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

5	The project benefits will substantially address a major subregional problem and benefit people and businesses in multiple communities.
4	The project benefits will significantly address a major subregional problem primarily benefiting people and businesses in one community.
3	The project benefits will either moderately address a major subregional problem or significantly address a moderate -level subregional problem.
2	The project benefits will moderately address a moderate-level subregional problem.
1	The project benefits will address a minor 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 substantial benefits in the 2050 MVRTP priority area and is determined to be in the top fifth 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 moderate benefits in the 2050 MVRTP priority area and is determined to be in the middle fifth 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 slight benefits in the 2050 MVRTP priority area and is determined to be in the bottom fifth 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	Moderate readiness is demonstrated and some known obstacles that are likely to result in project delays have been mitigated.
2	Slight 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

			natio	/11		
1.	Project Title		CO 7 ⁻	Traffic Signal Equipment and D	etection Expan	sion
2.	2. Project Location Provide a map, as appropriate (see		Start	point: 61.677		
			End p	oint: 64.144		
	Page 1)		OR Ge	eographic Area: See Attached		
3.	Project Spons financially respor	Or (entity that will be nsible for the project)	Katrin	a Kloberdanz - Colorado Depai	rtment of Trans	sportation - Region 4
4.	Project Conta	ct Person:				
Na Ph	me: Jonathan V one: 970-415-1	Voodworth 029		Title: Traffic Oper Email: Jonathan.V	ations Enginee Voodworth@st	r ate.co.us
 Required Concurrence and Project CDOT Right-of-Way, involve a CDO system, access RTD property, or re- service? Does this project directly it 			Support: T roadwa quest RT nvolve of	Does this project touch ay, connect to a CDOT D involvement to operate ther local agency partners.	Yes If yes, provide of Support Form f	No a completed Peer Agency for each partner.
_		If this project is lis <u>MVRTP)</u> , provide	sted in th the stagi	ne <u>DRCOG 2050 Metro Vision R</u> ng period: N/A	egional Transpo	ortation Plan (2050
6.	What planning			Planning Document Title: Re	egional ITS Arch	nitecture plan
	document(s)	Local/Regional plan:		Adopting agency (local agency Council, CDOT, RTD, etc.): CDOT		
	identifies this project?			Provide date of adoption by council/board/commission, if applicable: N/A		
Pro doc refe nur	vide link to sument(s) and erenced page nber if possible,	Please describe public review/engagement to date:		None – only stakeholder review as part of the project		
or p doc the	provide cumentation in e supplement	Other pertinent d	etails:	Referencing the CDOT State Department of Transportati service package TM03 – Tra is described in Appendix A c	wide Architect on Region 4, th ffic Signal Cont of the Regional	ure plan for Colorado his project will involve rol. This service package ITS Architecture plan.
7.	Identify the pr	oject's key phases ar s should correspond with	nd the an the "Phase	nticipated schedule of phase make to be Initiated" in the Funding Break	ilestones . down table below)
Phases to be included:			Major phase milestones:		Anticipated completion date (based on October 2023 DRCOG approval date): (MM/YYYY)	
		Precor	nstructio	n 🗌 Construction	🗆 Both	
<u>F</u>	REQUIRED OR ALL PHASES	Intergovernment (Assumed process execution is NOT	al Agreer s is 4-9 m reimburs	ment (IGA) executed with CDO nonths; any work performed be sable)	r/RTD efore	N/A
		Design contract N	lotice to	Proceed (NTP) issued (if using a	a consultant):	N/A
	Design	Design scoping m	eeting he	eld with CDOT (if no consultant	:):	N/A
		FIR (Field Inspect	ion Revie	ew):		N/A
		FOR (Final Office Review):			N/A	

Environmental	Environmental contract Notice to Proceed consultant):	N/A	
	Environmental scoping meeting held with	N/A	
	Initial set of ROW plans submitted to CDO	T:	N1 / A
□ Right-of-Way	Estimated number of parcels to acquire:	Enter Number	N/A
	ROW acquisition completed:	N/A	
	Required clearances:	N/A	
	Project publicly advertised:	N/A	
□Study	Kick-off meeting held after consultant NTP (or internal if no consultant):		N/A
⊠Equipment Purchase (Procurement)	RFP/RFQ/RFB (bids) issued:		2/2025
☑ Other Phase not Listed Describe: Implementation		5/2025	

8. **Problem Statement:** What specific subregional problem/issue will the transportation project address? This proposed project will expand advanced detection and upgrade existing infrastructure along SH 7 at the intersections of US-287 & CO7, CO7 & Crossing Drive, CO7 & Carr Ave, CO7 & 111th St, CO7 & Public Rd, CO7 & Gough Ave, CO7 & 119th St, CO7 & Coal Creek. Various locations will include all or some of the equipment as reflected in the estimate. The project aims to continue improving the operations, safety, and environment of CO 7 by pursuing the following goals:

Implement an advanced signal control system that will improve corridor operations by reducing travel times.

Improve operations to reduce costs in the form of travel time, driver delay, fuel consumption, and costs related to staff to maintenance and signal retiming.

Reducing the level of emissions produced by vehicles will create a greener environment for the community. If vehicles are experiencing shorter trip times and fewer stops, the vehicles will produce lower pollution levels.

CO7 is also a DRCOG Regional Route of Significance and the proposed new detection and signal component upgrades will enable CDOT Region 4 to activate advanced traffic controller features such as Automated Traffic Signal Performance Measures (ATSPM) data collection and analysis, cycle split failure monitoring, turning movement counts, bicycle and pedestrian detection, and others in line with regional objectives. These features can also be used to diagnose timing and phasing issues at the proposed intersections, reducing the need for technicians to visit the intersections to diagnose problems creating a safer environment for CDOT Region 4 technicians.

9.	Identify the project's key elements. A single project r	nay have multiple project elements.
		Safety Improvements
	Roadway	
	☑ Operational Improvements	Active Transportation Improvements
	\Box General Purpose Capacity (2050 MVRTP)	Bicycle Facility
	\Box Managed Lanes (2050 MVRTP)	Pedestrian Facility
	\Box Pavement Reconstruction/Rehab	
	□Bridge Replace/Reconstruct/Rehab	Air Quality Improvements
	Grade Separation	Improvements Impacting Freight
	\Box Roadway	
	Railway	Multimodal Mobility (i.e., accommodating a broad
	Bicycle	range of users)
	□ Pedestrian	Complete Streets Improvements
	Regional Transit ¹	□ Study
	\Box Rapid Transit Capacity (2050 MVRTP)	
	□Mobility Hub(s)	Other, briefly describe: The upgraded equipment
	□Transit Planning Corridors	and detection will enable advanced detection as it
	□Transit Facilities (Expansion/New)	the operations of the corridor for all forms of travel and multi-modal in nature.

¹For 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.

CDOT R4 is looking at upgrading existing hardware that has passed its expiration date at the following intersections: US-287 & CO7, CO7 & Crossing Drive, CO7 & Carr Ave, CO7 & 111th St, CO7 & Public Rd, CO7 & Gough Ave, CO7 & 119th St, CO7 & Coal Creek.

The new equipment (Intelight Controller, Iteris Next System, Cienna Network Switch, Clary UPS, and PTZ) will enable advanced traffic responsive capabilities, particularly at highway and interstate interchanges, and will enable full corridor management at CDOT owned traffic signals along CO 7. The new advanced detection will enable Active Traffic System Performance Measures (ATSPM) to be collected and analyzed. The new equipment will also enable CDOT to program their signals to be responsive to demand in realtime at each intersection and to coordinate the corridors at Region 4 signals. Additionally, the proposed systems will be used to classify and detect bicycles at the intersections in keeping with DRCOG regional objectives.

CDOT is willing to work with DRCOG to adjust the scope of the proposed expansions to match the budget constraints of the RTO&T program.

11. What is the current status of the proposed scope as defined in Question 2 <i>is addressed in more detail in Section E below.</i>	10 above? Note that overall project readiness		
CDOT is prepared to procure the needed systems to upgrade this corridor. Once procured, CDOT Region 4 will handle the installation process for all equipment. All equipment (Intelight Controller, Iteris Next System, Cienn Network Switch, Clary UPS, and PTZ) will be procured and installed as part of this project effort.			
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, alor	ng with the cost, MUST be defined.		
Smaller DRCOG funding request: N/A			
Outline the differences between the scope outlined above and the reduce	ed scope: N/A		

Project Financial Information and Funding Request <u>To update the formulas below, enter your information, highlight the formulas, a</u>	(All funding amou and press F9 or right-click and sel	n <mark>ts in \$1,000s)</mark> ect Update Field.
Total amount of Federal Funding Request (in \$1,000's) (Not to exceed 82.79% of the total project cost)	\$327,850	82.41% of total project cost
Match Funds (in \$1,000's) List each funding source and contribution amount.	Contribution Amount	% Contribution to Overall Project Total
CDOT	\$70,000	17.59%
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%
Total Match (private, local, state, regional, or federal)	\$70,000	17.59%
Project Total	\$ 397,850	

Funding Breakdown (in \$1,000s) (by program year) ¹ (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	\$327,850	\$0	\$0	\$327,850
CDOT or RTD Supplied Funds ²	\$0	\$70,000	\$0	\$0	\$70,000
Local Funds (Funding from sources other than DRCOG, CDOT, or RTD)	\$0	\$0	\$0	\$0	\$ O
Total Funding	\$0	\$397,850	\$ 0	\$ 0	\$397,850
Phase to be Initiated	Select Phase	Equipment Purchase (Procurement)	Select Phase	Select Phase	
Notes:	 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. Only enter funding in this line if CDOT and/or RTD specifically give permission via concurrence letters or other written source 				
Affirmation:	By checking this b Chair/City or Cour be submitted for p state, and federal	other written source. 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.			

. ...

This system will include Ethernet video and connect to existing node buildings in Region 4 via radio communication system already in existence on the highway. The ATSCS devices will primarily be operated and maintained by CDOT R4 maintenance staff through local machines. The information collected from this equipment would present a possibility to share with other local agencies for collaboration for corridor operations as it relates to traffic data.

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.

Primary initiatives	
Develop a Regional Situational Awareness platform.	
Develop processes to share traffic camera view and control between jurisdictions and public safety.	
Develop a Regional Performance Monitoring Data Archive platform.	
Develop strategies and processes to coordinate performance-based management.	\boxtimes
Deploy additional supporting transportation surveillance and control systems and infrastructure.	\boxtimes
Develop Traffic Incident Management standard operating procedures.	
Standardize and implement transit signal priority performance management and system optimization procedures.	
Secondary initiatives	
Develop evacuation and recovery plans and exercises.	
Develop processes to coordinate traveler information messaging across the region.	
Develop active work zone monitoring and management in the field.	
Deploy additional safety-focused technology applications	
Expand the Regional Performance Monitoring Data Archive platform.	
Expand the Regional Situational Awareness platform.	
Expand transit signal priority deployment.	
Tertiary initiatives	
Develop a Regional Multimodal Traveler Information platform.	
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 update directly works with the metro vision Travel Time Variation (TTV) measure and the Person Delay Measure. We are wanting to better address the travel time along this corridor and this update will be able to provide that with the new technology.

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.

30%

WEIGHT

B. Regional Impact of Proposed Project

Provide **qualitative and quantitative** 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.

This project is important because the selected corridor is within the DRCOG Regional Roadway System, and CDOT's Regional Routes of Significance, but also is in an area that is developing quickly, and this route is becoming increasingly congested. The existing equipment was not Region 4 standard and was, until recently, managed by CDOT Region 1. By updating this equipment to be consistent with Region 4 equipment, the corridor will see increased performance due to consistent application of technology that will also benefit the communities and population that utilize these corridors.

The new equipment (Intelight Controller, Iteris Next System, Cienna Network Switch, Clary UPS, and PTZ) will enable Active Traffic System Performance Measures (ATSPM) to be collected and analyzed. The new equipment will enable CDOT to coordinate CO 7 and react more quickly to needed changes. Additionally, the proposed systems will be used to classify and detect bicycles at the intersections in keeping with DRCOG regional objectives.

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>.

Implementing a better signal control system that will better monitor traffic conditions and relay the needed information to the CDOT signal team. A system that is operating correctly will reduce driver frustration, which in turn will reduce the number of signal timing complaints. Having a system that provides accurate counts will be able to provide engineers with information needed for future growth and planning purposes.

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.

City of Longmont, City of Lafayette, County of Boulder, City of Erie – See above

WEIGHT

25%

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

<u>To update the fo</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	5088	-	-					
Use 2015-2019	b. Total households	2033	-	-					
American	c. Individuals with low-income	1158	23%	20%					
Community	d. Individuals of color	2212	43%	33%					
Survey Data	e. Adults age 60 and over	904	18%	13%					
	f. Youth under 18	1486	29%	16%					
(Use a 0.5 mile	g. Individuals with limited English proficiency	518	10%	3%					
[Equity data tab]	h. Individuals with a disability	423	8%	9%					
	i. Households that are housing cost-burdened	755	37%	32%					
	j. Households without a motor vehicle	232	11%	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:*

Improve transportation system performance and reliability.

Improve transportation safety and security.

Improve bicycle and pedestrian accessibility.

- 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.)

 N/A
 - 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.)
 - It is assumed that TTI and PTI will improve due to improved monitoring on the corridor. Although it is not possible to quantify the exact amount of improvement that will result, it is reasonable to expect at least 3 percent decrease (improvement) in TTI and PTI based on existing average speeds on the corridors in relation to the average speed limit and the anticipated improvement due to travel time monitoring on the corridor. For example, the average speed limit on the corridors is 35 mph and the average speed during peak periods (AM and PM) is 28 mph or TTI of 1.2. The anticipated increase in average speed to 31.5 mph will result in TTI of 1.11, which is about 8 percent improvement.
 - 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. Items marked with an asterisk (*) below are available in the DRCOG Data Tool.					
Items marked with an asterisk (*) below are available in the DRCOG Data Tool.					
 Is there a DRCOG designated urban center within ½ mile of the project limits?* 					
\Box Yes $oxtimes$ No If yes, please provide the name: Click or tap here to enter text.					
 Does the project connect two or more urban centers?* 					
Yes X 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:6					
Rail station: \Box Yes $oxtimes$ No $$ If yes, how many: Click or tap here to enter text.					
 Is the project in a locally-defined priority growth and development area and/or a 					
supports compact, mixed-use development patterns and a variety of housing opt					
\Box Yes \boxtimes No					
If yes, provide a link to the relevant planning document:					
If yes, provide how the area is defined in the relevant planning document:					
Provide households and employment data* 2020 2050					
[Population and Employment tab]					
Jobs within ½ mile 584 1568					
Households within ½ mile 547 1487					

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*:

The new equipment (Intelight Controller, Iteris Next System, Cienna Network Switch, Clary UPS, and PTZ) will enable ATSPM capability. This system is centered around both a video detection camera for stop bar detection and a radar unit for advanced detection to detect approaching vehicles at over 500 feet from the sensor. This detection will expand functionality for bike and ped usage as it relates to corridor operations and allow greater compatibility with these modes of travel.

Utilizing the advanced algorithms in the radar unit, the system tracks all approaching vehicles, providing extremely accurate range and speed data of each individual vehicle. As the vehicles pass through up to five user- configured areas-of-interest, or trip lines, the system provides enhanced precision throughout the radar unit's detection area. Vehicles then enter the detection area of the video camera as they reach the stop bar, thus the system provides total coverage for all vehicles approaching the intersection.

The system provides the user with the ability to configure five trip lines within the radar detection zone at a specific distance from the stop bar, a minimum and maximum speed threshold, and a defined trip line width. As a vehicle enters each of the trip line areas, the system determines if that vehicle is within the configured speed threshold. If it is, then the vehicle is most likely within the dilemma zone criteria, and an output is sent to the controller with the required extension timing for that vehicle to reach the next trip line area. This continues through each trip line until the vehicle has slowed down and hasn't reached the next trip line in the required time before the extension has run out, or the vehicle has gone fast enough to have made it through the yellow light before it turned red.

Combined with the video detection area at the stop bar, the use of the trip lines within the system allows the user to create total dilemma zone coverage to ensure that high speed vehicles are detected, and the proper outputs are sent to the controller, so that vehicles can get through the yellow light safely, or are ensured to stop in enough time.

 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.

Greater corridor efficiency and lower travel times. Enhanced dilemma zone detection.

Enables reporting of some ATSPMs and traffic responsive capabilities.

Regional transportation network optimization and ITS device deployment.

8. Congestion Mitigation Process Mobility Score

Completing the below table and referencing <u>relevant</u> quantitative data in your response is <u>required</u>. **In the DRCOG Data Tool, use a 0.02 mile buffer distance.**

Provide congestion mobility parameters* [Congestion Mobility Score tab]	2021
Sum: length-weighted score	10.00
Sum: miles	5
Congestion Mobility Score	2.00
(The Congestion Mobility Score will automatically calculate based on value	s entered. If this has

13

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 DRCOG Data Tool. 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? • ⊠Walking ⊠ Bicycling ⊠ Transit ⊠ SOV ⊠ Freight ⊠ Other: All corridor operations 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.): Corridor Operations Improvement and ability to detect other modes of travel (bikes/peds) and provide counts/direction of travel for each mode for existing and future planning efforts. 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? • \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 human-• made hazards? \boxtimes Yes \square 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 Regional Managed Lanes System.

By installing the new equipment (Intelight Controller, Iteris Next System, Cienna Network Switch, Clary UPS, and PTZ) we will be Implementing a better signal control system that will better monitor traffic conditions. With the new equipment, there will be better detection and operations as it relates to various modes of transportation (ie bike/ped). This will allow for greater choice of travel mode if the operations are improved for all modes of travel.

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).

Advanced Dilemma-Zone Detection uses comprehensive detection equipment to measure vehicle speeds and flows. Based on the number of vehicles expected to be in the dilemma zone in the immediate future and the number of minor-street vehicles waiting to travel through the intersection, the Advanced Dilemma-Zone

Detection system attempts to identify when:

(1) the fewest passenger cars will be in the dilemma zone, and

(2) no heavy vehicles will be in the dilemma zone.

The Advanced Dilemma-Zone Detection system has several benefits relative to traditional multiple detector systems, which have upstream detection for vehicles in the dilemma zone but do not take the speed or size of individual vehicles into account. These benefits include:

- Reducing the frequency of red-light violations;
- Reducing the frequency of crashes associated with the traffic signal phase change (for example, rear-end and angle crashes);
- Reducing delay and stop frequency on the major road; and
- Maintaining or reducing overall intersection delay.

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 aims to reduce delays and improve travel time reliability by incorporating new equipment to replace antiquated equipment along the corridor we will be replacing the following Intelight Controllers, Iteris Next System, Cienna Network Switch, Clary UPS, and PTZ. Here's how this technology can contribute to these goals:

- 1. Video detection systems can provide real-time data on traffic conditions by analyzing live video feeds from strategically placed cameras. This allows transportation authorities to monitor traffic flow, identify congestion hotspots, and quickly respond to incidents or changing conditions. By having immediate and accurate information, appropriate measures can be taken to mitigate delays and manage traffic effectively.
- 2. Video detection technology can help identify incidents such as accidents, breakdowns, or road debris quickly. Automated algorithms can analyze video footage in real-time to detect abnormalities or disruptions in traffic patterns. Authorities can then be promptly notified, enabling them to respond swiftly and efficiently to clear the incident, redirect traffic, and restore normal flow, minimizing delays.
- 3. Video detection technology can accurately measure queue lengths at intersections or congestion points. This information helps transportation authorities assess the severity of congestion and implement appropriate measures, such as adjusting signal timings, deploying additional resources, or providing alternate routes to alleviate delays and improve travel time reliability.
- 4. By utilizing video detection data, transportation agencies can conduct comprehensive performance measurement and analysis. They can track and evaluate key metrics such as travel times, average speeds, and congestion patterns. This data-driven approach enables authorities to identify recurring issues, assess the effectiveness of implemented measures, and make data-informed decisions to further optimize the transportation system.
- 5. Video detection technology allows for proactive traffic management strategies. By leveraging the real-time data provided by video feeds, transportation authorities can anticipate and mitigate potential congestion points. They can take preventive measures such as adjusting signal timings, deploying additional personnel or resources, or providing real-time traffic information to drivers, thus reducing delays and improving travel time reliability.

Air Quality Air Quality Examples of Project Elements: active transportation, transit, or TDM elements; vehicle operational improvements; electric vehicle supportive infrastructure; etc.									
• Does this pr	oject reduce congest	ion?							
\boxtimes Yes \Box N	lo								
• Does this pr	oject reduce vehicle	miles traveled (VMT)?						
🗆 Yes 🖾 N	10								
• Does this pr	oject reduce single-c	ccupant vehicle	(SOV) travel?						
🗆 Yes 🖾 N	lo								
Emissic	Emissions Reduced CO NOx VOCs PM 10 CO-e								
(1	kg/day)	2.048	1.485	1.436	Enter Data	2263.4			
Use the <u>FHWA</u> year of opening submittal packe	Use the <u>FHWA CMAQ Calculators</u> 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.								

Note: if not using the FHWA Calculators, please describe your methodology and sources in your narrative below.

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.

3% improvement in TTI and 3% improvement in PTI.

It is assumed that TTI and PTI will improve due to improved monitoring on the corridor. Although it is not possible to quantify the exact amount of improvement that will result, it is reasonable to expect at least 5 percent decrease (improvement) in TTI and PTI based on existing average speeds on the corridors in relation to the average speed limit and the anticipated improvement due to travel time monitoring on the corridor. For example, the average speed limit on the corridors is 35 mph and the average speed during peak periods (AM and PM) is 28 mph or TTI of 1.2. The anticipated increase in average speed to 31.5 mph will result in TTI of 1.11, which is about 8 percent improvement.

	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. <u>Note</u> : 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.
	Items marke	ed with an asterisk (*) below are available in the DRCOG Data Tool.
•	Does this pro <u>MVRTP</u>)?*	oject implement a portion of the regional bus rapid transit (BRT) network (as defined in the 2050
	🗆 Yes 🖾 N	Io If yes, which specific corridor will this project focus on: Click or tap here to enter text.
•	Does this pro	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 properties \Box Yes \boxtimes N	oject implement a mobility hub (as defined in the <u>2050 MVRTP</u>)? Io
•	Does this pr	oject improve connections between transit and other modes?
	🗆 Yes 🖾 N	lo If yes, please describe in your response.
•	Does this pro	oject improve transit travel time reliability?
	🛛 Yes 🗆 N	Io If yes, please describe in your response. Corridor reliability and lane by lane measuring
•	Does this properties \Box Yes \boxtimes N	oject add and/or improve transit access to or within a DRCOG-defined urban center?* Io
Qu in int or	uestion: Desc the <u>2050 MVI</u> formation, inc o the <u>Regional</u>	ribe how this project improves connections to or expands the subregion's transit system, as outlined <u>RTP</u> . Also describe how this project improves transit travel time reliability. Please include quantitative sluding any items referenced above, in your response. <i>Note that rapid transit improvements must be <u>Rapid Transit System</u>.</i>

N/A

Safe	 Increase the safety for all users of the transport (drawn from 2050 MVRTP priorities, Taking Action on Regional Vision performance measures) Examples of Project Elements: bike/pedestrian crossing improvement 	ation system. on Zero, <u>CDOT Strategic</u> ents, vehicle crash count	Transportation Safety Plan, & federal safety ermeasures, traffic calming, etc.				
Items m	Items marked with an asterisk (*) below are available in the DRCOG Data Tool.						
 Does in a l Y 	 Does this project address a location on the <u>DRCOG High-Injury Network or Critical Corridors</u> or corridors defined in a local Vision Zero or equivalent safety plan?* Yes X No 						
• Does 🖂 Y	this project implement a safety countermeasure listed i es $\ \square$ No	n the <u>countermea</u>	isure glossary?				
• Will seco	this project result in a reduction of average roadway cleandary incidents?	rance time and in	cident clearance time and/or				
• Will	this project result in a reduction of first responder struck es $\ oxtimes$ No	-bys?					
Prov (usir [Cra NOT	vide the current number of crashes involving motor vehicles, bicyclist by the 2016-2020 period – in the DRCOG Data Tool, use a 0.02 mile buffer dis sh Severity 2016-2020 tab] E: if constructing a new facility, report crashes along closest existing alternativ	s, and pedestrians* tance) re route	Sponsor must use industry accepted crash modification factors (CMF) or crash reduction factor (CBE) practices (e.g., CME				
	Fatal crashes	0	Clearinghouse, NCHRP Report 617, or				
	Serious Injury crashes	2	DiExSys methodology).				
	Other: Non-Serious Injury and Property Damage Only crashes	85					
Esti (per	mated reduction in crashes <u>applicable to the project scope</u> • the five-year period used above)		Provide the methodology and sources below:				
	Fatal crashes reduced	0					
	Serious Injury crashes reduced	1	CMF Clearinghouse - CMF ID:				
	Other: Non-Serious Injury and Property Damage Only crashes	9.6	4855 (CRF% = 11.3)				

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>.*

Adding the ATSCS there is built in functionality embedded within the processor, that will allow us to detect bicycles simultaneously with vehicles. By providing the ability to differentiate bicycles, we can program the signal timing for accommodation of the slower moving bicycles to get through the intersection before the phase changes, ensuring a safer passage.

The advanced dilemma zone detection will allow for reduction in crashes by adjusting the signal timing to accommodate vehicles going through the intersection.

It will also give us detailed metrics on pedestrian movements throughout the intersection.

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.

N/A

	Maintain efficient movement of goods within and beyond the subregion.
Freight	(drawn from 2050 MVRTP priorities; Regional Multimodal Freight Plan; Colorado Freight Plan, federal freight reliability performance
	Examples of Project Elements: bridge improvements, improved turning radii, increased roadway capacity, etc.
Items 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> ?*
□ Yes ⊠	No If yes, please provide the name: Click or tap here to enter text.
• If this proje	ect is located in a Freight Focus Area does it address the relevant Needs and Issues identified in the Plan
(see text lo	cated within each Focus Area)?
🗆 Yes 🖂	No If yes, please describe in your response below.
• Is the proje	ct located on the <u>Tier 1 or Tier 2 Regional Highway Freight Vision Network</u> ?*
🗆 Yes 🖂	No
Check any i	tems from the Inventory of Current Needs which this project will address:
🗆 Truck C	rash 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.
Question: Des	cribe how this project will improve the efficient movement of goods. In your response, identify those
improvements	identified in the <u>Regional Multimodal Freight Plan</u> , include quantitative information, and include any
items reference	ed above. Note that any improvements on roadways must be primarily on the DRCOG <u>Regional</u>
<u>Roadway Syste</u>	<u>'m</u> .
Freight improv	ements will be cohesive to overall new system

т	Active ransportation	Expand and enhance active transportation travel (drawn from <u>2050 MVRTP priorities; Denver Regional Active Transpor</u> Examples of Project Elements: shared use paths, sidewalks, regional t	options. <u>tation Plan</u> ; & <u>Metro Vision o</u> rails, grade separations, etc.	bjectives 10 & 13)					
lter	ns marked with an	asterisk (*) below are available in the DRCOG Data	Tool						
•	Does this project close a gap or extend a facility on a <u>Regional Active Transportation Corridor</u> or locally-defined priority corridor?*								
•	Does this project improve pedestrian accessibility and connectivity in a <u>pedestrian focus area</u> ?*								
•	\square Yes \bowtie No								
-	\square Yes \boxtimes No								
•	Does this project ir boulevard)?	nclude a high-comfort bikeway (like a sidepath, shar s. please describe in your response	ed-use path, separate	ed bike lane, bicycle					
Die		s, please describe in your response.							
NO	YCIE USE TE: if constructing a new fo	acility, report bike usage along closest existing alternative route							
1	o update the formulas	below, enter your information, highlight the formulas (or Ctrl	-A), and press F9. OR close	e and reopen the file.					
1.	Current Average Sing	e Weekday Bicyclists:	Veer	N/A					
	Bicycle Use Calculatio	ns	of Opening	2050 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: {#2 X 50%	bicycle trips (in #2 above) that will be diverting from a ute. A 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 (Example: {#4 X 30%	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 {#6 (Values other than 2	x 2 miles}. (= 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.	If values would be dis Click or tap here	tinctly greater for weekends, describe the magnitude of differe to enter text.	nce:						
10.	If different values oth	er than the suggested are used, please explain here:							
_									
NO [®]	destrian Use TE: if constructing a new fo	acility, report pedestrian usage along closest existing alternative route							
1	o update the formulas	below, enter your information, highlight the formulas (or Ctrl-	-A), and press F9. OR close	e and reopen the file.					
1.	devices such as scoot	ers and wheelchairs):		N/A					
	Pedestrian Use Calcul	ations	Year of Opening	2050 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 a different walking ro (Example: {#2 X 50%	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: {#4 X 30%	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 {#6 (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					

8.	= Number of pounds GHG emissions reduced (#7 x 0.95 lbs.)	0.00	0.00					
9.	If values would be distinctly greater for weekends, describe the magnitude of different	ence:						
	N/A							
10.	If different values other than the suggested are used, please explain here:							
	N/A							
Que and, <u>Den</u>	Question: Describe how this project helps expand the active transportation network, closes gaps, improves comfort, and/or improves connections to key destinations, particularly improvements in line with the recommendations in the Denver Regional Active Transportation Plan. Please include quantitative information, including any items referenced							
abo	ve, in your response.							
N/A								

D. Financial Leveraging			WEIGHT	5%	
What percent of outside funding sources (non- federal funds) does this project have?	Enter score:	36%+ outside funding sources 31 - 35.9%			
(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]	17.59%	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.

15%

WEIGHT

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?

 \Box Yes \Box No \boxtimes 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:

N/A

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

- Utilities: N/A
- Railroad: N/A
- Right-of-Way: N/A
- Environmental/Historic: N/A
- Other: N/A
- b. Have additional project risks been identified?

 \boxtimes Yes \square No \square N/A

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

Lead times on equipment, construction installation

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

 \Box Yes \boxtimes No

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

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

🗆 Yes 🖾 No

If yes, please provide an explanation of the need for a Finding in the Public Interest. Do not reference specific products trade names.

Will be utilizing existing FiPis and state award agreements

e. H	las all required ROW been identified? 🛛 🗆 Yes 🗔 No 🖂 N/A
ŀ	las all required ROW already been acquired and cleared by CDOT? 🛛 Yes 🗔 No 🖂 N/A
Ŀ	s existing equipment within ROW? 🛛 🖂 Yes 🗔 No 🗔 N/A
١	Vill subsurface utility engineering be a factor in this project? 🛛 🗆 Yes 🖾 No
ŀ	Has subsurface utility engineering been accounted for in the project scoping, phasing and estimate? $\ \square$ Yes $\ \square$ No $\ \boxtimes$ N/A
f. E y y	Based on the current status provided in Project Information, question 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
۵	Does your agency have the appropriate staff available to work on this project? $igtimes$ Yes $igcup$ No
H	f yes, are they knowledgeable with the federal-aid process? $igtriangle$ Yes $igcarrow$ No $igcarrow$ N/A
g. H	lave other stakeholders in your project been identified and involved in project development?
lf N	□ Yes □ No ⊠ N/A yes, who are the stakeholders? /A
Pl	ease provide any additional details on any of the items in Subsection 1, if applicable.
N,	/A
N, Subse	/A ection 2. Local Match Availability
N, Subse a. l	A A A A A A A A A A A A A A A A A A A A
N, Subse	/A ection 2. Local Match Availability s 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? ☑ Yes □ No
N, Subse a. I c F	/A ection 2. Local Match Availability s 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? ☑ Yes □ No Please describe: nstallation costs will be managed in house to CDOT using existing funds
N, Subse a. I c F I b. I	/A ection 2. Local Match Availability s 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? ☑ Yes □ No Please describe: nstallation costs will be managed in house to CDOT using existing funds s all funding for this project currently identified in the sponsor agency's Capital Improvement Program (CIP)?
N, Subse a. I c F I b. I	/A ection 2. Local Match Availability s 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? ☑ Yes □ No Please describe: Installation costs will be managed in house to CDOT using existing funds s all funding for this project currently identified in the sponsor agency's Capital Improvement Program (CIP)? □ Yes ⊠ No
N, Subse a. I c F I b. I	(A ection 2. Local Match Availability s 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? No Please describe: Installation costs will be managed in house to CDOT using existing funds s all funding for this project currently identified in the sponsor agency's Capital Improvement Program (CIP)? Please describe: NO
N, Subse a. I c F I b. I F F Subse	(A ection 2. Local Match Availability s 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? No Please describe: Installation costs will be managed in house to CDOT using existing funds s all funding for this project currently identified in the sponsor agency's Capital Improvement Program (CIP)? Please describe: No Please describ
N, Subse a. I C F b. I b. I Subse System project transp	/A section 2. Local Match Availability s 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? □ Yes □ No Please describe: nstallation costs will be managed in house to CDOT using existing funds s all funding for this project currently identified in the sponsor agency's Capital Improvement Program (CIP)? □ Yes □ No Please describe: N/A extion 3. Systems Engineering Analysis Documentation ms Engineering Analysis (SEA) is a federally required process for deployment of transportation technology cts using funds from the Highway Trust Fund. CDOT established and administers a formal <u>SEA process</u> for portation technology projects in the state, including local agency projects.

Submit completed applications to <u>jluor@drcog.org</u> 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.



Engineer's Detailed Estimate Method

Project Name:	CO 7 Traffic Signal Equipment and Detection	n Expansion						_
Road/Facility Name:	CDOT Region 4							_
Route Number:	CO 7							-
Quantity Item		Unit Cost	Percentage Range	Percentage Selected	9		Costs	
Bid Items (estimate)								-
7 Contro 8 Cienna 8 PTZ C 7 UPS 8 Radio 7 Cable 28 Installa 7 Iteris N	ller Switch CTV Camera Cat-5 (wiring per intersection) tion of Iteris Systems (per camera) and equipment lext Vector Systems (4 cameras per system)	\$ 3,200.00 \$ 2,400.00 \$ 2,700.00 \$ 4,300.00 \$ 1,100.00 \$ 250.00 \$ 2,500.00 \$ 32,000.00				\$ \$ \$ \$ \$ \$ \$ \$ \$ \$	22,400 19,200 21,600 30,100 8,800 1,750 70,000 224,000	
					Subtotal	\$	397,850	(A)
Striping			0-5% of (A)	0	% Subtotal	\$ \$	۔ 397,850	(B)
Construction Signing and Traffic (Default – 20%)	Control		5-25% of (B)	0	% Subtotal	\$ \$	- 397,850	(C)
Mobilization (Round up to next \$1,000) (Defa	ult – 7%)		3-10% of (C)	0	%	\$	-	
TOTAL COST OF CONSTRU	ICTION BID ITEMS (CBI)					\$	397,850	-
Force Account Items								
Utilities Contingencies			1-3% of CBI 5-15% of CBI	0 0	%	\$ \$	-	
TOTAL OF CONSTRUCTION	I ITEMS (CI)					\$	397,850	-
CDOT Construction Engineering	(CE) plus CE Indirects		26% of CI	0	%	\$	-	-
Preliminary Engineering (PE) Entity Preliminary Engineering (ir Consultant Preliminary Engineer Right-of-Way Acquisition CDOT Preliminary Engineering (CDOT Preliminary Engineering In	ncluding systems engineering and design) [if applicable] ing (including systems engineering and design) [if applicabl PE) [if applicable] ndirects (25% of CDOT PE) [if applicable]	9]				\$ \$ \$ \$ \$	-	
				то	TAL COST	\$	397,850	

DRCOG Regional ITS Architecture Outputs

CDOT Region 4 Advanced Detection Expansion Project

Data Flow Diagram

TM03-02 CDOT Traffic Signal Control



List of Project Stakeholders

• CDOT Region 4

Stakeholder Roles and Responsibilities

Deploy and maintain interconnected traffic signal system elements along state highways.

Operate and maintain CTMC (including CTMS and support infrastructure).

Coordinate center-to-center communications and protocol development.

Coordinate traffic incident management roadway response from CTMC.

Monitor arterial operations to both track congestion and employ traffic signal system management.

Deploy, operate, and maintain backbone communications system connecting with other traffic management centers.

Deploy, operate, and maintain traffic and travel time monitoring system elements (including communications infrastructure) on freeways and major state highways.

Deploy, operate, and maintain a regional transportation operations display. This display will be a critical component for the support of Regional Traffic Management.

Deploy, operate, and maintain travel time monitoring and display system.

SH7 Intersection Technology Upgrade

Colorado Department of Transportation

Jonathan Woodworth	Project Start:	Wed, 1/29/2025							1			
	Display Week:	12		Apr 14, 2025	Apr 21, 2025	Apr 28, 2025	May 5, 2025	May 12, 2025	May 19, 2025	May 26, 2025	Jun 2, 2025	
				14 15 16 17 18 19 2	0 21 22 23 24 25 26 27	28 29 30 1 2 3 4	5 6 7 8 9 10 3	11 12 13 14 15 16 17 1	8 19 20 21 22 23 24 2	5 26 27 28 29 30 31 1	2 3 4 5 6 7 8	
TASK	PROGRESS	START	END	M T W T F S S	M T W T F S S	M T W T F S S	M T W T F S	S M T W T F S S	M T W T F S S	M T W T F S S	M T W T F S S	
Project Awarded												
Project Award	0%	1/29/25	2/1/25									
Equipment Approval	0%	2/1/25	2/3/25									
Order Equipment	0%	2/3/25	2/7/25									
Equipment Delivery	0%	2/7/25	4/28/25									
Project Notice to Proceed	0%	2/2/25	2/4/25									
SH 7 Intersections												
Removal of old equipment	0%	5/5/25	5/10/25									
Install new wiring	0%	5/12/25	5/16/25									
Set Video Detection	0%	5/19/25	5/24/25									
Activate New Video Detection	0%	5/26/25	5/31/25									
Update Transuite Servers	0%	6/2/25	6/6/25									

SH7 System D	etection	Project Cost	\$ 470,800.00																						
			1		Speed	10								-											
					Increase																				
rolect nata					Deraut	3.3	CO	Tenicie Milej				C02					VOC					NOX			
Corridor (s)	Segment Limits	Length Direction	Daily Impact Period	Volume	Speed (befi S	Speed (after)	CO Output Rate (B CO	D Emissions (B	CO Output Rate (C	O Emissions (After) Benefit	CO2 Output Rate (I	CO2 Emissions (B C	02 Output Rate / C	02 Emissions (Af	fter) Benefit	YOC Output Rate / YOC	Emissions (VO	C Output Rate (VO	C Emissions (A	fter) Benefit	NOX Output Rate (E NO)	Emissions (B NO	Contout Bate (NC	OX Emissions (Af
Baseline	The second se	0.01 miles VB		3914	4 28	31.5	6.05	2,369	5.70	2,233	136.3	520.06	203,571	483.84	189,393	14,177.9	0.234	92	0.212	83	8.4	0.610	239	0.576	225
and the first sector	Crocking	0.01 miles VB		3743	28	31.5	6.05	2,269	5.70	2,139	130.6	520.06	194,975	483.84	181,395	13,579.2	0.234	88	0.212	80	8.1	0.610	229	0.576	216
	Carl	###### ¥B		4494	6 28	31.5	6.05	70,728	5.70	66,658	4,070.2	520.06	6,077,367	483.84	5,654,103	######	0.234	2,732	0.212	2,481	251.0	0.610	7,128	0.576	6,730
	511 1	0.01 miles VB		436	11 28	31.5	6.05	2,640	5.70	2,488	151.9	520.06	226,802	483.84	211,006	15,795.9	0.234	102	0.212	93	9.4	0.610	266	0.576	251
	Public	0.01 miles VB		3602	2 28	31.5	6.05	2,180	- 5.70	2,055	125.5	520.06	187,335	483.84	174,288	13,047.1	0.234	84	0.212	76	7.7	0.610	220	0.576	207
	Gough	0.72 miles VB		3384	3 28	31.5	6.05	148,093	5.70	139,571	8,522.3	520.06	12,725,013	483.84	11,838,766	886,247.2	0.234	5,721	0.212	5,196	525.6	0.610	14,925	0.576	14,092
	and the second se	0.53 miles WB		2506	8 28	31.5	6.05	80,413	5.70	75,785	4,627.5	520.06	6,303,500	483.84	6,428,281	481,213.6	0.234	3,107	0.212	2,821	285.4	0.610	8,104	0.576	7,652
	GOOLCIER	1.40 miles WB		4016	40	51.5	4.00	211,524	4.02	214,000	2,15.5	425.01	25,330,881	410.02	24,314,020	416,053.0	0.165	3,045	0.160	3,505	333.3	0.543	32,000	0.553	32,311
		Add Roy	ws as Necessary Above	This Line																					
Annual Impact Period (daws)	25	50																							
Project Life																									
Cycle (years)		5					Project Sponsor Data Inpu	at Parameters a	nd Default Values																
conversion factor)	0.0022046	52					Represents project sponsor	r required data inpu	it parameters.																
conversion actor)	0.000	5					Represents default values th substainiated by project sp	hat should not be cl onsor.	hanged unless																
	Emis	ssions Benefits Summary Tabl	le				Do not change the nam	ne of the Emiss	ion Curves tab as				1												
The only modifica included in the fo	ation project sponsor will mak ormula in C22 through C25 on	ie to this Table is to ensure t this Table.	hat all rows of each pollu	tant Benefit from	the spreadshee	t are	it is used as a "look u	p" table in the	spreadsheet.		_														
			í)ollars per	-							_													
missions	Total Daily Benefits (grams)	Total Benefit (Lb	siye: Total Benefit (Ton t	onlycar of																					
0	20,480	0 11,	,288 5.6	\$ 83,420	1																				
002	2,263,39	1 1,247	479 623.7	\$ 755																					
/0C	1,430	6	791 0.4	\$ 1,190,027																					
vox	1,48	5	818 0.4	\$ 1,150,485																					
All Pollutant Totals	2.286.79	1 1.260	.376 630.2	\$ 747																					
	2			146																					
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/0C			2.0	\$ 238,005.40																					
VOX			2.0	\$ 230,097.00																					



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	Version	6.0																		
	Date	######		Project Name	CO 7 Traffic Signal Equipment an	Region	CDOT Region 4													
			P	niect Manager	Jonathan Woodworth	Date	6/1/2023	1												
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			P	TOJECT IDIPUN				-		•										
	Concernance of									1					1					
-	NOTE: A	^r a Risk is real	lized and results in a	change to the pr	oject, the change should then be i	tracked on the AID-Change Log								-						
-																				
									CDOT- Pro	piect Risk	Assessmen	t Tool								
					2020/07/07/07 12/07 20:02					Sec. of the	100 M						No. 10			
					Risk Identification				Qua	litative An	alysis			Risk Respon	se	Monitoring and Control				
			Date the Bick	Rick was	Rick Event (What is the			-	1000	and the second second	Man (Bick	Responsible	Bick Owner			Next Planned Bate/Frent for Reviewing				
III -	Comment 7	Priorit 7	was Identifi T	Identified V	threatlonnertunitu?]	Detailed Rick Descriptiv	Rick Trigger	Impar V	Likelihor T	Impac T	Lough -		(Individua V	Stratom 7	Planned Action	Rick	Date and Comments			
100	statu	Lugar .	Box Got Hill	INCOMOS N	And Contractor Contractor	Musica and a large state	Litzk. Higgsst		Selescillings	mpane	Jack Selfs	sugarmeoust /	THISADJISAS	Stat State 19		Luco	LESINE SILLE SCOULDERING			
					Ma Fantana a seat anti-leteran	Neither are needed due to using									Identified early in project, not					
4	Destruct		EHI2022	0	(CLE)	diasis abase skie size s week		Schedule	E FARS	Li ale	Mar also see	Testis		Misimuta	anticipated to be an issue due to					
-	Heared		or irzuza	acoping	(OUE) impacts	algging/trenching is required.		Schedule	LOW	riign	mealum	trame		miligate	CPOT asknowledges this potential	<u>.</u>				
		1 1													risk and understands that anu					
		1 1													nossible BOW issues that may occur					
		1 1													will be CDOT's responsibility to					
		1 1				BOW should not be needed due									address using only CDOT's					
2	Betired		6/1/2023	Scoping	No BOW Impacts	to using existing infrastructure		Schedule	Low	High	Medium	Traffic		Mitigate	resources not any of the awarded					
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