

APPLICATION OVERVIEW

What: The Call for Projects for the FY 2024-2027 Regional Transportation Operations and Technology Set-Aside

Funding Available: 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)

1. REQUIRED: a **single PDF document** 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 [cost estimate form](#)), 4) CDOT/RTD concurrence response (if applicable), 5) completed CDOT SEA-Local Agency Template, 6) project support form(s), and 7) any required documentation based on the application text (i.e., FHWA emissions calculators). Please DO NOT 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:

- **Eligibility:** Projects must align with the eligibility guidelines in the [Policies for FY2024-2027 TIP Set-Aside Programs](#). Proposed work on roadways must primarily be located on the [DRCOG Regional Roadway System](#) to be eligible for funding (the DRCOG RRS can also be viewed within the [DRCOG Data Tool](#)).
- **Call-for-Projects Pre-Application Webinar:** 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.
- **Application Data:** To assist sponsors in filling out the application, DRCOG has developed the [DRCOG Data Tool](#). A link to the instructions is also included. Additionally, sponsors may download datasets to run their own analyses from this same site.
- **Project Affirmation:** 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.
- **Evaluation Process:** 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 gmackinnon@drcog.org or jluor@drcog.org.

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 guide 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 [DRCOG Data Tool](#) as well as other relevant data resources.

Scoring Methodology: Each section will be scored on a scale of 0 to 5, relative 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:

Section A. Deployment of RTO&T Initiatives in RTO&T Strategic Plan 30%

Projects will be evaluated on the degree to which they address a significant subregional problem or benefit people throughout the subregion. Relevant quantitative data should be included within narrative responses.

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.

Section B. Regional Impact of Proposed Project 25%

Projects will be evaluated on the degree to which they address a significant subregional problem or benefit people throughout the subregion. Relevant quantitative data should be included within narrative responses.

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.

Section C. Metro Vision Regional Transportation Plan Priorities 25%

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.

Section D. Financial Leveraging5%

Scores are assigned based on the percent of other non-federal funding sources.

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)

Section E. Project Readiness15%

Be sure to answer ALL questions. While “Yes” answers will generally reflect greater readiness, opportunities are given to provide additional details to assist reviewers in fully evaluating the readiness of your project.

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

1. Project Title		Louisville Signal Technology Update	
2. Project Location <i>Provide a map, as appropriate (see Page 1)</i>		Start point: Click or tap here to enter text. End point: Click or tap here to enter text. OR Geographic Area: See attached map.	
3. Project Sponsor (entity that will be financially responsible for the project)		City of Louisville	
4. Project Contact Person:			
Name: Geoff Nettleton, PE		Title: Assistant City Engineer	
Phone: (303) 335-4603		Email: gnettleton@louisvilleco.gov	
5. Required Concurrence and Project Support: Does this project touch CDOT Right-of-Way, involve a CDOT roadway, connect to a CDOT system, access RTD property, or request RTD involvement to operate service? Does this project directly involve other local agency partners.			<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <i>If yes, provide a completed Peer Agency Support Form for each partner.</i>
6. What planning document(s) identifies this project? <i>Provide link to document(s) and referenced page number if possible, or provide documentation in the supplement</i>	If this project is listed in the DRCOG 2050 Metro Vision Regional Transportation Plan (2050 MVRTP) , provide the staging period: Click or tap here to enter text.		
	Local/Regional plan:	Planning Document Title: City of Louisville Transportation Master Plan Adopting agency (local agency Council, CDOT, RTD, etc.): Louisville City Council Provide date of adoption by council/board/commission, if applicable: October 1, 2019	
	Please describe public review/engagement to date:	The intersections along the corridors throughout the City of Louisville were discussed extensively during the City of Louisville Transportation Master Plan process.	
	Other pertinent details:	Click or tap here to enter text.	
7. Identify the project's key phases and the anticipated schedule of phase milestones. (phases and dates should correspond with the "Phase to be Initiated" in the Funding Breakdown table below)			
Phases to be included:	Major phase milestones:		Anticipated completion date (based on October 2023 DRCOG approval date): (MM/YYYY)
<input type="checkbox"/> Preconstruction <input type="checkbox"/> Construction <input checked="" type="checkbox"/> Both			
REQUIRED FOR ALL PHASES	Intergovernmental Agreement (IGA) executed with CDOT/RTD (Assumed process is 4-9 months; any work performed before execution is NOT reimbursable)		05/2024
<input type="checkbox"/> Design	Design contract Notice to Proceed (NTP) issued (if using a consultant):		Enter Date
	Design scoping meeting held with CDOT (if no consultant):		Enter Date
	FIR (Field Inspection Review):		Enter Date
	FOR (Final Office Review):		Enter Date
<input type="checkbox"/> Environmental	Environmental contract Notice to Proceed (NTP) issued (if using a consultant):		Enter Date

	Environmental scoping meeting held with CDOT (if no consultant):	Enter Date
<input type="checkbox"/> Right-of-Way	Initial set of ROW plans submitted to CDOT:	Enter Date
	Estimated number of parcels to acquire: <input type="text" value="Enter Number"/>	
	ROW acquisition completed:	Enter Date
<input type="checkbox"/> Construction	Required clearances:	Enter Date
	Project publicly advertised:	Enter Date
<input type="checkbox"/> Study	Kick-off meeting held after consultant NTP (or internal if no consultant):	Enter Date
<input checked="" type="checkbox"/> Equipment Purchase (Procurement)	RFP/RFQ/RFB (bids) issued:	05/2024
<input type="checkbox"/> Other Phase not Listed Describe: <input type="text" value="Describe"/>	First invoice submitted to CDOT/RTD:	Enter Date

8. **Problem Statement:** What specific subregional problem/issue will the transportation project address?
The transportation operations improvement project will address traffic congestion and delay, intersection safety, and unsynchronized subregional operations and coordination.

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

Roadway

- ☒ Operational Improvements
- ☐ General Purpose Capacity (2050 MVRTP)
- ☐ Managed Lanes (2050 MVRTP)
- ☐ Pavement Reconstruction/Rehab
- ☐ Bridge Replace/Reconstruct/Rehab

Grade Separation

- ☐ Roadway
- ☐ Railway
- ☐ Bicycle
- ☐ Pedestrian

Regional Transit¹

- ☐ Rapid Transit Capacity (2050 MVRTP)
- ☐ Mobility Hub(s)
- ☐ Transit Planning Corridors
- ☐ Transit Facilities (Expansion/New)

☒ **Safety Improvements**

Active Transportation Improvements

- ☒ Bicycle Facility
- ☒ Pedestrian Facility

☒ **Air Quality Improvements**

☐ **Improvements Impacting Freight**

Multimodal Mobility (i.e., accommodating a broad range of users)

- ☒ Complete Streets Improvements

☐ **Study**

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

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).**
DO NOT 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 or 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.

This project seeks to add new or upgrade outdated hardware at multiple intersections throughout Louisville. Improvements proposed include upgrades of signal cabinets, battery backup, improvements to signal and advanced detection, and emergency pre-emption. The system will function like other modern traffic signal systems in the region, and Louisville will leverage its investment in signal management software to maximize the operational and safety benefits to be gained from these hardware upgrades. This project will create a great baseline of hardware and software that is able to easily implement newer technology and software solutions that can aid in regional collaboration.

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.

The proposed scope has been reviewed and identified in a signal optimization master plan. The improvements have been identified and are being submitted here to acquire the hardware to complete the improvements. Work will be completed by City of Louisville crews, so the overall readiness is ready to implement pending purchase of the equipment.

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: \$345,000

Outline the differences between the scope outlined above and the reduced scope: Reduce number of cabinets, number of camera installations.

Project Financial Information and Funding Request (All funding amounts in \$1,000s)		
<i>To update the formulas below, enter your information, highlight the formulas, and press F9 or right-click and select Update Field.</i>		
Total amount of Federal Funding Request (in \$1,000's) (Not to exceed 82.79% of the total project cost)	\$545	73.15% 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 Louisville	\$200	26.8%
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)	\$ 200	26.8%
Project Total	\$ 745	

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	\$545	\$Enter Amount	\$Enter Amount	\$Enter Amount	\$ 545
CDOT or RTD Supplied Funds ²	\$Enter Amount	\$Enter Amount	\$Enter Amount	\$Enter Amount	\$ 0
Local Funds (Funding from sources other than DRCOG, CDOT, or RTD)	\$200	\$Enter Amount	\$Enter Amount	\$Enter Amount	\$ 200
Total Funding	\$ 745	\$ 0	\$ 0	\$ 0	\$ 745
Phase to be Initiated	Equipment Purchase (Procurement)	Select Phase	Select Phase	Select Phase	
Notes:	<ol style="list-style-type: none">1. 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.2. 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 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. <input checked="" type="checkbox"/>				

Evaluation Questions

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

WEIGHT

30%

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.	<input type="checkbox"/>
Develop processes to share traffic camera view and control between jurisdictions and public safety.	<input checked="" type="checkbox"/>
Develop a Regional Performance Monitoring Data Archive platform.	<input type="checkbox"/>
Develop strategies and processes to coordinate performance-based management.	<input checked="" type="checkbox"/>
Deploy additional supporting transportation surveillance and control systems and infrastructure.	<input checked="" type="checkbox"/>
Develop Traffic Incident Management standard operating procedures.	<input type="checkbox"/>
Standardize and implement transit signal priority performance management and system optimization procedures.	<input type="checkbox"/>

Secondary initiatives

Develop evacuation and recovery plans and exercises.	<input type="checkbox"/>
Develop processes to coordinate traveler information messaging across the region.	<input type="checkbox"/>
Develop active work zone monitoring and management in the field.	<input type="checkbox"/>
Deploy additional safety-focused technology applications	<input checked="" type="checkbox"/>
Expand the Regional Performance Monitoring Data Archive platform.	<input type="checkbox"/>
Expand the Regional Situational Awareness platform.	<input type="checkbox"/>
Expand transit signal priority deployment.	<input type="checkbox"/>

Tertiary initiatives

Develop a Regional Multimodal Traveler Information platform.	<input type="checkbox"/>
Develop a process to monitor regional parking availability, capacity and pricing.	<input type="checkbox"/>
Develop a multimodal trip planner and reservation/ payment system.	<input type="checkbox"/>
Develop and deploy dynamic ride-sharing.	<input type="checkbox"/>
Develop and implement curbside management standards.	<input type="checkbox"/>
Develop continuity of operations plans.	<input type="checkbox"/>

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

-Regional Collaboration - The equipment upgrades allow for the city to be in a better position to regionally collaborate on traffic management systems.

-Safety: There are several safety benefits that will occur with the proposed improvements.

By upgrading TS1 controllers to TS2, Louisville can more broadly implement flashing yellow arrow at signalized intersections. Flashing yellow arrow is a proven safety countermeasure for intersections with permissive left-turns.

Battery backup will ensure that signals stay on during power outages; 13 Louisville traffic signals currently have no battery backup.

Replacing loop detection with cameras will ensure that bicyclists and motorcyclists can be detected by traffic signals to minimize instances of them running red lights.

-Resiliency: Several improvements will provide resiliency improvements for a community that has seen multiple major climate events in the past 10 years.

Battery backup will ensure that signals remain active during power outages and potential emergency events allowing emergency pre-emption to work.

-Travel Time Reliability: By connecting all of this hardware into a software traffic management platform, Louisville will be able to more actively and nimbly operate the traffic signals system to manage systemwide operations and coordinate with regional partners.

-Sustainability: Through the incorporation of new signal technology improvements, signals can be optimized to reduce congestion, which improves not only vehicular idling emissions but also creates more reliable transit

operations. There are also improvements for detection for bicycles and pedestrians, reducing the number of vehicle trips taken within the city.

Evacuations: The City of Louisville through the Marshall Fire discovered that the smaller communities also need technology improvements to assist in evacuations during climate events. These upgrades will allow the community to be better positioned if a climate event were to happen again.

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.

Louisville and Superior currently utilizes a platform that shares data. The upgraded hardware and software brings opportunities for these communities to work with CDOT and DRCOG to share data regionally. It is a goal of this project for the pieces to be setup to make this sharing much easier.

B. Regional Impact of Proposed Project

WEIGHT

25%

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 [DRCOG Data Tool](#).

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

Traffic signal system equipment upgrades would allow for the City of Louisville to be in a better position to regionally collaborate on traffic management systems. The three urban centers within a 0.5-mile buffer of the project area, including Downtown Louisville (Existing), Superior Town Center (Emerging), and the Interlocken Loop Activity Center (Emerging) would be served by the systemwide traffic signal operations and regional coordination. Many of the residents of Louisville commute and visit those activity centers, as well as other regional traffic that passes through Louisville to those centers. Many of Louisville's main corridors serve as reliever routes to US 36, US 287, and CO 7 during incidents or large flows of traffic.

Coming out of the devastating Marshall Fire, a bigger emphasis has been put on the community on evacuation and emergency vehicle response. This project will bring signal hardware up to level to make it easier to implement evacuation planning and improve emergency vehicle response.

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 required.**

The proposed project will address the specific transportation problem by providing equipment upgrades that will improve congestion during peak hours, reducing the need for expanded infrastructure. Expanded infrastructure would decrease safety by creating roadways with excess capacity, which in turn increases vehicle speeds. This will also increase comfort and safety for bicycle and pedestrians by creating roadways that are more contextual than large highways. Creating regional collaboration will create better traffic coordination between communities, help reduce the demand for expanded roadways.

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.

The proposed project benefits multiple municipalities in Boulder County, including the City of Louisville, City of Lafayette, and Town of Superior as well as the City and County of Broomfield, by providing safety benefits for all roadway users and resiliency improvements for a regional community that has seen multiple major climate events in the past 10 years. This is done through improving the infrastructure to allow for regional collaboration. Currently, the Town of Superior and City of Louisville share data through a combined traffic management system. Due to the age of the system, it makes it difficult to open this up regionally to partners that may not have physical IT connections.

4. Disproportionately Impacted and Environmental Justice Communities

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

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 %
Use 2015-2019 American Community Survey Data (Use a 0.5 mile buffer distance) [Equity data tab]	a. Total population	59,341	-	-
	b. Total households	24,751	-	-
	c. Individuals with low-income	7,358	12%	20%
	d. Individuals of color	12,116	20%	33%
	e. Adults age 60 and over	12,114	20%	13%
	f. Youth under 18	13,007	22%	16%
	g. Individuals with limited English proficiency	1,561	3%	3%
	h. Individuals with a disability	4,819	8%	9%
	i. Households that are housing cost-burdened	7,169	29%	32%
	j. Households without a motor vehicle	886	4%	5%

For Lines c. – i. use definitions in the [DRCOG Title VI Implementation Plan](#). 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 required quantitative analysis*:

This project will improve access and mobility for each of the applicable disproportionately impacted and environmental justice populations identified in the table above primarily by increasing accessibility to updated traffic signal hardware that can serve and improve safety for all street users, including bicyclists and motorcyclists. Some of the improvements, such as the advanced detection for bicyclists, will benefit the 886 households within a 0.5-mile buffer of the project area. This with reduced congestion, more efficient and timely bus route operations, and creating better air quality, there will also be better operations of other modes of transportation that may be the required mode of the disproportionately impacted populations.

Another benefit is most major roads in Louisville will not need capacity expansions due to better operations of vehicles in peak hour. This will mean roadways will not become bigger barriers and be built for peak hour operations when outside of peak hours they serve the community fairly.

Improved travel time with emergency vehicle preemption systems will improve access to affected communities by decreasing response times to communities that may have been affected by major roadway expansions through the last few decades of growth in Louisville.

5. How will this project move the subregion toward achieving the shared [regional transportation outcomes](#) established in [Metro Vision](#) 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.)*
 - *Improve the diversity and livability of communities.* Major roadways may not need expansion due to better operations and control of the transportation network.
 - *Contain urban development in locations designated for urban growth and services.* The improvements will provide more opportunity for transportation by other modes than motor vehicle through decreasing the need for expanded infrastructure.
 - *Increase housing and employment in urban centers.* By allowing better connectivity to downtown Louisville, there is potential for more housing and employment to be created in this urban center.
 - *Diversify the region's housing stock.* Current the housing stock in Louisville is predominately single family. Due to affordability challenges, there is a push to diversify this housing stock. These transportation improvements would make it possible for increased density while not overloading the roadway infrastructure.
 - *Improve the region's competitive position.* This project will help to contribute to regional investments in infrastructure and modern traffic signal systems.
 - 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.)*
 - *Improve and expand the region's multimodal transportation system, services, and connections.* This project will expand access to newer traffic signal technology and software solutions that will improve safety for multimodal transportation users.
 - *Operate, manage, and maintain a safe and reliable transportation system.* The upgraded technology will enhance both operational and safety benefits for the transportation system. Emergency vehicle preemption systems will better reliability and resiliency during emergency events.
 - *Improve air quality and reduce greenhouse gas emissions.* The equipment updates will lower traffic congestion, therefore improving air quality and reduce greenhouse emissions.
 - *Reduce the risk of hazards and their impact.* The project will promote planning and decision-making in hazard mitigation. The emergency vehicle preemption systems will contribute to faster emergency response times during extreme weather events.
 - 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.)*
 - *Connect people to natural resource and recreational areas.* This project will support more travel time reliability to open spaces, ball fields, recreational trails, and parks.
 - *Increase access to amenities that support, healthy, active choices.* This project will increase travel time reliability and improved intersection safety to amenities that support healthy, active choices, including the YMCA.
 - *Improve transportation connections to health care facilities and service providers.* This project will encourage collaboration among stakeholders at the local, regional, and state levels. The regional FQHC (federally qualifying health provider) is in the central part of the project area.
 - *Improve access to opportunity.* This project will help to contribute to regional investments in infrastructure that ensures the region remain globally competitive.

6. 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?*
- ☒ Yes ☐ No If yes, please provide the name: [Downtown Louisville \(Existing\)](#), [Superior Town Center \(Emerging\)](#), and [Interlocken Loop Activity Center \(Emerging\)](#)
- Does the project connect two or more urban centers?*
- ☒ Yes ☐ No If yes, please provide the names: [Downtown Louisville \(Existing\)](#), [Superior Town Center \(Emerging\)](#), and [Interlocken Loop Activity Center \(Emerging\)](#)
- Is there a transit stop or station within ½ mile of the project limits?*
- Bus stop: ☒ Yes ☐ No If yes, how many: [98](#)
- Rail station: ☐ Yes ☒ 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 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: [City of Louisville Transportation Master Plan](#)
- If yes, provide how the area is defined in the relevant planning document: [The project area is defined in the planning document as having multiple zoning districts and land uses. The project area contains primarily residential, civic, commercial, and industrial land uses. Residential and commercial growth are highlighted in the Transportation Master Plan as potential impacts to key travel corridors for people coming into and through the City of Louisville.](#)

Provide households and employment data* [Population and Employment tab]	2020	2050
Jobs within ½ mile	37,420	59,388
Households within ½ mile	18,425	26,662

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 required quantitative analysis*:

[This project will improve more reliable and safer transportation options in and between key geographic areas including DRCOG-defined urban centers, locally defined priority growth areas, and multimodal corridors. It will also allow roadways to function as they do currently and reduce the need for expansion that would be detrimental to bicycle, pedestrian, and transit mobility. There is a future rail station in downtown Louisville in which more transit oriented development has been focused.](#)

Currently, there are 18,425 households within a half mile of the project area as of 2020, and there is expected to be an average of 26,662 households within a half mile of the project location by 2050. Additionally, there are 37,420 jobs within the 0.5-mile buffer, and there is expected to be an average of 59,388 jobs within a half mile of the project area by 2050.

7. 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**.

[The improvements are located throughout Louisville. This will improve the connectivity within Louisville, but also to Louisville Technical Center, Interlocken, Downtown Superior, Boulder, Longmont, Lafayette and the whole 36 Corridor. By upgrading the operational infrastructure, there is better utilization of the existing infrastructure making modal choice to these destinations more plausible.](#)

8. Congestion Mitigation Process Mobility Score

Completing the below table and referencing relevant quantitative data in your response is required. 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	72.14
Sum: miles	32.19
Congestion Mobility Score	2.24

(The Congestion Mobility Score will automatically calculate based on values entered. If this has not updated, select the box and click F9)

C. Metro Vision Regional Transportation Plan Priorities

WEIGHT

25%

- **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.

Multimodal Mobility

Provide improved travel options for all modes.

(drawn from [2050 MVRTP priorities](#); [federal travel time reliability, infrastructure condition, & transit asset management performance measures](#); & [Metro Vision objective 4](#))

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: 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.): [Bicycle and motorcyclist detection; upgrades to make it possible for transit signal priority when needed](#).
- 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?
☒ Yes ☐ No
- Does this project improve asset management of roadway infrastructure, active transportation facilities, and/or transit facilities or vehicle fleets?
☒ Yes ☐ No
- Does this project implement resilient infrastructure that helps the subregion mitigate natural and/or human-made hazards?
☒ Yes ☐ 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 [Regional Roadway System](#) and/or [Regional Managed Lanes System](#).*

Modal choice will be increased through the optimization of the existing roadway infrastructure. If these improvements were not to happen, the existing roadway infrastructure would need to be expanded to meet the demands of the roadway, which will decrease safety and comfort for vulnerable users.

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).

The goal of this project is to upgrade community owned assets to provide resiliency and reliability. Currently several signals will not operate during power outages or emergency events, like the Marshall Fire. Upgrading infrastructure means capital investment now to offset operational maintenance costs in the near future.

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 reduce delays and improve travel time reliability by connecting of the traffic signal hardware into a software traffic management platform. Connecting all this into one platform will allow the City of Louisville to be able to more actively and nimbly operate the traffic signals system to manage systemwide operations and coordinate with regional partners.

Air Quality

Improve air quality and reduce greenhouse gas emissions.

(drawn from [2050 MVRTTP 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 project reduce congestion?
☒ Yes ☐ No
- Does this project reduce vehicle miles traveled (VMT)?
☐ Yes ☒ No
- Does this project reduce single-occupant vehicle (SOV) travel?
☐ Yes ☒ No

Emissions Reduced (kg/day)	CO	NOx	VOCs	PM 10	CO ₂ e
	15.257	0.240	1.379	3.431	0.673

Use 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.

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.

The traffic signal equipment updates will lower traffic congestion and create better operations of vehicles in peak hour, therefore improving air quality and reduce greenhouse emissions.

Regional Transit	<p>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.</p>
<p><u>Items marked with an asterisk (*) below are available in the DRCOG Data Tool.</u></p> <ul style="list-style-type: none"> Does this project implement a portion of the regional bus rapid transit (BRT) network (as defined in the 2050 MVRTP)?* <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, which specific corridor will this project focus on: Click or tap here to enter text. Does this project involve a regional transit planning corridor (as defined in the 2050 MVRTP)?* <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, which specific corridor will this project focus on: Click or tap here to enter text. Does this project implement a mobility hub (as defined in the 2050 MVRTP)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Does this project improve connections between transit and other modes? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, please describe in your response. Does this project improve transit travel time reliability? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If yes, please describe in your response. Does this project add and/or improve transit access to or within a DRCOG-defined urban center?* <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <p>Question: Describe how this project improves connections to or expands the subregion's transit system, as outlined in the 2050 MVRTP. Also describe how this project improves transit travel time reliability. Please include quantitative information, including any items referenced above, in your response. <i>Note that rapid transit improvements must be on the Regional Rapid Transit System.</i></p> <p>The project improvements will add the ability to have transit signal priority to the signalized intersections in the project area that will reduce bus stop delay and improve transit travel times. Overall, the better efficiency of the traffic operations will lead to less delay of transit vehicles, making this a viable transportation option.</p>	

Safety	Increase the safety for all users of the transportation system. (drawn from 2050 MVRTP priorities , Taking Action on Regional Vision Zero , CDOT Strategic Transportation Safety Plan , & federal safety performance measures) Examples of Project Elements: bike/pedestrian crossing improvements, vehicle crash countermeasures, traffic calming, etc.							
	Items marked with an asterisk (*) below are available in the DRCOG Data Tool.							
<ul style="list-style-type: none"> Does this project address a location on the DRCOG High-Injury Network or Critical Corridors or corridors defined in a local Vision Zero or equivalent safety plan?* <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Does this project implement a safety countermeasure listed in the countermeasure glossary? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Will this project result in a reduction of average roadway clearance time and incident clearance time and/or secondary incidents? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Will this project result in a reduction of first responder struck-bys? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No 								
Provide the current number of crashes involving motor vehicles, bicyclists, and pedestrians* (using the 2016-2020 period – in the DRCOG Data Tool, use a 0.02 mile buffer distance) [Crash Severity 2016-2020 tab] NOTE: if constructing a new facility, report crashes along closest existing alternative route		Sponsor must use industry accepted crash modification factors (CMF) or crash reduction factor (CRF) practices (e.g., CMF Clearinghouse , NCHRP Report 617 , or DiExSys methodology).						
<table border="1"> <tr> <td>Fatal crashes</td> <td>2</td> </tr> <tr> <td>Serious Injury crashes</td> <td>26</td> </tr> <tr> <td>Other: Non-Serious Injury and Property Damage Only crashes</td> <td>125</td> </tr> </table>			Fatal crashes	2	Serious Injury crashes	26	Other: Non-Serious Injury and Property Damage Only crashes	125
Fatal crashes	2							
Serious Injury crashes	26							
Other: Non-Serious Injury and Property Damage Only crashes	125							
Estimated reduction in crashes applicable to the project scope (per the five-year period used above)		Provide the methodology and sources below:						
<table border="1"> <tr> <td>Fatal crashes reduced</td> <td><1</td> </tr> <tr> <td>Serious Injury crashes reduced</td> <td>2</td> </tr> <tr> <td>Other: Non-Serious Injury and Property Damage Only crashes</td> <td>8</td> </tr> </table>		Fatal crashes reduced	<1	Serious Injury crashes reduced	2	Other: Non-Serious Injury and Property Damage Only crashes	8	Based on 2016-2020 crash data from DRCOG applying CMF for FYA of 0.934
Fatal crashes reduced	<1							
Serious Injury crashes reduced	2							
Other: Non-Serious Injury and Property Damage Only crashes	8							
<p>Question: Describe how this project will implement safety improvements (roadway, active transportation facility, etc.), particularly improvements in line with the recommendations in Taking Action on Regional Vision Zero. Please include quantitative information, including any items referenced above, in your response. <i>Note that any improvements on roadways must be primarily on the DRCOG Regional Roadway System.</i></p> <p>By upgrading older, TS1 cabinets and controllers to TS2, the City of Louisville will be able to install four-section signal heads with flashing yellow arrows. At minimum, the Crash Modification Factor of this change for all crashes is 0.934. Additionally, the city will be able to change left-turn operation by time of day (for example, protected-only during the AM and PM peak hours). Protected-only operation, when needed, has been shown to even further reduce crashes.</p> <p>The system will function like other modern traffic signal systems in the region, and Louisville will leverage its investment in signal management software to maximize the operational and safety benefits to be gained from these hardware upgrades.</p> <p>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.</p> <p>The project includes the installation of emergency vehicle pre-emption at several locations which should reduce emergency response times and ensure that traffic signals change for emergency vehicles, thereby reducing first responder struck-bys.</p>								

Freight	<p>Maintain efficient movement of goods within and beyond the subregion.</p> <p>(drawn from 2050 MVRTP priorities; Regional Multimodal Freight Plan; Colorado Freight Plan, federal freight reliability performance measure; Metro Vision objective 14)</p> <p>Examples of Project Elements: bridge improvements, improved turning radii, increased roadway capacity, etc.</p>
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Items marked with an asterisk (*) below are available in the DRCOG Data Tool.

- Is this project located in or impact access to a [Freight Focus Area](#)?*
☒ Yes ☐ No If yes, please provide the name: [Northwest Metro](#)
- If this project is located in a [Freight Focus Area](#) does it address the relevant Needs and Issues identified in the Plan (see text located within each Focus Area)?
☒ Yes ☐ No If yes, please describe in your response below.
- Is the project located on the [Tier 1 or Tier 2 Regional Highway Freight Vision Network](#)?*
☒ Yes ☐ No
- Check any items from the [Inventory of Current Needs](#) which this project will address:
☐ Truck Crash Location ☐ Rail Crossing Safety ([eligible locations](#))
☒ Truck Delay ☒ Truck Reliability ☐ Highway Bottleneck
☐ Low-Clearance or Weight-Restricted Bridge
Please provide the location(s) being addressed: [McCaslin Boulevard and South Boulder Road Intersections \(several\)](#)
- Does this project 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: Describe how this project will improve the efficient movement of goods. In your response, identify those improvements identified in the [Regional Multimodal Freight Plan](#), include quantitative information, and include any items referenced above. *Note that any improvements on roadways must be primarily on the DRCOG [Regional Roadway System](#).*

[This project will improve the efficient movement of goods by reducing congestion and more reliable travel times for freight operations moving on multiple corridors in the project area.](#)

Active Transportation	Expand and enhance active transportation travel options. (drawn from 2050 MVRTP priorities ; Denver Regional Active Transportation Plan ; & Metro Vision objectives 10 & 13) Examples of Project Elements: shared use paths, sidewalks, regional trails, grade separations, etc.	
Items marked with an asterisk (*) below are available in the DRCOG Data Tool.		
<ul style="list-style-type: none"> Does this project close a gap or extend a facility on a Regional Active Transportation Corridor or locally-defined priority corridor?* <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Does this project improve pedestrian accessibility and connectivity in a pedestrian focus area?* <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Does this project improve active transportation choices in a short trip opportunity zone?* <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Does this project include a high-comfort bikeway (like a sidepath, shared-use path, separated bike lane, bicycle boulevard)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, please describe in your response. 		
Bicycle Use NOTE: if constructing a new facility, report bike usage along closest existing alternative route To 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 Single Weekday Bicyclists:	50	
Bicycle Use Calculations	Year of Opening	2050 Weekday Estimate
2. Enter estimated additional average weekday one-way bicycle trips on the facility after project is completed.	60	70
3. Enter number of the bicycle trips (in #2 above) that will be diverting from a different bicycling route. (Example: {#2 X 50%} or other percent, if justified on line 10 below)	6	7
4. = Initial number of new bicycle trips from project (#2 – #3)	54	63
5. Enter number of the new trips produced (from #4 above) that are replacing a trip made by another non-SOV mode (bus, carpool, vanpool, walking, etc.). (Example: {#4 X 30%} or other percent, if justified on line 10 below)	6	7
6. = Number of SOV trips reduced per day (#4 - #5)	48.00	56.00
7. Enter the value of {#6 x 2 miles}. (= the VMT reduced per day) (Values other than 2 miles must be justified by sponsor on line 10 below)	96	112
8. = Number of pounds GHG emissions reduced (#7 x 0.95 lbs.)	91.20	106.40
9. If values would be distinctly greater for weekends, describe the magnitude of difference: There is double the ridership on weekends due to recreational cycling. These would not replace trips but could end up with more ridership due to ease of use.		
10. If different values other than the suggested are used, please explain here: Click or tap here to enter text.		
Pedestrian Use NOTE: if constructing a new facility, report pedestrian usage along closest existing alternative route To 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 Single Weekday Pedestrians (including users of non-pedaled devices such as scooters and wheelchairs):	60	
Pedestrian Use Calculations	Year of Opening	2050 Weekday Estimate
2. Enter estimated additional average weekday pedestrian one-way trips on the facility after project is completed	70	80
3. Enter number of the new pedestrian trips (in #2 above) that will be diverting from a different walking route (Example: {#2 X 50%} or other percent, if justified on line 10 below)	2	4
4. = Number of new trips from project (#2 – #3)	68	76
5. Enter number of the new trips produced (from #4 above) that are replacing a trip made by another non-SOV mode (bus, carpool, vanpool, bike, etc.). (Example: {#4 X 30%} or other percent, if justified on line 10 below)	1	1
6. = Number of SOV trips reduced per day (#4 - #5)	67.00	75.00

7. Enter the value of {#6 x .4 miles}. (= the VMT reduced per day) (Values other than .4 miles must be justified by sponsor on line 10 below)	26.8	30
8. = Number of pounds GHG emissions reduced (#7 x 0.95 lbs.)	25.46	28.50
9. If values would be distinctly greater for weekends, describe the magnitude of difference: Click or tap here to enter text.		
10. If different values other than the suggested are used, please explain here: Click or tap here to enter text.		

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 above, in your response.

This project helps improve comfort for active transportation users through better detection for bicyclists and the delaying of additional capacity on the roadway, creating an overbuilt roadway that would increase speeds and decrease safety.

D. Financial Leveraging		WEIGHT	5%
What percent of outside funding sources (non-federal funds) does this project have? <i>(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.)</i> [*includes 100% eligible projects with no match]	Enter score: <div>26.8%</div>	36%+ outside funding sources 5 31 - 35.9% 4 26 - 30.9% 3 21 - 25.9% 2 17.21 - 20.9%* 1 17.21% 0	
E. Project Readiness		WEIGHT	15%
<i>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.</i>			
Subsection 1. Avoiding Pitfalls and Roadblocks			
<p>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?</p> <p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A (for projects which do not require engineering services)</p> <p>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:</p> <p>Geoff Nettleton, PE</p> <p>Please describe the status to date on each, including 1) anticipated/known pitfalls/roadblocks, and 2) mitigation activities taken to date:</p> <ul style="list-style-type: none"> Utilities: None effected Railroad: N/A Right-of-Way: N/A Environmental/Historic: No new construction Other: Click or tap here to enter text. 			
<p>b. Have additional project risks been identified?</p> <p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A</p> <p>If yes, please provide a brief description of the known risks and planned mitigation activities.</p> <p>Click or tap here to enter text.</p>			
<p>c. Is this application for a single project phase only (i.e., design, environmental, ROW acquisition, construction only, study, equipment purchase, etc.)?</p> <p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>If yes, are the other prerequisite phases complete? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A</p>			
<p>d. Will this project seek a Finding in the Public Interest as part of equipment procurement?</p> <p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>If yes, please provide an explanation of the need for a Finding in the Public Interest. Do not reference specific products trade names.</p> <p>The City of Louisville would like to seek a finding of Public Interest due to adding equipment that is of similar pieces as existing infrastructure. This similar equipment works with all the software pieces Louisville has and</p>			

wants to continue using. New equipment may require the need for additional software or hardware purchases that are not needed.

- e. Has all required ROW been identified? ☐ Yes ☐ No ☒ N/A

Has all required ROW already been acquired and cleared by CDOT? ☐ Yes ☐ No ☒ N/A

Is existing equipment within ROW? ☒ Yes ☐ No ☐ N/A

Will subsurface utility engineering be a factor in this project? ☐ Yes ☒ No

Has subsurface utility engineering been accounted for in the project scoping, phasing and estimate? ☐ Yes ☐ No ☒ N/A

- f. 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?

☒ Yes ☐ No

Does your agency have the appropriate staff available to work on this project? ☒ Yes ☐ No

If yes, are they knowledgeable with the federal-aid process? ☒ Yes ☐ No ☐ N/A

- g. Have other stakeholders in your project been identified and involved in project development?

☒ Yes ☐ No ☐ N/A

If yes, who are the stakeholders?

[Town of Superior](#)

Please provide any additional details on any of the items in Subsection 1, if applicable.

[Click or tap here to enter text.](#)

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?

☐ Yes ☒ No

Please describe:

[Part of the funding is identified in the 2023 Louisville budget and additional budget will be allocated in the 2024 budget.](#)

- b. Is all funding for this project currently identified in the sponsor agency's Capital Improvement Program (CIP)?

☒ Yes ☐ No

Please describe:

[The local match has been identified as capital projects in the 2023/2024 budget cycle as Signal Cabinet Upgrades. The remaining match would come from the City's annual signal maintenance program funding.](#)

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 [SEA process](#) for transportation technology projects in the state, including local agency projects.

Please complete at least the first seven sections of the required [SEA-Local Agency Template](#). 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.

City of Louisville DRCOG Technology Grant Cost Estima			
Item	Qty	Cost	Total
TS1 to TS2 Signal Cabinents	7	\$30,000	\$210,000
Battery Backups	13	\$15,000	\$195,000
Camera Detection	9	\$24,000	\$216,000
Emergency Pre-Emption	16	\$7,050	\$112,800
Contingency/Misc Items	10%		\$11,280
		Total Cost	\$745,080

Traffic Signal Synchronization

This calculator will estimate the emission reductions resulting from synchronizing the traffic signals along a previously unsynchronized corridor.

INPUT

Evaluation Year	2030	
Area Type	Urban	
Corridor Length	2.5	miles
Number of Signalized Intersections	9	
Number of Lanes (one direction)	2	
Posted Speed Limit	45	miles per hour (1 - 75 MPH)
Average Cycle Length	90	seconds
Truck Percentage	6%	
Annual Average Daily Traffic (AADT) (both directions)	30,000	veh/day
Peak-hour Volume (both directions)	3,500	veh/hr
Existing Corridor Travel Time	5	minutes
Total peak hours per day (AM+PM)	4	

OUTPUT

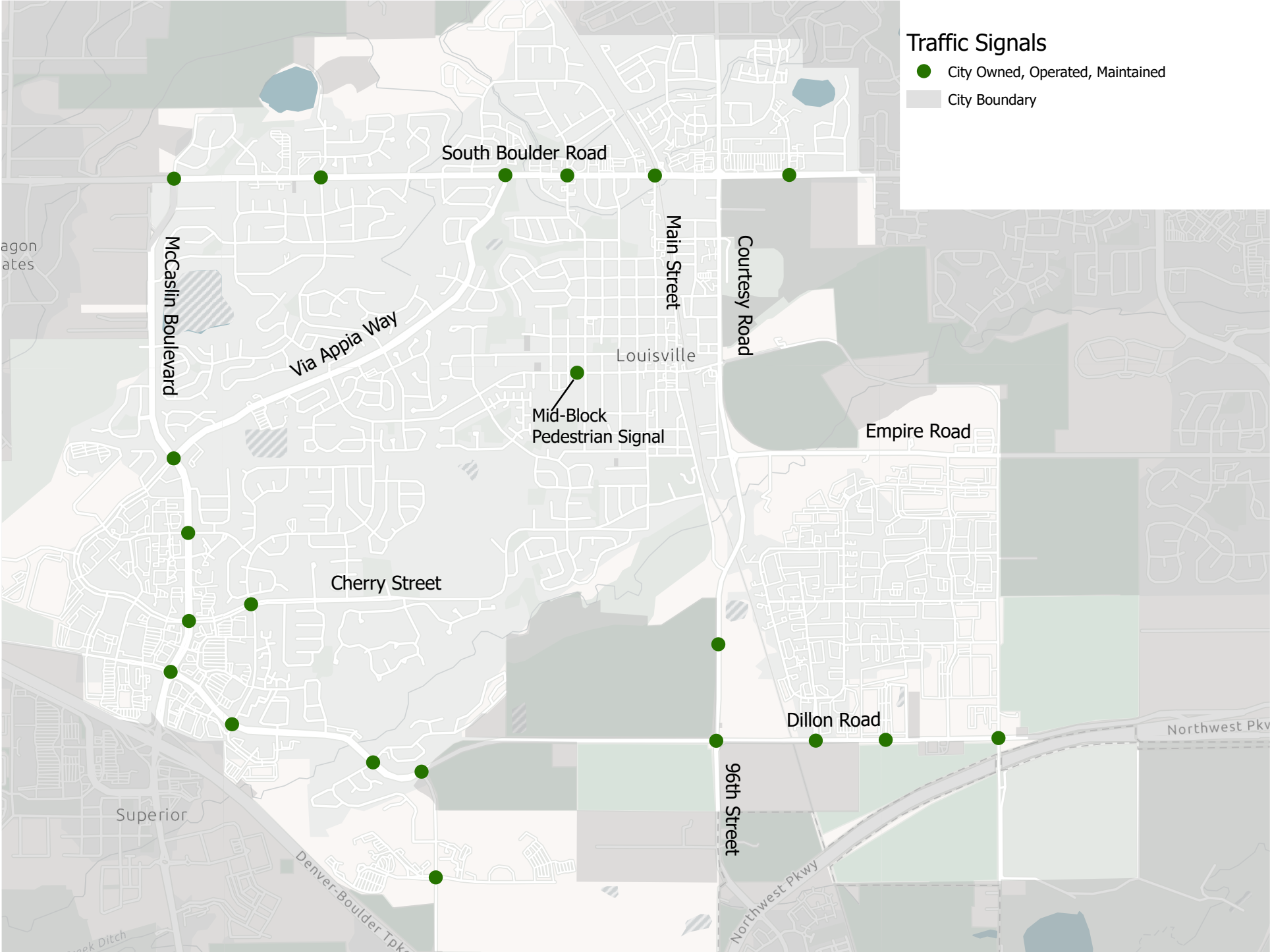
PERFORMANCE

	PEAK-HOUR	OFF-PEAK	
Volume (both directions)	3,500	800	veh/hr
Existing Average Speed	30	28	mph
Travel Time Savings	62	37	min
Proposed Average Speed	38	32	mph

EMISSION REDUCTIONS

Pollutant	Peak-hour Kilograms/day	Off-Peak Kilograms/day	Total Kilograms/day
Carbon Monoxide (CO)	10.903	4.354	15.257
Particulate Matter <2.5 µm (PM _{2.5})	0.153	0.088	0.240
Particulate Matter <10 µm (PM ₁₀)	0.808	0.572	1.379
Nitrogen Oxide (NOx)	2.429	1.002	3.431
Volatile Organic Compounds (VOC)	0.402	0.271	0.673
Atmospheric Carbon Dioxide (CO2)	1,112.380	909.390	2,021.770
Carbon Dioxide Equivalent (CO2e)	1,120.535	915.340	2,035.875
Total Energy Consumption (MMBTU)	14.543	11.963	26.507

City of Louisville Traffic Signal Locations - Project Locations





Requirement: The [systems engineering analysis \(SEA\)](#) process is required per [23 CFR 940](#). 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
<p>1.1 Local Public Agency Project Manager and Contact Information</p> <p>Name: Geoff Nettleton, PE Title: Deputy City Engineer Phone: (303) 335-4603 Email: gnettleton@louisvilleco.gov</p>
<p>1.2 Consultant Project Manager and Contact Information (<input type="checkbox"/> N/A)</p> <p>N/A]</p>
<p>1.3 CDOT Project Manager and Contact Information</p>
<p>1.4 Project Location, Route Beginning and Ending MM, or Nearest Intersection</p> <p>The project will add or upgrade technology at multiple signalized intersections throughout the City of Louisville. See the attached map for the project locations.</p>
<p>1.5 Project Description, Title, and Type of Work – This should include identification of the problem and the purpose of the project</p>



Many of Louisville's traffic signals feature outdated hardware that limit operational capabilities, cannot serve all street users (e.g., bicyclists, motorcyclists), or lack basic resiliency elements such as battery backup. The purpose of the project is to make upgrades to traffic signal equipment to be in a better position to regionally collaborate on traffic management systems, improve travel time reliability, benefit safety, allow for bicycle and motorcycle detection to minimize instances of them running red lights, and provide resiliency for a community that has seen multiple major climate events over the last 10 years.

1.6 CDOT Project Number and Sub Account Code

1.7 Federal-Aid ☐ Yes ☒ No

1.8 Is the project within CDOT's Right of Way (ROW)? ☐ Yes ☒ No

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

Federal Funds Requested: \$545,000

1.10 Fiscal Year of Funding: FY 2024/2025

Section 2 - SEA Required?

Federal Requirement: 23 CFR 940.11 Project Implementation

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

The [National Regulation \(23 CFR 940\)](#) 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, [non-traditional signals](#) (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.

☒ Yes ☐ 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 “**yes**” is selected for any of the above questions, then the [Robust SEA Process](#) needs to be followed and this form is no longer applicable.

If “**no**” is selected for all questions, then completing this entire form will fulfill the [23 CFR 940](#) requirements for local agency projects only.

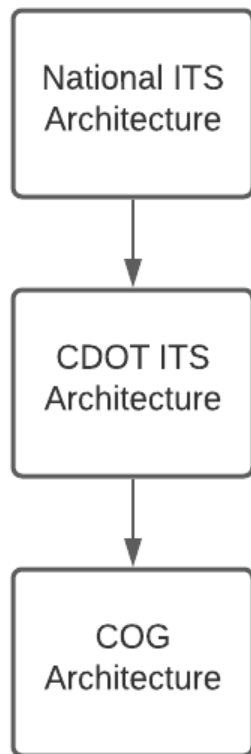
Section 3 - ITS Architecture Conformance

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 [National ITS Architecture Plan](#) 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

☒ 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 Governments (DRCOG)

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

1. TM01: 021 Local Jurisdiction Detector Surveillance
2. TM03: 01 Local Jurisdiction Traffic Control



3. DM01: 02 Local Jurisdiction Data Warehouse
4. PS03: 02 Local Jurisdiction Emergency Vehicle Preemption

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) Procurement 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 project delivery method?

☐ Design, Bid, Build ☐ Design Build
☐ Construction Manager/General Contractor ☒ Other (Please specify) __Procurement of Materials, In-house construction____

Section 5 - Alternative 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
No Build	Do nothing	No	Vulnerabilities will still exist in the system
Upgrades	Upgrade cabinents, cameras, and better backups	Yes	Takes out vulnerabilities and allows system to be better intergrated with regional systems.



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 Louisville	Local Public Agency Deputy City Engineer	Geoff Nettleton, PE (303) 335-4603 gnettleton@louisville.co.gov	Operations	Project Manager

*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 23 CFR 940.11(c)(6) Identification of applicable ITS standards and testing procedures	
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 Requirement	How is the requirement included in the project? Spec, plan set, etc
Flashing yellow arrow at signalized intersections	Upgraded equipment to allow usage



Battery backup to ensure that traffic signals stay on during power outages and potential emergency events allowing emergency pre-emption to work	Upgraded equipment
Advanced detection for bicycle and motorcycle detection	Upgraded equipment

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? <input type="checkbox"/> Yes <input type="checkbox"/> No				
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.
Signal cabinets	Yes. CDOT Communications Cabinet (Type 2): Revision of Section 614	No	Ni	No
Battery backup	No	No	No	No
Detection	No	No	No	No
Emergency pre-emption	No	No	No	No



row, select “insert”, select “row below”

To add additional rows, right click on a

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: N/A

10.2 AD date: 5/2024

10.3 Construction Start: 10/2024

10.4 Construction completion: 01/2024

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?

No relationship to other projects or phases.