:</li> <li>RTD Funds: Amount:</li> </ul>				
<ol> <li>Please type your name and da complete: Name: Carlie Campuzano</li> </ol>	te below which certifies t Date: 6/28/23	he above info 3	rmation is accurate and	
	· · ·			

**RESPONSE** (to be completed by agency from whom support is requested)

9. The agency in #1 above has requested your support for their project. Who are you? Colorado
Department of Transportation
10. Contact person at supporting agency: Alazar Tesfaye
Title: Region 1 Traffic & Email: alazar.tesfaye@state.co.us Phone: (303)564-6446
Safety Program Engineer
11. Will your agency participate in this project? 🛛 Yes 🗌 No
12. Does your agency commit financial support to this project, if requested? 🗌 Yes 🛛 No 🗌 N/A
If yes, provide amount: \$ Fiscal year(s) funds are provided in:
If yes, where are funds coming from:
13. Please enter your name and date below which certifies the above information is accurate and
complete, and your subregion/agency will honor any financial commitments made above:
Name: Alazar Tesfaye Alazar Date: 06/30/2023
Tesfaye

### FY2024-2027 REGIONAL TRANSPORTATION OPERATIONS AND TECHNOLOGY SET-ASIDE PROCESS: REQUEST FOR PROJECT SUPPORT FORM

Complete the sections with green headers below, then provide this form to the agency you are requesting support from. That agency will complete the blue section and return the form.

APPLICANT INFORMATION					
1. Who is requesting project sup	port? City of Aurora				
2. Project Sponsor: City of       3. Other Project Partners:					
Aurora					
4. Contact Person: Carlie Campu	zano Title: Traffic N	Manager			
Email: ccampuza@auroragov.	org Phone: 303-7	39-7309			
PROJECT DESCRIPTION		1			
5. Project Title: Aurora Traffic Co	ommunications	Total Project	: Cost: \$1,013,000		
Infrastructure Improvements					
Project Location: City Wide		Project Limit	s: (mileposts, intersecting		
	ų .	roads, rivers	, etc.) City Wide		
County: Adams, Douglas,	Municipality(ies): City o	f Aurora	Project Length: City Wide		
Arapahoe					
Brief Description of Project: This p	roject includes Aurora Tra	affic fiber optio	c communications and radio		
infrastructure upgrades. Fiber con	nponents include new eth	ernet field swi	itches at eight traffic signals		
at I-225 ramp terminals, new back	bone ethernet communic	ation equipme	ent at the Aurora Municipal		
Center (AMC) and the North Satel	lite Complex (NSC), and fi	ber conduit an	d fiber cabling for lateral		
connections to the traffic signals a	ind to create a backbone of	communicatio	ns connection between the		
AMC and NSC. The backbone fiber	communications connect	tion between /	AMC and NSC will leverage		
existing Aurora IT fiber in RTD's R	Line corridor, and will allo	w traffic data	to be transmitted between		
traffic engineering at AMC and tra	ffic operations at NSC. Th	is strategies in	this project adhere to the		
recommendations contained in th	e Aurora Fiber Optic Mas	ter Plan.			
6 Based on who is requesting su	Inport (see #1) from who	m are vou are	requesting support? If you		
are requesting support from mult	tiple entities, please fill out a	nd send a senai	rate form to each.		
Local Agency, Specif	fv:				
7. Type of Support Requested:					
$\square$ Material Participation (e.g. staff resources operations responsibilities etc.)					
Specify: Staff participation in data integration related to traffic signals with TSP					
Financial Commitment: Local (non-DRCOG) Funds: Amount:					
	State Funds: Ar	nount:			
	BTD Funds: Am	ount:			
8. Please type your name and date below which certifies the above information is accurate and					
complete:					
Name: Carlie Campuzano	Date: 6/26/23	3			
	2				
RESPONSE (to be completed by agency from whom support is requested)					

9. The agency in #1 above has requested your support for their project. Who are you? RTD Acting Assistant General Manager of Planning Brian Welch

10.	10. Contact person at supporting agency: Doug Monroe				
	Title: Manager, Corridor	Email: douglas.monroe@rtd-	Phone: 303-299-2213		
	Planning	denver.com			
11.	Will your agency participa	te in this project? 🛛 Yes 🗌 N	10		
12.	Does your agency commit	financial support to this project,	, if requested? 🗌 Yes 🗌 No 🛛 N/A		
	If yes, provide amount: \$ Fiscal year(s) funds are provided in:				
	If yes, where are funds coming from:				
13.	13. Please enter your name and date below which certifies the above information is accurate and				
	complete, and your subregion/agency will honor any financial commitments made above:				
	Name: Brian T. Welch	y signed by Brian T. Welch 2023.06.30 12:41:17 -06'00' Date: 6/30/23			



### COLORADO Department of Transportation Division of Maintenance & Operations

**Requirement:** The <u>systems engineering analysis (SEA)</u> process is required per <u>23 CFR 940</u>. The SEA is the project delivery process for the technology element of the project. If the project does not have technology, the project still needs documentation that the scope was evaluated and no additional SEA documentation is required beyond section two of this form. As a matter of policy, CDOT has committed to following the intent and requirements of the SEA process for all transportation projects, regardless whether the project is state or federally funded.

**Purpose:** The SEA is intended to help design a robust and sustainable technology system. The SEA prompts discussions during design with stakeholders and is intended to document those critical discussions. Since technology does require maintenance and has relatively short life cycles, the SEA also helps projects plan for how to keep the system maintained and operating after construction is completed.

**Who is responsible:** The local agency will be required to complete this form. This form shall be submitted to CDOT a minimum of two weeks prior to the FOR meeting. It must be reviewed and approved prior to receiving CDOT Concurrence to Advertise for construction. The ITS & Network Services Branch needs at least two weeks to review documents.

Section 1 - Project Overview

1.1 Local Public Agency Project Manager and Contact Information

Carlie Campuzano, PE, PTOE, Traffic Manager, City of Aurora, 303-739-7309, ccampuza@auroragov.org

1.2 Consultant Project Manager and Contact Information (X N/A)

1.3 CDOT Project Manager and Contact Information

Ben Kiene, PE, Region 1 Traffic Operations Engineer, 303-512-4025, benjamin,kiene@state.co.us

1.4 Project Location, Route Beginning and Ending MM, or Nearest Intersection

City of Aurora, Colorado, within the City's limits

1.5 Project Description, Title, and Type of Work – This should include identification of the problem and the purpose of the project

1.

City of Aurora Traffic Communications Infrastructure Improvements - The existing system is



Division of Maintenance & Operations

entirely wireless radio which has very limited capacity for the current and planned City Traffic Signal System and ITS components. It cannot transmit streaming IP video from CCTV cameras reliably, and cannot transmit data needed for ATSPM or Connected Vehicle Technologies in the future. As is, the existing system fails frequently due to interference. This leads to signal controller clocks drifting from universal time, and require field visits by technicians to perform tasks that can be accomplished through the central system when communications are stable. There is also no redundancy in the existing network. With the deployment of the planned fiber optic cable system, some existing radios can be repurposed and relocated, and some are old and need to be replaced. These repurposed/relocated radios plus the requested new radios will support the planned fiber optic network during transition, add redundancy, and extend the reach of the City's Traffic Signal System Network to add signals, including the southeast portion of the City's signal system, that currently are not interconnected with our network. The repurposed radios deployed on the strategic, critical corridors will be able to transport higher-bandwidth data and be redirected to the Aurora Municipal Center - North Satellite Complex fiber backbone link.

1.6 CDOT Project Number and Sub Account Code

TBD]

1.7 Federal-Aid 🛛 Yes 🗆 No

1.8 Is the project within CDOT's Right of Way (ROW)?  $\boxtimes$  Yes  $\Box$  No

1.9 Funding and Source of Each (Including State and Federal)

78.89% Federal STBG funding through the Denver Regional Council of Government's (DRCOG) Regional Transportation Operations & Technology (RTO&T) Set-Aside program, and 21.11% Local Match from the City of Aurora.

1.10 Fiscal Year of Funding: FY 2024-2027

Section 2 - SEA Required?

Federal Requirement: 23 CFR 940.11 Project Implementation



Division of Maintenance & Operations

### 2.1 Are there any technology elements included in the scope of the project?

The <u>National Regulation (23 CFR 940)</u> defines ITS as "electronics, communications, or information processing used singly or in combination to improve the efficiency or safety of a surface transportation system." An ITS project is "any project that in whole or in part funds the acquisition of technologies or systems of technologies that provide or significantly contribute to the provision of one or more ITS user services as defined in the National ITS Architecture."

Technology includes any type of device or system that is used to improve the roadways. This could include, but is not limited to, intelligent transportation systems devices. Examples are CCTV, DMS, VTMS, VSL, wrong way detection, RWIS, connected vehicles, <u>non-traditional signals</u> (click on link to understand which signals projects require an SEA), on board equipment in vehicles, and anything that has to be communicated to ATMS or other traffic management systems. Additionally, creating or modifying systems and software that impacts the roadway is included in the SEA classification. If there is still confusion on what is classified as technology, please reach out to the ITS & Network Services Branch.

 $\boxtimes$  Yes  $\Box$  No

If the answer to 2.1 is "yes" then a SEA is required.

If the answer to 2.1 is "**no**" then a **SEA is not required** and the rest of this form does not need to be completed, but Sections 1 and 2 will need to be submitted for documentation purposes.

2.2 Which SEA process should be followed?				
□ Yes	⊠ No	Will the system be owned, operated, or maintained by CDOT?		
□ Yes	⊠ No	Does the project involve CDOT technology assets?		
□ Yes	⊠ No	Will the project connect to the CDOT network?		
□ Yes	⊠ No	Will the project be on CDOT right of way?		
□ Yes	⊠ No	Does the project involve multiple municipalities?		
If " <b>yes</b> " is selected for any of the above questions, then the <u>Robust SEA Process</u> needs to be followed and this form is no longer applicable.				
If " <b>no</b> " is selected for all questions, then completing this entire form will fulfill the <u>23 CFR 940</u> requirements for local agency projects only.				



Division of Maintenance & Operations

#### Section 3 - ITS Architecture Conformance

Federal Requirement: 23 CFR 940.11(c)(1) - "Identification of portions of the regional ITS architecture being implemented (or if a regional ITS architecture does not exist, the applicable portions of the National ITS Architecture)"



Per 23 CFR 940, every project has to comply with an ITS Architecture Plan. For background information, there is a <u>National ITS Architecture Plan</u> that is maintained by FHWA. The National Architecture Plan consists of Service Packages that identifies a problem that needs to be solved or a certain application of a technology. A service package states the basic requirements the project must achieve to create consistency. CDOT is then required to select the service packages from the National ITS Architecture Plan that will assist in fulfilling CDOT's technology vision and make them CDOT specific. From there the local Council of Governments (COG's) have to make their ITS Architectures as well. The local agencies should use the COG's architecture plan if one exists. If one does not, the CDOT Architecture Plan should be followed.

Service packages are critical to identify as part of compiling required SEA documentation. Service packages focus on how the technology is being used rather than specific devices. For example, there is no Dynamic Message Sign (DMS) service package. It will be critical to understand the intent of use for the DMS in order to determine the applicable service package(s). A DMS could fall within the TM06 Traffic Information Dissemination if the intent is to provide drivers with information. If a DMS is being installed as part of a tunnel, then it could fall under TM24 Tunnel Management. The key is focusing on what application the DMS is being used in. It is possible for a project to fall within multiple service packages. Please reach out to the ITS & Network Services Branch with any questions.

3.1 Which architecture plan will be used?

□ National ITS Architecture

□ CDOT ITS Architecture

 $\boxtimes$  COG

3.2 If using a COG/MPO/TPR Architecture Plan, what COG? N/A for using the National or CDOT Architecture Plan.

Denver Regional Council of Government (DRCOG)



Division of Maintenance & Operations

3.3 List service packages that will be implemented on this project:

1. PT09-01 RTD Transit Signal Priority

- 2. TM 01-02 Local Jurisdiction Infrastructure-Based Traffic Surveillance
- 3. TM 03-01 Local Jurisdiction Traffic Signal Control
- 4. TM 08-02 Local Jurisdiction Traffic Incident Management System
- 5. TM 13-01 Local Jurisdiction Standard Railroad Grade Crossing

To add additional service packages click in the line item 2 box and hit enter.

Section 4 - Procurement	
Federal Requirement: 23 CFR 940.11(c)(5) Procure	ment options
4.1 State the procurement method for the project.	
⊠ Competitively Bid	⊠ Sole Source
4.2 If 4.1 is competitively bid, then what kind is the p	roject delivery method?
⊠ Design, Bid, Build	□ Design Build
Construction Manager/General Contractor	oxtimes Other (Please specify)Purchase Order

Section 5 - Alte	ernative Analysis			
Federal Requirement: 23 CFR 940.11(c)(4) - Analysis of alternative system configurations and technology options to meet requirements				
Instructions: Document alternatives considered. When thinking of alternatives it is important to consider maintenance resources and costs into the selected alternative. An alternative can also include not implementing the project. More rows can be added as needed.				
Alternative Title	Alternative Description	Selected (Yes/No)	Reason	



### COLORADO

**Department of Transportation** 

Division of Maintenance & Operations

Integrate and expand fiber optic cable.	Integrate available leased fiber from CDOT and City-owned fiber on RTD ROW, and expand with connections to existing wireless radio network. Follow existing City Fiber Master Plan and connect North Satellite and Aurora Municipal Center facilities.	Yes	This alternative will begin transition to new fiber optic network identified in City's Fiber Optic Master Plan that will provide greater bandwidth and more stable communication network with traffic signals and CCTV.
Expand existing wireless radio network.	Expand existing wireless network to entire network of traffic signals and CCTV.	No	Wireless radio has limited bandwidth that is unable to satisfy all data collection and video transmission needs, and existing system has been unstable.
Expand fiber network through entire network.	Integrate available leased fiber from CDOT and City-owned fiber on RTD ROW, and expand with connections to entire traffic signal network and remove existing wireless radio network. Follow existing City Fiber Master Plan and connect North Satellite and Aurora Municipal Center facilities.	No	Way too expensive an option, and would take more than 4 years to complete.
Do Nothing	Continue maintaining existing wireless radio network.	No	Existing wireless radio network does not reach entire City network and has very limited bandwidth to satisfy signal system data needs and CCTV video coverage.

#### To add additional rows, right click on a row, select "insert", select "row below"

#### Section 6 - Roles & Responsibilities

## Federal Requirement: 23 CFR 940.11(c)(2) - Identification of participating agencies roles and responsibilities

Instructions: Determine roles and responsibilities of the proposed technology system throughout the entire life cycle. More rows can be added as needed.

Agency	Role/Position	Contact Info	Phase*	Responsibility
City of Aurora - Public Works - Traffic Engineering	Traffic Manager	Carlie Campuzano ccampuza@aurorag ov.org	Planning, Design, Construction, Operations	Manager of central traffic signal and ITS system.
City of Aurora - Public Works – Traffic Operations	Traffic Operations Superintendent	Mike Jaques mjaques@auroragov .org	Planning, Design, Construction, Operations	Field operations of all city traffic signals and ITS system.
City of Aurora – Information Technology	Technical Infrastructure Manager	Josh Smith jomsmith@aurorago v.org	Planning, Design, Construction, Operations	Communications network support.



### COLORADO

# Department of Transportation Division of Maintenance & Operations

CDOT - ITS	Lease available fiber optic cable strands and permit connections to CDOT signals.	Alazar Tesfaye alazar.tesfaye@stat e.co.us	Planning, Design, Construction, Operations	Owner of leased fiber optic cable along I-225 and other segments within the City.
RTD - ITS	Support use of City fiber optic cable within RTD ROW and permit connections to signals with transit priority.	Li-Wei Tung Li-Wei.Tung@RTD- Denver.com	Planning, Design, Construction, Operations	Owner of conduit with City fiber optic cable along rail lines.

\*Phase: Design, Construction, Operations

To add additional rows, right click on a row, select "insert", select "row below"

Section 7 - Requirements & Corresponding Standards				
Federal Requirement: 23 CFR 940.11(c)(3) Requirements definitions and Identification of applicable ITS standards and testing procedures	1 23 CFR 940.11(c)(6)			
Instructions: Determine the functional requirements of the system and how these requirements will be implemented. Implementation could be specifications or included in the general design of the system. More rows can be added as needed.				
Functional RequirementHow is the requirement included in the project? Spec, plan set, etc				
'Roadway Communications Support' supports secure, reliable communications with other connected devices.	Specifications and plan set			

To add additional rows, right click on a row, select "insert", select "row below"

Section 8 - Devices & System
Federal Requirement: 23 CFR 940.11(c)(6) Identification of applicable ITS standards and testing procedures and 23 CFR 940.11(c)(7) Procedures and resources necessary for operations and management of the system
8.1 Is a list or a map with all of the proposed devices attached? □ Yes □ No



Division of Maintenance & Operations

8.2 Determine how each device type installed or modified on the project will be specified, tested, and operation of the devices documented. If the project is a whole system, then there may need to be a system wide test as well to ensure all devices are working together properly. More rows can be added as needed.

Device and system type included in project	Is there a supporting specification(s)? If yes, give specification title.	Is there a supporting test document? If yes, give testing procedure title.	Is this device documented in a Standard Operating Procedure (SOP) Document? If yes, give SOP title.	Is this device documented in a Maintenance Plan document? If Yes, give maintenance plan title.

To add additional rows, right click on a row, select "insert", select "row below"

#### Section 9 - FHWA Involvement

9.1 Has FHWA classified this project as a Project of Division Involvement (PODI) and requires involvement in the review of SEA documents?

🗆 Yes

🗆 No

Section 10 - Schedule	
10.1 Design Start Date:	10.2 AD date:
10.3 Construction Start:	10.4 Construction completion:

10.5 Relationship to other Federal, State, and local projects and phases. Tip: Does this project depend on another project to operate successfully? Is this project one of a series or projects for a phased approach?





CMAQ Emissions Calculator Toolkit	Traffic Signal Synchronization						
	This calculator will estimate the emission reductions resulting from synchronizing the traffic signals along a previously unsynchronized corridor.						
Navigator		INPUT					
Intersection Improvements		Fuckation Voor	2027	1			
Traffic Signal Synchronization		Area Type	Urban	irban			
Traine Signal Synchronization		Corridor Length	r Length 50 miles				
<u>Roundabouts</u>	Number of S	Signalized Intersections	150				
Two Way Loft Turn Lanos	Number V	Posted Speed Limit 45 miles per hour (1 - 75 MPH)			ИРН)		
Two way Left Turn Lanes		Average Cycle Length					
	Annual Average Daily Traffic (	Truck Percentage 2%		voh (dov			
	Annual Average Daily france ( Peak-hour Ve	Peak-bour Volume (both directions) 40,000		ven/day			
	Existi	ng Corridor Travel Time	100	minutes			
	Total peak h	nours per day (AM+PM)	4				
OUTPUT							
		PEAK-HOUR	OFF-PEAK				
	Volume (both directions)	4,000	1200	veh/hr			
	Existing Average Speed Travel Time Savings	1 580	982	min			
	Proposed Average Speed	41	30	mph			
EMISSION REDUCTIONS							
	Pollutant	Peak-hour	Off-Peak	Total			
		Kilograms/day	Kilograms/day	Kilograms/day			
	Carbon Monoxide (CO)	385.890	189.910	575.800			
	Particulate Matter <2.5 μm (PM <sub>2.5</sub> )	3.590	3.127	6.717			
	Nitrogen Oxide (NOx)	20.804	29.226	53.541			
	Volatile Organic Compounds (VOC)	12.806	13.237	26.044			
	Atmospheric Carbon Dioxide (CO2)	24,678.343	46,970.216	71,648.559			
	Carbon Dioxide Equivalent (CO2e)	24,884.647	47,191.758	72,076.405			
	I otal Energy Consumption (MMBTU)	324.142	618.592	942./34			