

CITY OF GREELEY Purchasing

Request for Qualifications RFQ #F23-12-091

Connected Greeley - Emergency Vehicle Pre-emption Pilot

for

Department of Public Works

REQUEST FOR QUALIFICATIONS (RFQ) RFQ #F23-12-091

Procurement Contact: Shantelle Griego/Sarah Atkins Email Address: Purchasing@greeleygov.com

Telephone Number: 970-350-9333

Qualifications must be received no later than the date indicated in the Schedule of Events below.

Qualifications received after this date and time will not be considered for award.

ONLY ELECTRONIC RFQ RESPONSES WILL BE ACCEPTED DURING THE COVID-19 EVENT

Email your RFQ Response to purchasing@greeleygov.com. Only emails sent to purchasing@greeleygov.com will be considered as responsive to the request for qualifications. DO NOT submit your RFQ Response to multiple email addresses. Emails sent to other City emails may be considered as non-responsive and may not be reviewed.

Qualifications shall be submitted in a single PDF file under 20MB. The Qualifications must not exceed 20 total pages, excluding cover letter, index or table of contents, front and back covers, and title pages/separation tabs. Billing rates may be submitted as a separate appendix to the PDF. Pages shall be 8 ½ x 11 inch except for up to four (4) pages of 11 x 17 inches. Eleven-point font or larger must be used for the qualifications and appendices. Resumes and billing rates included as an appendix are not considered part of the 20 pages. No price information, except billing rates, shall be included in the qualifications. Including pricing information beyond what is required will disqualify the offeror from evaluation of the qualifications.

The RFQ number and Project name must be noted in the subject line, otherwise the qualifications may be considered as non-responsive to the RFQ.

Electronic submittals will be held, un-opened, until the time and date noted in the RFQ documents or posted addenda.

Schedule of Events (subject to change)	All times are MST
RFQ Issued	12/27/2023
Mandatory or Optional Pre-Qualification Conference include date/time and location	Not Applicable
Inquiry Deadline	1/5/2024 by 2:00 p.m.
Final Addendum Issued	1/11/2023
Qualifications Due Date	1/18/2024 by 10:00 a.m. emailed to purchasing@greeleygov.com
Interviews (tentative)	To be Determined
Notice of Award (tentative)	To be Determined

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"Public Viewing Copy: The City is a governmental entity subject to the Colorado Open Records Act, C.R.S. §§ 24-72-200.1 et seq. ("CORA"). Any proposals submitted hereunder are subject to public disclosure by the City pursuant to CORA and City ordinances. Vendors may submit one (1) additional complete proposal clearly marked "FOR PUBLIC VIEWING." In this version of the proposal, the Vendor may redact text and/or data that it deems confidential or proprietary pursuant to CORA. Such statement does not necessarily exempt such documentation from public disclosure if required by CORA, by order of a court of appropriate jurisdiction, or other applicable law. Generally, under CORA trade secrets, confidential commercial and financial data information is not required to be disclosed by the City. Proposals may not be marked "Confidential" or 'Proprietary' in their entirety. All provisions of any contract resulting from this request for proposal will be public information."

SECTION I. BACKGROUND, OVERVIEW, AND GOALS

A. Background

The City of Greeley is a home rule municipality with a council-manager form of government and is the county seat and the most populous municipality of Weld County, Colorado. Greeley is in northern Colorado and is situated 52 miles north-northeast of the Colorado State Capitol in Denver. According to the U.S. Census Bureau, the population of the city is roughly 111,000 which makes it the 12th-most populous city in Colorado. The City has an annual budget of ~\$490M with a fiscal year that starts Jan 1st, and employees over 1100 employees. Greeley is a major city of the Front Range Urban Corridor and home to the University of Northern Colorado which is a public baccalaureate and graduate research university with approximately 12,000 students and six colleges as well as Aims Community College, which has served the community since 1967.

B. Overview

In the <u>City of Greeley's 2045 Transportation Master Plan</u> (TMP), Greeley on the Go, the City plans on updating its existing transportation infrastructure to accommodate emerging technologies that promote resilience and safety. As such, Greeley applied for and was successful in receiving funding as part of the USDOT SMART Grant. The "Connected Greeley – Emergency Vehicle Preemption (CG-EVP) Pilot" is to evaluate and install connected vehicle (CV) technologies to:

- Provide emergency vehicle preemption/signal priority (EVP) for emergency vehicles (e.g., firetrucks and ambulances) and preemption for snowplows
- Vulnerable Road User (VRU) detection and warning system using CV technology in emergency and snowplow vehicles

The pilot will retire the legacy Opticom system and use ATC Controllers and Roadside Units (RSUs) to facilitate safe passage of emergency vehicles and snowplows through signalized intersections and to integrate pedestrian detection at select high pedestrian intersections. The CG-EVP Pilot will install RSUs at 43



Figure 1. Study Area

intersections, 50 On-Board Units (OBUs) on snowplows and emergency vehicles (i.e., fire and ambulances) and VRU detection systems at three study area intersections in the pilot project study area.

C. Goals

The CG-EVP Pilot will track the performance of deployed infrastructure using key performance indicators (KPIs), such as average response time, detection accuracy, and KPIs to be identified by stakeholders (e.g., Greeley Fire Department, UC Health Ambulance Service, Greeley Public Works). System effectiveness will be tested using various scenarios including during inclement weather, day and nighttime, and a range of emergency vehicle use cases.

The CG-EVP Pilot has identified the use of a CV solution to improve the ability to integrate systems that promote connectivity of infrastructure, CVs, VRUs and the traveling public. The flexibility of the CG-EVP Pilot technologies provides opportunities for the system to accommodate a wide range of additional use cases to benefit all road users, including, but not limited to, the integration of transit vehicle priority/preemption, VRU proactive detection, etc.

The CG-EVP Pilot will coincide with the development of the City's first Multimodal Transportation Systems Management and Operations (TSMO) Plan. The lessons learned from the CG-EVP Pilot will provide additional insights to the development of the Multimodal TMSO Plan and identify early actions to meet the following goals:

- Data Integration: Collect and use real-time mobility data across multiple systems. Data may be compared with performance metrics to support operational decision making and enable real-time responses to planned and unplanned events.
- **Data Standardization and Storage:** Ensure system may be extended to be interoperable with hardware and software from various vendors and manufacturers. System data output and metadata should be created following open data specifications and stored to follow FAIR principles (findable, accessible, interoperable, reusable.)
- Infrastructure: Make functional and cost-effective transportation infrastructure investments that best enhance safety and mobility. This includes ensuring the system is a Multimodal Intelligent Traffic Safety System (MMITSS) that can prioritize the traffic (pedestrian, bicycle, transit, other vehicles) based on the needs of the City.

The CG-EVP Pilot will advance these goals by testing equipment and devices that will form the backbone of the connected transportation infrastructure, creating a central system for CV technologies that will accommodate a range of multimodal CV solutions, establishing an interoperable and device agnostic data management system, and methodically testing and refining device installations to measure effectiveness, efficiency and opportunities for expansion across the entire City traffic signal system.

Beyond the pilot, when successful, it is the intent of the City to apply for a Phase II project through the Department of Transportation for implementation throughout the City to not only expand upon the existing preemption but also transit and potential other modes.

SECTION II. STATEMENT OF WORK

A. Scope of Services

Through this Request for Qualifications (RFQ) process, the City desires to select the best team to achieve the goals, objectives and grant requirements outlined within the SMART Grant application (Exhibit 5) and SMART Grant agreement (Exhibit 6). The City have also made available the Data and Evaluation Management Plans upon completion.

The ideal connected vehicle team should possess a comprehensive background in transportation and smart infrastructure, with a minimum of 5 years of relevant experience. Candidates must demonstrate expertise in connected vehicle technologies, V2X (Vehicle-to-Everything) communication, and familiarity with emerging trends in the automotive industry. A strong understanding of intelligent transportation systems, traffic management, and the integration of connected vehicles into existing urban infrastructure is essential. Proven experience in designing and implementing connected vehicle preemption projects, coupled with excellent communication and collaboration skills, is crucial. The consultant should also exhibit proficiency in analyzing data from connected vehicles to derive insights that contribute to improved safety, operations, and overall transportation efficiency.

The selected team is expected to assist the City in the following:

<u>Planning & Design:</u> Utilizing the City's Data and Evaluation Management Plans, the selected team is expected to Develop a Concept of Operations (ConOps) for the project's implementation. This will include goals outlined within the grant, use cases and an operation description of the CG-EVP Pilot. Design and specification of the system elements, including roadside and on-board equipment and software/ IT architecture. Existing data collection processes will be reviewed and validated to ensure adequate baseline condition documentation.

<u>Procure & Train:</u> Assist the city in the procurement of equipment and training of City employees on how to install and maintain equipment. The purpose is to ensure long term maintenance/management of the equipment and alignment with the department's work force development goals. It is the City's expectation

that the selected team will train both signal and fleet staff in the configuration, installation and maintenance of equipment.

<u>Develop & Deploy:</u> Assist in the development and deployment cycles for both software and hardware. This includes both bench and initial field testing. Software is procured in parallel with the hardware to ensure maximum interoperability between them. and the system shall also be in alignment with industry best practices related to cyber security. Once bench and initial field testing is complete, full deployment can follow.

<u>Test & Validate</u>: Once fully deployed, the identified team assists the city in the collection and validation of the data. Portions of testing will need to coincide with winter operations to account for the snowplow aspects of the grant. Following the conclusion of the pilot, the results will be presented in a technical memorandum.

<u>Evaluate & Report:</u> Evaluation will be completed and documented in this phase. The results of this evaluation will dictate next steps related to Stage II of the grant. The consultant is expected to assist the City in the required quarterly and all other reporting for the grant.

The overall project schedule per the grant agreement is presented in the following table.

Milestone	Schedule Date
Evaluation & Data Management Plan (NLT 3mo after start)	12/15/2023
Draft Implementation Report (NLT 1 yr after start)	09/15/2024
Final Implementation Report (by the end of the POP)	03/15/2025

B. Period of Award

The completion date of providing the required qualifications and services shall be September 30, 2025.

If the City desires to extend the contract, no later than thirty (30) days prior to expiration, the City's Purchasing Contact may send a notice in writing to the vendor requesting firm pricing for the next twelve-month period. After the City evaluates the firm pricing qualification from the vendor, it will determine whether to extend the contract. All awards and extensions are subject to annual appropriation of funds. The provisions of the foregoing paragraphs with respect to extensions of the terms of the contract shall be null and void if the contract has been terminated or revoked during the initial term or any extension thereof. All decisions to extend the contract are at the option of the City.

C. Minimum Mandatory Qualifications of Offeror

The consultant team proposing on these qualifications shall meet the following minimum qualifications for their submittals to be considered for evaluation. Any firm (including any sub-consultant firms) NOT meeting a minimum qualification will be disqualified and the qualifications will not be considered.

- A clean record on SAM.gov,
- Required licenses and permits necessary to provide the services in State of Colorado.
- Has no conflict of interest in ability to provide services as required in the RFQ.

SECTION III. ADMINISTRATIVE INFORMATION

A. Issuing Office

The City's contact name listed herein is to be the sole point of contact concerning this RFQ. Offerors shall not directly contact other personnel regarding matters concerning this RFQ or to arrange meetings related to such.

B. Official Means of Communication

All official communication from the City to offerors will be via postings on an electronic solicitation notification system, the Rocky Mountain Bid System (www.rockymountainbidsystem.com). The Purchasing Contact will post notices that will include, but not be limited to, qualification document, addenda, award announcement, etc. It is incumbent upon offerors to carefully and regularly monitor the Rocky Mountain Bid System for any such postings.

C. Inquiries

Prospective offerors may make written inquiries by email before the written inquiry deadline concerning this RFQ to obtain clarification of requirements. There will be opportunity to make inquiries during the pre-qualification conference, if any. No inquiries will be accepted after the deadline. Inquiries regarding this RFQ (be sure to reference RFQ number) should be referred to:

E-Mail: Purchasing@greeleygov.com

Subject Line: RFQ #F23-12-091

Response to offerors' inquiries will be published as addenda on the Rocky Mountain Bid System in a timely manner. Offerors cannot rely on any other statements that clarify or alter any specification or other term or condition of the RFQ.

Should any interested offeror, sales representative, or firm find any part of the listed qualifications, specifications, terms and conditions to be discrepant, incomplete, or otherwise questionable in any respect, it shall be the responsibility of the concerned party to notify the Purchasing Contact of such matters immediately upon discovery.

D. Insurance

The successful contractor will be required to provide a Certificate of Insurance (Exhibit 3) or other proof of insurance naming the City of Greeley as "additional insured". Coverage must include COMMERCIAL GENERAL LIABILITY coverage with minimum limits of \$2,000,000, and WORKER'S COMPENSATION coverage with limits in accordance with State of Colorado requirements.

COMPREHENSIVE AUTOMOBILE LIABILITY with minimum limits for bodily injury and property damage coverage of at least \$1,000,000, plus an additional amount adequate to pay related attorneys' fees and defense costs, for each of Consultant's owned, hired or non-owned vehicles assigned to or used in performance of this agreement.

The City shall be named as additional Insured for General and Auto Liability Insurance.

Awarded offeror must present the City with proof of PROFESSIONAL LIABILITY COVERAGE with a minimum limit of \$1,000,000.

E. Modification or Withdrawal of Qualifications

Qualifications may be modified or withdrawn by the offeror prior to the established due date and time.

F. Minor Informalities

Minor informalities are matters of form rather than substance evident from the response or insignificant mistakes that can be waived or corrected without prejudice to other vendors. The Purchasing Manager may waive such informalities or allow the vendor to correct them depending on which is in the best interest of the City.

G. Responsibility Determination

The City will make awards only to responsible offerors. The City reserves the right to assess offeror responsibility at any time in this RFQ process and may not make a responsibility determination for every offeror.

H. Acceptance of RFQ Terms

A qualification submitted in response to this RFQ shall constitute a binding offer. The autographic signature of a person who is legally authorized to execute contractual obligations on behalf of the offeror shall indicate acknowledgment of this condition. A submission in response to this RFQ acknowledges acceptance by the offeror of all terms and conditions as set forth herein.

I. Protested Solicitations and Awards

Right to protest. Any actual or prospective bidder, offeror or contractor who is aggrieved in connection with the solicitation or award of a contract must protest in writing to the City Manager as a prerequisite to seeking judicial relief. Protestors are urged to seek informal resolution of their complaints initially with the Purchasing Manager. A protest shall be submitted within ten (10) calendar days after such aggrieved person knows or should have known of the facts giving rise thereto. A protest with respect to an invitation for bids or request for qualifications shall be submitted in writing prior to the opening of bids or the closing date of qualifications, unless the aggrieved person did not know and should not have known of the facts giving rise to such protests prior to bid opening or the closing date for qualifications.

1. Stay of procurement during protests. In the event of a timely protest under Subsection (A) of this Section, the Purchasing Manager shall not proceed further with the solicitation or award of the contract until all administrative and judicial remedies have been exhausted or until the City Manager makes a written determination on the record that the award of a contract without delay is necessary to protect substantial interest of the City. (Ord. 75, 1984 §2 (part))

J. Confidential/Proprietary Information

All qualifications will be confidential until a contract is awarded and fully executed. At that time, all qualifications and documents pertaining to the qualifications will be open for public inspection, except for the material that is proprietary or confidential. However, requests for confidentiality can be submitted to the Purchasing Contact provided that the submission is in accordance with the following procedures. This remains the *sole responsibility* of the offeror. The Purchasing Contact will make no attempt to cure any information that is found to be at a variance with this procedure. The offeror may not be given an opportunity to cure any variances after qualification opening. **A qualification in its entirety will not be considered confidential/proprietary.** Questions regarding the application of this procedure must be directed to the Purchasing Contact listed in this RFQ.

K. Acceptance of Qualifications Content

The contents of the qualification (including persons specified to implement the project) of the successful contractor shall become contractual obligations into the contract award. Failure of the successful offeror to perform in accordance with these obligations may result in cancellation of the award and such offeror may be removed from future solicitations.

L. RFQ Cancellation

The City reserves the right to cancel this RFQ at any time, without penalty.

M. Negotiation of Award

In the event only one (1) responsive qualification is received by the City, the City reserves the right to negotiate the award for the services with the offeror submitting the qualification in lieu of accepting the qualification as is.

N. Contract

A sample copy of the contract award the City will use to contract for the services specified in this RFQ is attached as Exhibit 2. The attached contract is only a sample and is not to be completed at this time.

O. RFQ Response/Material Ownership

All material submitted regarding this RFQ becomes the property of the City of Greeley, unless otherwise noted in the RFQ.

P. Incurring Costs

The City is not liable for any cost incurred prior to issuance of a legally executed contract and/or a purchase order.

Q. Utilization of Award by Other Agencies

The City of Greeley reserves the right to allow other State and local governmental agencies, political subdivisions, and/or school districts to utilize the resulting award under all terms and conditions specified and upon agreement by all parties. Usage by any other entity shall not have a negative impact on the City of Greeley in the current term or in any future terms.

R. Non-Discrimination

The offeror shall comply with all applicable state and federal laws, rules and regulations involving non-discrimination on the basis of race, color, religion, national origin, age or sex.

S. News Releases

Neither the City, nor the offeror, shall make news releases pertaining to this RFQ prior to execution of the contract without prior written approval of the other party. Written consent on the City's behalf is provided by the Communications and Engagement Department.

T. Certification of Independent Price Determination

- 1. By submission of this qualification each offeror certifies, and in the case of a joint qualification each party, thereto certifies as to its own organization, that in connection with this procurement:
 - a) No attempt has been made or will be made by the offeror to induce any other person or firm to submit or not to submit a qualification for the purpose of restricting competition.
- 2. Each person signing the Request for Qualification form of this qualification certifies that:
 - a) He/she is the person in the offeror's organization responsible within that organization for the decision as to the qualifications being offered herein and that he/she has not participated, and will not participate, in any action contrary to (1.a) above; or
 - b) He/she is not the person in the offeror's organization responsible within that organization for the decision as to the qualifications being offered herein but that he/she has been authorized in writing to act as agent for the persons responsible for such decision in certifying that such persons have not participated, and will not participate, in any action contrary to (1.a) above, and as their agent does hereby so certify; and he/she has not participated, and will not participate, in any action contrary to (1.a) above.

- 3. A qualification will not be considered for award where (1.a) or (2.) above has been deleted or modified.
- 4. The Contract Documents may be executed in two or more counterparts, each of which shall be deemed an original but all of which together shall constitute one and the same document. The Contract Documents, including all component parts set forth above, may be executed and delivered by electronic signature by any of the parties and all parties consent to the use of electronic signatures.

U. Taxes

The City of Greeley is exempt from all federal excise taxes and all Colorado State and local government sales and use taxes. Where applicable, contractor will be responsible for payment of use taxes.

V. Assignment and Delegation

Neither party to any resulting contract may assign or delegate any portion of the agreement without the prior written consent of the other party.

W. Availability of Funds

Financial obligations of the City of Greeley payable after the current fiscal year are contingent upon funds for that purpose being appropriated, budgeted and otherwise made available. In the event funds are not appropriated, any resulting contract will become null and void without penalty to the City.

X. Standard of Conduct

The successful firm shall be responsible for maintaining satisfactory standards of employees' competency, conduct, courtesy, appearance, honesty, and integrity, and shall be responsible for taking such disciplinary action with respect to any employee as may be necessary.

The City may request the successful firm to immediately remove from this assignment any employee found unfit to perform duties due to one or more of the following reasons:

- 1. Neglect of duty.
- 2. Disorderly conduct, use of abusive or offensive language, quarreling, intimidation by words or actions or fighting.
- 3. Theft, vandalism, immoral conduct or any other criminal action.
- 4. Selling, consuming, possessing, or being under the influence of intoxicants, including alcohol, or illegal substances while on assignment for the City.

Agents and employees of contractor or consultant working in City facilities shall present a clean and neat appearance.

Y. Damages for Breach of Contract

In addition to any other legal or equitable remedy the City may be entitled to for a breach of this Contract, if the City terminates this Contract, in whole or in part, due to contractor's breach of any provision of this Contract, contractor shall be liable for actual and consequential damages to the City.

Z. Other Statutes

 The signatory hereto avers that he/she is familiar with Colorado Revised Statutes, 18-8-301, et seq. (Bribery and Corrupt Influence) and 18-8-401, et seq. (Abuse of Public Office) as amended, and that no violation such provisions is present. The signatory hereto avers that to his/her knowledge, no City of Greeley employee has any personal or beneficial interest whatsoever in the service or property described herein. See CRS 24-18-201 and CRS 24-50-507.

SECTION IV. QUALIFICATION SUBMISSION

Following are the response requirements for this RFQ. All specific response items represent the minimum information to be submitted. Deletions or incomplete responses in terms of content or aberrations in form may, at the City's discretion, render the qualification non-responsive.

RFQ responses must be emailed to purchasing@greeleygov.com. Only emails sent to purchasing@greeleygov.com will be considered as responsive to the request for qualifications. DO NOT submit your RFQ Response to multiple email addresses. Emails sent to other City emails will be considered as non-responsive and will not be reviewed.

Qualifications shall be submitted in a single PDF file under 20MB. The Qualifications must not exceed 20 total pages, excluding cover letter, index or table of contents, front and back covers, and title pages/separation tabs. Billing rates may be submitted as a separate appendix to the PDF. Pages shall be 8 $\frac{1}{2}$ x 11 inch except for up to four (4) pages of 11 x 17 inches. Eleven-point font or larger must be used for the qualifications and appendices. Resumes and billing rates included as an appendix are not considered part of the 20 pages. **No price information, except billing rates, shall be included in the qualifications. Including pricing information beyond what is required will disqualify the offeror from evaluation of the qualifications.**

The RFQ number and Project name must be noted in the subject line, otherwise the qualifications may be considered as non-responsive to the RFQ.

Electronic submittals will be held, un-opened, until the time and date noted in the RFQ documents or Posted addenda.

To facilitate the evaluation, offeror shall submit and organize all responses in the same order as listed in Section V. Qualifications that are determined to be at a variance with this requirement may not be accepted.

Late qualifications will not be accepted. It is the responsibility of the offeror to ensure that the qualifications are received at the City of Greeley's Purchasing Division on or before the qualifications due date and time.

SECTION V. RESPONSE FORMAT

The following items are to be included in your qualifications, in the order listed. Responses should be no more than 20 pages, excluding required forms. Deviation from this may render your qualifications non-responsive.

A. Cover Letter

Include a cover letter introducing your company, summarizing your qualifications. This letter should also provide principal contact information for this RFQ, including address, telephone number, fax number, e-mail, and website (if applicable).

B. Use of Subcontractors/Partners

There may be areas for use of subcontractors or partners in this project. If you are utilizing this approach, your qualifications must list the subcontractors/partners, their area(s) of expertise, and include all other applicable information herein requested for each subcontractor/partner. Please keep in mind that the City will contract solely with your company, therefore subcontractors/partners remain your sole responsibility.

C. Minimum Mandatory Qualifications

Include an itemized description of how your company and sub-consultants, if any meet each of the minimum mandatory qualifications outlined in Section II, C. Failure to meet or exceed these requirements will disqualify your response.

D. Company Information

- 1. Provide the following information as listed: Company Name, Address, Phone Number, and Names of Principals.
- 2. Identify the year in which your company was established and began providing consulting services.
- 3. Describe any pending plans to sell or merge your company.
- 4. Provide a comprehensive listing of all the services you provide.

E. Evaluation Criterion #1 - Company and Personnel Qualifications

- 1. Describe your customer service philosophy. Provide an organization chart showing your proposed team and channels of communications.
- 2. Provide information from preferably at least three projects of similar scope performed by key personnel in your qualification statement. If your team includes an ITS provider/ solution, please provide an additional three projects of similar scope. Include, at a minimum, the following information:
 - 1) client name, 2) contact name, 3) phone number, 4) email address, 5) brief description of project scope and value, 6) status of project.

The City reserves the right to contact the references provided in your qualifications as well as other references without prior notification to you.

- 3. List the number of people that you can commit to working on this project and the amount of time each is expected to spend on the project broken out by potential task areas.
- 4. Provide the names and resumes of the key personnel that will be performing the proposed services, including the primary project manager.
- 5. List the names of the subcontractors you expect to use, the services to be provided by the subcontractors and the amount of time that each is expected to spend on the project. Also, include the names and resumes of the key subcontractor personnel who will be working on the project.
- 6. Provide a specific timeline or schedule for the work to ensure completion within the defined timeline outlined within the scope of work. Show milestones and completion dates on your proposed schedule.
- 7. Describe the methods and timeline of communication your firm will use with the City's project manager, other involved City staff, and other interested parties.

Evaluation Criterion #2 - Approach to Scope of Work

- 1. Describe any project approaches or ideas that you would apply to this project and that you feel would:
 - a) enhance the quality of your services
 - b) enhance the overall project
 - c) ensure timelines, goals and objectives of the federal grant are met, including ensuring the project would be scalable as part of a Stage 2 grant funding request.
- 2. If the team includes an ITS provider/ solution, please outline in your response how the provider/ solution has been vetted to ensure it is the best solution for this application.

- Describe how the team will handle quality control, specifically how issues would be monitored and resolved, documents checked and cross-referenced.
- 4. Describe how your team plans on aligning the project requirements with industry best practices related to cyber security.

F. Qualification Acknowledgement

Include this form as provided in Exhibit 1.

G. Certificate of Insurance

A sample Certificate of Insurance is provided in Exhibit 3.

H. Debarment Form

Include this form as provided in Exhibit 4.

SECTION VI. EVALUATION AND AWARD

A. Qualifications Evaluation

All qualifications submitted in response to this RFQ will be evaluated by a committee in accordance with the criteria described below. Total scores will be tabulated, and the highest ranked firm will enter into negotiations.

If the City requests presentations by short-listed offerors, committee members may revise their initial scores based upon additional information and clarification received in this phase. Please note that presentations have been tentatively scheduled per the Schedule of Events on the first page of this RFQ. If your company is invited to give a presentation to the committee, these dates may not be flexible.

In preparing responses, offerors should describe in detail how they propose to meet the specifications as detailed in the previous sections. Specific factors will be applied to qualification information to assist the City in selecting the most qualified offeror for this contract. Following are the evaluation criteria that will be used. Criteria will be assigned a points value.

List Evaluation Criteria here:

Company and Personnel Qualifications:
 Approach to Scope of Work & Grant Timeline:
 60 Points

A presentation and/or demonstration may be requested by short-listed offerors prior to award. However, a presentation/demonstration may not be required, and therefore, complete information should be submitted with your qualifications.

B. Determination of Responsibility of the Offeror

The City of Greeley awards contracts to responsible offerors only. The City reserves the right to make its offeror responsibility determination at any time in this RFQ process and may not make a responsibility determination for every offeror.

The City of Greeley's Municipal Code defines a "Responsible Offeror" as one who has "the capability in all respects to perform fully the contract requirements, and the tenacity, perseverance, experience, integrity, reliability, capacity, facilities, equipment, and credit which will assure good faith performance." The City reserves the right to request information as it deems necessary to determine an offeror's responsibility. If the offeror fails to supply the requested information, the City shall base the determination of responsibility upon any available information or may find the offeror non-responsible if such failure is unreasonable.

COOPERATIVE PURCHASING STATEMENT

The City of Greeley encourages and participates in cooperative purchasing endeavors undertaken by or on behalf of other governmental jurisdictions. To the extent, other governmental jurisdictions are legally able to participate in cooperative purchasing endeavors; the City of Greeley supports such cooperative activities. Further, it is a specific requirement of this proposal or Request for Qualifications that pricing offered herein to the City of Greeley may be offered by the vendor to any other governmental jurisdiction purchasing the same products. The vendor(s) must deal directly with any governmental agency concerning the placement of purchase orders, contractual disputes, invoicing, and payment. The City of Greeley shall not be liable for any costs or damages incurred by any other entity.

EXHIBIT 1 QUALIFICATION ACKNOWLEDGEMENT

The offeror hereby acknowledges receipt of addenda numbers through . Falsifying this information is cause to deem your qualification nonresponsive and therefore ineligible for consideration. In addition, falsification of this information is cause to cancel a contract awarded based on one or both of the above preferences. By signing below, you agree to all terms & conditions in this RFQ, except where expressly described in your cover letter. Original Signature by Authorized Officer/Agent Type or printed name of person signing Company Name Title Phone Number Vendor Mailing Address Fax Number City, State, Zip Qualifications Valid Until (at least for 90 days) E-Mail Address Website Address **Project Manager:** Name (Printed) Phone Number Fax Number Vendor Mailing Address

Email Address

City, State, Zip

EXHIBIT 2 SAMPLE CONTRACT

(Incorporated By Reference)

Exhibit 2 Sample COG Professional Services Contract F23-12-091.pdf

EXHIBIT 3 SAMPLE CERTIFICATE OF INSURANCE

Client#: 12170	GRECI				
	F LIABILITY INSURANCE	E (MM/DD7777) 5/14/2013			
THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.					
the terms and conditions of the policy, certain policies may re	RED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, equire an endorsement. A statement on this certificate does not confer				
certificate holder in lieu of such endorsement(s).					
ABC Insurance Company	NAME:				
P. O. Box 1234	PHONE (A/C, No, Ext): (A/C, No):				
Anywhere, USA	AD DRESS: PRODUCER CUSTOMER ID #:				
	INSURER(S) AFFORDING COVERAGE	NAIC #			
Sample Certificate	INSURER A: Financial Rating of A	+			
	INSURER B:				
	INSURER C : INSURER D :				
	INSURER E:	_			
	INSURER F:				
COVERAGES CERTIFICATE NUMBER:	REVISION NUMBER:				
INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CON. CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AF EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS 940WN M.		HIS			
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X NON-OWNED AUTOS	\$				
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If yes, describe under DES ORPTION OF OPERATIONS below		00,000			
DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Ramarka Schedule, if more space is required) City of Greeley is named as Additional Insured on General Liability. Walver of subrogation is included on Work Compensation. This insurance is primary and noncontributory to insurance policies held by the City.					
CERTIFICATE HOLDER	CANCELLATION				
City of Greeley 1000 10th St Greeley, CO 80631-3808		SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.			
1	AUTHORIZED REPRESENTATIVE				
	@ 1988-2009 ACORD CORPORATION. All I	inhte received			

ACORD 25 (2009/09) 1 of 1 The ACORD name and logo are registered marks of ACORD #S786373M786364

DSM

EXHIBIT 4 DEBARMENT/SUSPENSION CERTIFICATION STATEMENT

The proposer certifies that neither it nor its principals are presently debarred, suspended, proposed for debarment, declared ineligible or voluntarily excluded from participation in this transaction by any Federal, State, County, Municipal or any other department or agency thereof. The proposer certifies that it will provide immediate written notice to the City if at any time the proposer learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstance.

UEI # (Optional)	
Name of Organization	_
Address_	_
Authorized Signature	
Title	
Date	

EXHIBIT 5 GRANT AGREEMENT

(The Terms and Conditions of this agreement are a part of the contract terms and will flow down to the selected consultant and sub consultants.)

CITY OF GREELEY, COLORADO RESOLUTION 30, 2023

RESOLUTION AUTHORIZING THE CITY TO ENTER INTO AN INTERGOVERNMENTAL AGREEMENT WITH THE UNITES STATES DEPARTMENT OF TRANSPORTATION FOR A CONNECTED GREELEY – EMERGENCY VEHICLE PREEMPTION (CG-EVP) PILOT

WHEREAS, in accordance with C.R.S. §29-1-203, governments may cooperate or contract with one another to provide function, service or facility lawfully authorized to each of the cooperating or contracting units of government; and

WHEREAS, through a competitive SMART grant process with the United States Department of Transportation (USDOT), the City has been awarded a Connected Greeley – Emergency Vehicle Preemption (CG-EVP) Pilot grant, in the total amount of One Million Three Hundred Eight Two Thousand One Hundred Fifty Dollars (\$1.382.150.00); and

WHEREAS, USDOT will be responsible for the general administration and supervision of the performance of the Project, and is willing to provide One Million Three Hundred Eight Two Thousand One Hundred Fifty Dollars (\$1.382.150.00); and

WHEREAS, the Project will require no matching funding from the City (\$0); and

WHEREAS, the City desires to comply with the applicable requirements for USDOT's general administration and supervision of the Project through this IGA, in order to obtain federal funds; and

WHEREAS, the City is adequately staffed and suitably equipped to undertake and satisfactorily complete some or all of the work on the Project; and

WHEREAS, it is in the best interest of the citizens of the City for Council to enter into this IGA, reduce rear-end crashes at this Intersection, thus maintaining a safe, competitive, appealing, and successful community; and

WHEREAS, this IGA with USDOT is authorized by C.R.S. §§43-2-103, and 43-2-144; and

WHEREAS, the City and USDOT have agreed to the terms and conditions of the IGA attached hereto and incorporated herein as Exhibit A.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF GREELEY, COLORADO:

Section 1. The City Council hereby authorizes the City to enter into this IGA.

<u>Section 2</u>. City staff is hereby authorized to make changes and modifications to the Agreement, so long as the substance of the IGA remains unchanged.

<u>Section 3</u>. This Resolution shall become effective immediately upon its passage, as provided by the Greeley City Charter.

 ${\bf PASSED} \ {\bf AND} \ {\bf ADOPTED}, {\bf SIGNED} \ {\bf AND} \ {\bf APPROVED} \ {\bf THIS} \ {\bf 5th} \ {\bf DAY} \ {\bf of} \ {\bf SEPTEMBER}$

2023.

ATTEST:

THE CITY OF GREELEY, COLORADO

By: City Clerk

By: Mayor

STRENGTHENING MOBILITY AND REVOLUTIONIZING TRANSPORTATION (SMART) GRANTS PROGRAM

1. Award No.

69A3552341024 SMARTFY22N1P1G15

4. Award To

City of Greeley

2. Effective Date See No. 17 Below 3. Assistance Listings No. 20.941

5. Sponsoring Office

U.S. Department of Transportation
Office of the Assistant Secretary for Research
and Technology
1200 New Jersey Avenue, SE
Washington, DC 20590

Unique Entity Id:

VJG3QJJKZ1X6

6. Period of Performance

09/15/23 to 03/15/25

7. Total Amount

Federal Share: \$1,382,150

Recipient Share: Other Federal Funds: Other Funds:

Total: \$1,382,150

8. Type of Agreement

Grant

9. Authority

Section 25005 of the Infrastructure Investment and Jobs Act (Pub. L. 117–58, November 15, 2021; also referred to as the "Bipartisan Infrastructure Law" or "BIL")

10. Procurement Request No.

69A3552341024

11. Federal Funds Obligated

\$1.382.150

12. Submit Payment Requests To

See article 19.

13. Payment Office

See article 19.

14. Accounting and Appropriations Data 69A3552341024

Provide Emergency Vehicle Preemption (EVP), snowplow priority, and a 15. Description of Project Vulnerable Road User (VRU) detection and warning system at intersections in Greeley.

RECIPIENT

16. Signature of Person Authorized to Sign

Pocusigned by:

Raymond C. W || 9/7/2023

Signature Date

Name: Raymond C. Lee III Title: City Manager

City of Greeley

17. OFFICE OF THE ASSISTANT SECRETARY FOR RESEARCH AND TECHNOLOGY Signature of Agreement Officer

ROXANNE D

Digitally signed by ROXANNE D LEDESMA

LEDESMA-

Date: 2023.09.11 08:12:49 -04'00'

Signature

Name: Roxanne Ledesma

Title: Supervisory Grant Management Specialist

(Agreement Officer)

U.S. DEPARTMENT OF TRANSPORTATION

GRANT AGREEMENT UNDER THE FISCAL YEAR 2023 STRENGTHENING MOBILITY AND REVOLUTIONIZING TRANSPORTATION (SMART) GRANTS PROGRAM

This agreement is between the [United States Department of Transportation (the "USDOT")] and the City of Greeley (the "Recipient").

This agreement reflects the selection of the Recipient to receive a Strengthening Mobility and Revolutionizing Transportation (SMART) Grant for the Connected Greeley – Emergency Vehicle Preemption (CG-EVP) Pilot The parties therefore agree to the following:

ARTICLE 1 GENERAL TERMS AND CONDITIONS

- (1) In this agreement, "General Terms and Conditions" means the content of the document titled "General Terms and Conditions Under the Fiscal Year Strengthening Mobility and Revolutionizing Transportation (SMART) Grants Program," dated June 20, 2023, which is available at https://www.transportation.gov/grants/smart/grants-management. Articles 7–30 are in the General Terms and Conditions. The General Terms and Conditions are part of this agreement.
- (2) The Recipient states that it has knowledge of the General Terms and Conditions. Recipient also states that it is required to comply with all applicable Federal laws and regulations including, but not limited to, the Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards (2 CFR part 200); National Environmental Policy Act (NEPA) (42 U.S.C. § 4321 et seq.); and Build America, Buy America Act (BIL, div. G §§ 70901-27).
- (3) The Recipient acknowledges that the General Terms and Conditions impose obligations on the Recipient and that the Recipient's non-compliance with the General Terms and Conditions may result in remedial action, termination of the SMART Grant, disallowing costs incurred for the Project, requiring the Recipient to refund to the USDOT the SMART Grant, and reporting the non-compliance in the Federal-government-wide integrity and performance system.

STRENGTHENING MOBILITY AND REVOLUTIONIZING TRANSPORTATION (SMART) GRANTS PROGRAM

ARTICLE 2 APPLICATION, PROJECT, AND AWARD

a. Application.

Application Title: Connected Greeley – Emergency Vehicle Preemption (CG-EVP) Pilo

Application Date: November 18, 2022

b. Award Amount.

SMART Grant Amount: \$1,382,150

c. Award Dates.

Period of Performance End Date: 03/15/2025

d. Budget Period

Budget Period End Date: 03/15/2025

FEDERAL AWARD IDENTIFICATION NUMBER.

The Federal Award Identification Number is listed on page 1, line 1.

ARTICLE 3 SUMMARY PROJECT INFORMATION

a. Summary of Project's Statement of Work.

Provide Emergency Vehicle Preemption (EVP), snowplow priority, and a Vulnerable Road User (VRU) detection and warning system at intersections in Greeley.

b. Project's Estimated Schedule.

Milestone	Schedule Date
Evaluation & Data Management Plan (NLT 3mo after start)	12/15/2023
Draft Implementation Report (NLT 1 yr after start)	09/15/2024
Final Implementation Report (by the end of the POP)	03/15/2025

Project's Estimated Costs.

(1) Eligible Project Costs

Eligible Project Costs		
SMART Grant Amount:	\$1,382,150	
Other Federal Funds:		
State Funds:		
Local Funds:		
In-Kind Match:		
Other Funds:		
Total Eligible Project Cost:	\$1,382,150	

(2) Supplemental Estimated Budget

Cost Element	Federal Share	Non-Federal Share	Total Budget
			Amount
Direct Labor	97,000	\$0	97,000
Fringe Benefits	\$0	\$0	\$0
Travel	3,000	\$0	3,000
Equipment	74,6500	\$0	746,500
Supplies	40,000	\$0	40,000
Contractual/Consultant	370,000	\$0	370,000
Construction	\$0	\$0	\$0
Other	125,650	\$0	125,650
Indirect Costs	\$0	\$0	\$0

STRENGTHENING MOBILITY AND REVOLUTIONIZING TRANSPORTATION (SMART) GRANTS PROGRAM

Total Budget	\$1,382,150	\$0	\$1,382,150

(3) Cost Classification Table -Implementation Grants Only

Utilize the descriptions from the SF-424c to determine what cost goes in each row.

		Non-SMART Previously Incurred	Eligible
Cost Classification	Total Costs	Costs	Costs
Administrative and legal expenses	0	0	0
Land, structures, rights-of-way, appraisals, etc.	0	0	0
Relocation expenses and payments	0	0	0
Architectural and engineering fees	0	0	0
Other architectural and engineering fees	0	0	0
Project inspection fees	0	0	0
Site work	0	0	0
Demolition and removal	0	0	0
Construction	0	0	0
Equipment	0	0	0
Miscellaneous	0	0	0
Contingency	0	0	0
Project Total	0	0	0

ARTICLE 4 RECIPIENT INFORMATION

a. Recipient's Unique Entity Identifier.

VJG3QJJKZ1X6

b. Recipient Contact(s).

Steven Younkin
Deputy Chief Engineer
2835 10th Street,
Greeley, CO, 80634-5424
(970) 373-6281
steven.younkin@greeleygov.com

c. Recipient Key Personnel.

Name	Title or Position
Steven Younkin	Deputy Chief Engineer

d. USDOT Project Contact(s).

Roxanne Ledesma

Strengthening Mobility and Revolutionizing Transportation Grants Program Manager U.S. Department of Transportation

Office of the Assistant Secretary for Research and Technology 1200 New Jersey Avenue, S.E.

Washington, DC 20590

(202) 774-8003

Roxanne.Ledesma@dot.gov

ARTICLE 5 USDOT ADMINISTRATIVE INFORMATION

5.1 Office for Subaward and Contract Authorization.

(a) USDOT Office for Subaward and Contract Authorization: Office of the Assistant Secretary for Research and Technology SUBAWARDS AND CONTRACTS APPROVAL

Note: See 2 CFR § 200.331, Subrecipient and contractor determinations, for definitions of subrecipient (who is awarded a subaward) versus contractor (who is awarded a contract).

Note: Recipients with a procurement system deemed approved and accepted by the Government or by the AO are exempt from the requirements of this clause. See 2 CFR 200.317 through 200.327.

- (b) Unless described in the application and funded in the approved award, the Recipient must obtain prior written approval from the AO for the subaward, transfer, or contracting out of any work under this award above the Simplified Acquisition Threshold. This provision does not apply to the acquisition of supplies, material, equipment, or general support services. Approval of each subaward or contract is contingent upon the Recipient's submittal of a written fair and reasonable price determination, and approval by the AO for each proposed contractor/sub-recipient. Consent to enter into subawards or contracts will be issued through written notification from the AO or a formal amendment to the Agreement.
- (c) The following subawards and contracts are currently approved under the Agreement by the AO. This list does not include supplies, material, equipment, or general support services which are exempt from the pre-approval requirements of this clause.

(Fill in at award or by amendment)

5.2 Reimbursement Requests

- (a) The Recipient may request reimbursement of costs incurred in the performance of this agreement if those costs do not exceed the funds available under section 2.2 and are allowable under the applicable cost provisions of 2 C.F.R. Part 200, Subpart E. The Recipient shall not request reimbursement more frequently than monthly.
- (b) The Recipient shall use the DELPHI elnvoicing System to submit requests for reimbursement to the payment office. When requesting reimbursement of costs incurred or credit for cost share incurred, the Recipient shall electronically submit supporting cost detail with the SF 271 (Outlay Report and Request for Reimbursement for Construction Programs) to clearly document all costs incurred.

STRENGTHENING MOBILITY AND REVOLUTIONIZING TRANSPORTATION (SMART) GRANTS PROGRAM

- (c) The Recipient's supporting cost detail shall include a detailed breakout of all costs incurred, including direct labor, indirect costs, other direct costs, travel, etc., and the Recipient shall identify the Federal share and the Recipient's share of costs. If the Recipient does not provide sufficient detail in a request for reimbursement, the AO may withhold processing that request until the Recipient provides sufficient detail.
- (d) The USDOT shall not reimburse costs unless the Agreement Officer's Representative (the "AOR") reviews and approves the costs to ensure that progress on this agreement is sufficient to substantiate payment.
- (e) The USDOT may waive the requirement in section 19.7(a) that the Recipient use the DELPHI eInvoicing System. The Recipient may obtain waiver request forms on the DELPHI eInvoicing website (http://www.dot.gov/cfo/delphi-einvoicing-system.html) or by contacting the AO. A Recipient who seeks a waiver shall explain why they are unable to use or access the Internet to register and enter payment requests and send a waiver request to

Director of the Office of Financial Management US Department of Transportation, Office of Financial Management B-30, Room W93-431 1200 New Jersey Avenue SE Washington DC 20590-0001

or

DOTElectronicInvoicing@dot.gov.

(f) To seek reimbursement from DOT, the Recipient shall submit documentary evidence of all expenditures associated with the Grant Project (those to be covered by the local and/or state contribution, as well as those covered by the Federal contribution) on a monthly basis. All reimbursement requests to DOT shall include sufficient documentation to justify reimbursement of the Recipient, including invoices and proof of payment of the invoice. In seeking reimbursements, grant recipients must provide invoices or other evidence of the expenditure, details about the expenditure and how it relates to the grant project, and evidence of payment.

The requirements set forth in these terms and conditions supersede previous financial invoicing requirements for Recipients.

ARTICLE 6 SPECIAL GRANT TERMS

- 6.1 SMART funds must be expended by the budget period end date in section 10.3 of the Terms and Conditions.
- 6.2 The Recipient should demonstrate compliance with civil rights obligations and nondiscrimination laws, including Title VI of the Civil Rights Act of 1964, the Americans with Disabilities Act of 1990 (ADA), Section 504 of the Rehabilitation Act, and implementing regulations. This should include a current Title VI plan, completed Community Participation Plan, and a plan to address any legacy infrastructure or facilities that are not compliant with ADA standards. The Department's and the applicable Operating Administrations' Offices of Civil Rights may work with awarded grant recipients to ensure full compliance with Federal civil rights requirements.
- **6.3** There are no other special grant requirements for this award.

ATTACHMENT A PERFORMANCE MEASUREMENT INFORMATION

Baseline Measurement Date: Due 90 days after award

Baseline Report Date: Due 90 days after award

Table 1: Performance Measure Table

Measure	Category and Description	Measurement Frequency
Safety and Reliability	Qualitative Project Benefits: Qualitative description of the anticipated impacts of at-scale implementation on emergency response and the safety of systems for pedestrians, bicyclists, and the broader traveling public	End of period of performance
Resiliency	Qualitative Project Benefits: Qualitative description of the anticipated impacts of at-scale implementation on the reliability and resiliency of the transportation system including cybersecurity and climate change	End of period of performance
Equity and Access	Qualitative Project Benefits: Qualitative description of the anticipated impacts of at-scale implementation on connecting or expanding access to jobs, education, and essential services for underserved or disadvantaged populations	End of period of performance
Climate	Qualitative Project Benefits: Qualitative description of the anticipated impacts of at-scale implementation on congestion, air pollution, emissions, and energy efficiency	End of period of performance
Partnerships	Qualitative Project Benefits: Qualitative description of the anticipated impacts of	End of period of performance

STRENGTHENING MOBILITY AND REVOLUTIONIZING TRANSPORTATION (SMART) GRANTS PROGRAM

Measure	Category and Description	Measurement Frequency
	at-scale implementation on the economic competitiveness and private sector investments or partnerships including technical and financial commitments	
Integration	Qualitative Project Benefits: Qualitative description of the anticipated impacts of at-scale implementation on the integration of systems and the connectivity of infrastructure, connected vehicles, pedestrians, bicyclists, and the broader traveling public	End of period of performance
Costs	Project Costs: Quantification of the cost of the proof-of-concept or prototype carried out using the grant (Stage 1)	End of period of performance
Costs	Project Costs: Quantification of the anticipated cost of at-scale implementation (Stage 2)	End of period of performance
Lessons Learned and Recommendations	Lessons Learned and Recommendations: Description of lessons learned and recommendations for future deployment strategies	End of period of performance

Scope:

Schedule:

Budget:

ATTACHMENT B CHANGES FROM APPLICATION

INSTRUCTIONS FOR COMPLETING ATTACHMENT B: Describe all material differences between the scope, schedule, and budget described in the application and the scope, schedule, and budget described in Article 3. The purpose of this attachment B is to document the differences clearly and accurately in scope, schedule, and budget to establish the parties' knowledge and acceptance of those differences. See section 10.1.

	Application		Section 3.3	
Fund Source	\$	%	\$	%
Previously Incurred Costs				
(Non-Eligible Project Costs)				
Federal Funds				
Non-Federal Funds				
Total Previously Incurred Costs				
Future Eligible Project Costs				
SMART Funds	\$1,382,150	100	\$1,382,150	100
Other Federal Funds				
Non-Federal Funds				
Total Future Eligible Project				
Costs				

\$1,382,150

100

\$1,382,150

Total Project Costs

100

ATTACHMENT C CLIMATE CHANGE AND ENVIRONMENTAL JUSTICE IMPACTS

1. Consideration of Climate Change and Environmental Justice Impacts.

The Recipient states that rows marked in the following table are accurate:

	The Project directly supports a Local/Regional/State Climate Action Plan that results in lower greenhouse gas emissions. (<i>Identify the plan in the supporting</i>
	narrative below.)
	The Project directly supports a Local/Regional/State Equitable Development Plan that results in lower greenhouse gas emissions. (Identify the plan in the supporting narrative below.)
	The Project directly supports a Local/Regional/State Energy Baseline Study that results in lower greenhouse gas emissions. (<i>Identify the plan in the supporting narrative below.</i>)
	The Recipient or a project partner used environmental justice tools, such as the EJSCREEN, to minimize adverse impacts of the Project on environmental justice communities. (<i>Identify the tool(s) in the supporting narrative below.</i>)
✓	The Project supports a modal shift in freight or passenger movement to reduce emissions or reduce induced travel demand. (Describe that shift in the supporting narrative below.)
	The Project utilizes demand management strategies to reduce congestion, induced travel demand, and greenhouse gas emissions. (Describe those strategies in the supporting narrative below.)
	The Project incorporates electrification infrastructure, zero-emission vehicle infrastructure, or both. (Describe the incorporated infrastructure in the supporting narrative below.)
	The Project supports the installation of electric vehicle charging stations. (Describe that support in the supporting narrative below.)
	The Project promotes energy efficiency. (Describe how in the supporting narrative below.)
	The Project serves the renewable energy supply chain. (Describe how in the supporting narrative below.)
✓	The Project improves disaster preparedness and resiliency (Describe how in the supporting narrative below.)
	The Project avoids adverse environmental impacts to air or water quality, wetlands, and endangered species, such as through reduction in Clean Air Act criteria pollutants and greenhouse gases, improved stormwater management, or improved habitat connectivity. (Describe how in the supporting narrative below.)
	The Project repairs existing dilapidated or idle infrastructure that is currently causing environmental harm. (Describe that infrastructure in the supporting narrative below.)
	The Project supports or incorporates the construction of energy- and location-efficient buildings. (Describe how in the supporting narrative below.)

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STRENGTHENING MOBILITY AND REVOLUTIONIZING TRANSPORTATION (SMART) GRANTS PROGRAM

The Project includes recycling of materials, use of materials known to reduce or reverse carbon emissions, or both. (Describe the materials in the supporting narrative below.)
The Recipient has taken other actions to consider climate change and environmental justice impacts of the Project, as described in the supporting narrative below.
The Recipient has not yet taken actions to consider climate change and environmental justice impacts of the Project but, before beginning construction of the Project, will take relevant actions described in Attachment A. (Identify the relevant actions from Attachment A in the supporting narrative below.)
The Recipient has not taken actions to consider climate change and environmental justice impacts of the Project and will not take those actions under this award.

2. Supporting Narrative.

[Recipient - Insert supporting text in last page, as described in the table above.]

ATTACHMENT D RACIAL EQUITY AND BARRIERS TO OPPORTUNITY

1. Efforts to Improve Racial Equity and Reduce Barriers to Opportunity.

The Recipient states that rows marked with "X" in the following table are accurate:

	A racial equity impact analysis has been completed for the Project. (Identify a report on that analysis or, if no report was produced, describe the analysis and its results in the supporting narrative below.)
√	The Recipient or a project partner has adopted an equity and inclusion program/plan or has otherwise instituted equity-focused policies related to project procurement, material sourcing, construction, inspection, hiring, or other activities designed to ensure racial equity in the overall delivery and implementation of the Project. (<i>Identify the relevant programs, plans, or policies in the supporting narrative below.</i>)
	The Project includes physical-barrier-mitigating land bridges, caps, lids, linear parks, and multimodal mobility investments that either redress past barriers to opportunity or that proactively create new connections and opportunities for underserved communities that are underserved by transportation. (<i>Identify the relevant investments in the supporting narrative below.</i>)
	The Project includes new or improved walking, biking, and rolling access for individuals with disabilities, especially access that reverses the disproportional impacts of crashes on people of color and mitigates neighborhood bifurcation. (Identify the new or improved access in the supporting narrative below.)
	The Project includes new or improved freight access to underserved communities to increase access to goods and job opportunities for those underserved communities. (Identify the new or improved access in the supporting narrative below.)
	The Recipient has taken other actions related to the Project to improve racial equity and reduce barriers to opportunity, as described in the supporting narrative below.
	The Recipient has not yet taken actions related to the Project to improve racial equity and reduce barriers to opportunity but, before beginning construction of the project, will take relevant actions described in Attachment A. (Identify the relevant actions from Attachment A in the supporting narrative below.)
	The Recipient has not taken actions related to the Project to improve racial equity and reduce barriers to opportunity and will not take those actions under this award.

2. Supporting Narrative.

[Recipient- Insert supporting text in last page, as described in the table above.]

ATTACHMENT E LABOR AND WORKFORCE

1. Efforts to Support Good-Paying Jobs and Strong Labor Standards. Successful projects will also support the creation of good-paying jobs with the free and fair choice to join a union.

As outlined in the Notice of Funding Opportunity, applicants are evaluated and selected based on criteria including the extent to which applicants identify the necessary planning and engagement activities that, as projects are fully implemented during Stage 2, will ensure high-quality job creation by supporting good-paying jobs with a free and fair choice to join a union, incorporating strong labor standards (e.g., wages and benefits at or above prevailing, use of project labor agreements, registered apprenticeship programs, pre-apprenticeships tied to 16 registered apprenticeships, etc.), and/or providing workforce opportunities for historically underrepresented groups (e.g., workforce development program, etc.). The table below enables The Recipient to demonstrate how this criteria is addressed.

The Recipient states that rows marked with "X" in the following table are accurate:

	The Recipient demonstrate, to the full extent possible consistent with the law, an effort to create good-paying jobs with the free and fair choice to join a union and incorporation of high labor standards. (Identify the relevant agreements and describe the scope of activities they cover in the supporting narrative below.)
✓	The Recipient or a project partner has adopted the use of local and economic hiring preferences in the overall delivery and implementation of the Project. (Describe the relevant provisions in the supporting narrative below.)
	The Recipient or a project partner has adopted the use of registered apprenticeships in the overall delivery and implementation of the Project. (Describe the use of registered apprenticeship in the supporting narrative below.)
	The Recipient or a project partner will provide training and placement programs for underrepresented workers in the overall delivery and implementation of the Project. (Describe the training programs in the supporting narrative below.)
	The Recipient or a project partner will support free and fair choice to join a union in the overall delivery and implementation of the Project by investing in workforce development services offered by labor-management training partnerships or setting expectations for contractors to develop labor-management training programs. (Describe the workforce development services offered by labor-management training partnerships in the supporting narrative below.)

STRENGTHENING MOBILITY AND REVOLUTIONIZING TRANSPORTATION (SMART) GRANTS PROGRAM

	The Recipient or a project partner will provide supportive services and cash assistance to address systemic barriers to employment to be able to participate and thrive in training and employment, including childcare, emergency cash assistance for items such as tools, work clothing, application fees and other costs of apprenticeship or required pre-employment training, transportation and travel to training and work sites, and services aimed at helping to retain underrepresented groups like mentoring, support groups, and peer networking. (Describe the supportive services and/or cash assistance provided to trainees and employees in the supporting narrative below.) The Recipient or a project partner has documented agreements or ordinances in
	place to hire from certain workforce programs that serve underrepresented groups. (<i>Identify the relevant agreements and describe the scope of activities</i>
	they cover in the supporting narrative below.)
	The Recipient or a project partner participates in a State/Regional/Local comprehensive plan to promote equal opportunity, including removing barriers to hire and preventing harassment on work sites, and that plan demonstrates action to create an inclusive environment with a commitment to equal opportunity, including:
✓	 a. affirmative efforts to remove barriers to equal employment opportunity above and beyond complying with Federal law; b. proactive partnerships with the U.S. Department of Labor's Office of Federal Contract Compliance Programs to promote compliance with EO 11246 Equal Employment Opportunity requirements and meet the requirements as outlined in the Notice of Funding Opportunity to make good faith efforts to meet the goals of 6.9 percent of construction project hours being performed by women and goals that vary based on geography for construction work hours and for work being performed by people of color; c. no discriminatory use of criminal background screens and affirmative steps to recruit and include those with former justice involvement, in accordance with the Fair Chance Act and equal opportunity requirements; d. efforts to prevent harassment based on race, color, religion, sex, sexual orientation, gender identity, and national origin; e. training on anti-harassment and third-party reporting procedures covering employees and contractors; and f. maintaining robust anti-retaliation measures covering employees and contractors. (Describe the equal opportunity plan in the supporting narrative below.)
	The Recipient has taken other actions related to the Project to create good-
	paying jobs with the free and fair choice to join a union and incorporate strong labor standards. (Describe those actions in the supporting narrative below.)

STRENGTHENING MOBILITY AND REVOLUTIONIZING TRANSPORTATION (SMART) GRANTS PROGRAM

The Recipient has not yet taken actions related to the Project to create good-paying jobs with the free and fair choice to join a union and incorporate strong labor standards but, before beginning construction of the project, will take relevant actions described in schedule B. (Identify the relevant actions from schedule B in the supporting narrative below.)
The Recipient has not taken actions related to the Project to improving good- paying jobs and strong labor standards and will not take those actions under this award.

a. Supporting Narrative.

[Recipient- Insert supporting text in last page, as described in the table above.]

ATTACHMENT F CRITICAL INFRASTRUCTURE SECURITY AND RESILIENCE

1. Efforts to strengthen the Security and Resilience of Critical Infrastructure against both Physical and Cyber Threats.

The Recipient states that rows marked with "X" in the following table are accurate:

	The Recipient demonstrates, prior to the signing of this agreement, effort to
	consider and address physical and cyber security risks relevant to the
	transportation mode and type and scale of the activities.
	The Recipient appropriately considered and addressed physical and cyber
	security and resilience in the planning, design and oversight of the project, as
	determined by the Department and the Department of Homeland Security.
	The Recipient complies with 2 CFR 200.216 and the prohibition on certain
V	telecommunications and video surveillance services or equipment.
	For projects in floodplains: The Recipient appropriately considered whether
	the project was upgraded consistent with the Federal Flood Risk Management
	Standard, to the extent consistent with current law, in Executive Order 14030,
	Climate-Related Financial Risk (86 FR 27967), and Executive Order 13690,
	Establishing a Federal Flood Risk Management Standard and a Process for
	Further Solicit and Considering Stakeholder Input (80 FR 6425).

2. Supporting Narrative.

[Recipient- Insert supporting text in last page as described in the table above.]

SUPPORTING TEXT FOR CLIMATE CHANGE AND ENVIRONMENTAL JUSTICE IMPACTS

The Project supports a modal shift in freight or passenger movement to reduce emissions or reduce induced travel demand.

Supporting text: The Project is a pilot study to evaluate the to evaluate and install connected vehicle (CV) technologies to, provide emergency vehicle preemption (EVP) for emergency vehicles (e.g., firetrucks and ambulances) and preemption for snowplows and; Vulnerable Road User (VRU) detection and warning system using CV technology in emergency and snowplow vehicles. Upon successful completion of the pilot, the next phase will not only expand the footprint of the program but also expand to include low priority preemption for transit vehicles. This will lead to a modal shift for local and regional transit services and consequently reduce emissions due to less idling times at signals.

The Project improves disaster preparedness and resiliency

Supporting text: The CG-EVP Pilot will track the performance of deployed infrastructure using key performance indicators (KPIs), such as average response time, detection accuracy, and KPIs to be identified by stakeholders. System effectiveness will be tested using various scenarios including during inclement weather, day and nighttime, and a range of emergency vehicle use cases.

SUPPORTING TEXT FOR RACIAL EQUITY AND BARRIERS TO OPPORTUNITY

The Recipient or a project partner has adopted an equity and inclusion program/plan or has otherwise instituted equity-focused policies related to project procurement, material sourcing, construction, inspection, hiring, or other activities designed to ensure racial equity in the overall delivery and implementation of the Project.

Supporting text: The City of Greeley uses the following language in procurement.

1. CIVIL RIGHTS REQUIREMENTS

(29 U.S.C. § 623, 42 U.S.C. § 2000 42 U.S.C. § 6102, 42 U.S.C. § 12112 42 U.S.C. § 12132, 49 U.S.C. § 5332 29 CFR Part 1630, 41 CFR Parts 60 et seq.)

Applicability to Contracts

The Civil Rights Requirements apply to all contracts.

Flow Down

The Civil Rights requirements flow down to all third-party contractors and their contracts at every tier.

Model Clause/Language

The following clause was predicated on language contained at 49 CFR Part 19, Appendix A, but FTA has shortened the lengthy text.

Civil Rights - The following requirements apply to the underlying contract:

- 1. Nondiscrimination In accordance with Title VI of the Civil Rights Act, as amended, 42 U.S.C. § 2000d, section 303 of the Age Discrimination Act of 1975, as amended, 42 U.S.C. § 6102, section 202 of the Americans with Disabilities Act of 1990, 42 U.S.C. § 12132, and Federal transit law at 49 U.S.C. § 5332, the Contractor agrees that it will not discriminate against any employee or applicant for employment because of race, color, creed, national origin, sex, age, or disability. In addition, the Contractor agrees to comply with applicable Federal implementing regulations and other implementing requirements FTA may issue.
- 2. Equal Employment Opportunity The following equal employment opportunity requirements apply to the underlying contract:
- a) Race, Color, Creed, National Origin, Sex In accordance with Title VII of the Civil Rights Act, as amended, 42 U.S.C. § 2000e, and Federal transit laws at 49 U.S.C. § 5332, the Contractor agrees to comply with all applicable equal employment opportunity requirements of U.S. Department of Labor (U.S. DOL) regulations, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor," 41 C.F.R. Parts 60 et seq., (which implement Executive Order No. 11246, "Equal Employment Opportunity," as amended by Executive Order No. 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity," 42 U.S.C. § 2000e note), and with any applicable Federal statutes, executive orders, regulations, and Federal policies that may in the future affect construction activities undertaken in the course of the Project. The Contractor agrees to take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, creed, national origin, sex, or age. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. In addition, the Contractor agrees to comply with any implementing requirements FTA may issue.
- b) Age In accordance with section 4 of the Age Discrimination in Employment Act of 1967, as amended, 29 U.S.C. § § 623 and Federal transit law at 49 U.S.C. § 5332, the Contractor agrees to refrain from discrimination against present and prospective employees for reason of age. In addition, the Contractor agrees to comply with any implementing requirements FTA may issue.

SUPPORTING TEXT FOR LABOR AND WORKFORCE

Refer to Attachment D for City of Greeley policies.

SUPPORTING TEXT FOR CRITICAL INFRASTRUCTURE SECURITY AND RESILIENCE

The City of Greeley continues to make strides in efforts to strengthen security and resiliency of Information Security and Critical Infrastructure. This progress includes the enrollment and implementation of Microsoft Security and Compliance across the enterprise tenant. The new features allow the adoption of Multi-Factor Authentication to all employees, a unified experience of endpoint protection and management with Defender for Endpoints and Cloud, insight of vulnerability management, enhanced email protection against zero-day threats, phishing attacks, and spoofed priority accounts. In additional new Data Loss Prevention policies will be adopted that include features for information protection, data lifecycle management, and insider threats.

The above tools will be used for the SMART Grant to better enforce least privilege to ensure data integrity by allowing access to only what is needed based on assigned duties. Control to traffic devices and information will be strictly enforced using Role Based Access and need-to-know. Data Loss Prevention enforcement will ensure trusted information will be encrypted with rights access to only assigned individuals to ensure confidentiality is maintained from creation to archive. Further security measures include segmented channels between the traffic and enterprise network with robust next-generation firewalls between the network, transport, and application layers.

INTRODUCTION AND PROJECT OVERVIEW

The Connected Greeley – Emergency Vehicle Preemption (CG-EVP) Pilot is a transformative initiative aimed at modernizing the transportation infrastructure of the City of Greeley, Colorado. Aligned with the City's 2045 Transportation Master Plan (TMP) and part of the SMART Grant program, the pilot envisions the deployment of Connected Vehicle (CV) technologies to enhance emergency vehicle preemption (EVP) and snowplow operations. The motivation behind CG-EVP stems from the need to improve emergency response times, optimize snow removal operations, and enhance safety for vulnerable road users. By retiring legacy systems and embracing Vehicle-to-Everything (V2X) services, the project seeks to revolutionize the City's approach to mobility, resilience, and safety.

Project Description

- Motivation
 - Improve emergency response times
 - Enhance efficiency and safety in snowplow operations
 - Prioritize the safety of Vulnerable Road Users (VRUs)
- Technologies
 - Cellular Vehicle-to-Everything (C-V2X) based technology
 - Traffic signal controllers, On-Board Units (OBU), and Roadside Units (RSUs)
 - Signal Phasing and Timing (SPaT) information broadcasting

Goals:

- Provide emergency vehicle preemption and snowplow preemption
- Implement VRU detection and warning system
- Evaluate and retire legacy systems
- Test and refine CV technologies for scalability

Overview of the Proof-of-Concept or Prototype

The Stage 1 deployment of CG-EVP involves the installation of RSUs, OBUs, and VRU detection systems within the pilot project study area. Stage 1 deployment will serve as a proof-of-concept to evaluate key performance indicators, or KPIs, such as average response time, detection accuracy, and system effectiveness under various scenarios.

- Scale of Stage 1 Deployment
 - 43 intersections with RSUs
 - 50 OBUs on snowplows and emergency vehicles
 - VRU detection systems at 3 high-pedestrian intersections
- Anticipated Scale of Stage 2 Deployment
 - Citywide application, including all signalized intersections
 - Potential expansion to other CV applications (e.g., transit)

Summary of the Evaluation Process:

The evaluation process involves a collaborative effort with key participants playing crucial roles in assessing the effectiveness and scalability of the CG-EVP system.

Participants and key roles are as follows

- ▶ City of Greeley stakeholders (e.g., Public Works, IT) oversee project management and coordination.
- ▶ Emergency Services (fire and EMTs/ambulances) provide real-time emergency response data.
- ▶ Colorado Department of Transportation (CDOT) representatives collaborate on SPaT infrastructure and broader CV applications.
- Greeley Evans Transit officials contribute for transit-related applications.
- ▶ University of Northern Colorado (UNC) involvement may focus on pedestrian-centric aspects.

This collaborative approach ensures a comprehensive evaluation that incorporates diverse perspectives and expertise. Findings from Stage 1 will inform the anticipated Stage 2 deployment and contribute valuable insight to the broader Multimodal Transportation Systems Management and Operations (TSMO) Plan.

PROJECT GOALS FOR AT-SCALE IMPLEMENTATION

The at-scale implementation of the CG-EVP represents a transformative endeavor with overarching goals to enhance public safety, optimize transportation operations, and integrate cutting-edge technologies into the fabric of the City of Greeley's mobility infrastructure.

- 1. Improved Emergency Response Times
 - ▶ Qualitative Impact: Significantly reduce emergency response times for firetrucks and ambulances.
 - ▶ Rationale: Enhancing EVP through CV technologies will expedite critical responses, potentially saving lives and minimizing property damage.
- 2. Optimized Snow Removal Operations
 - Qualitative Impact: Streamline snowplow operations for more efficient and timely snow clearance.
 - Rationale: Providing traffic signal preemption for snowplows will minimize delays, enhance road safety, and contribute to more effective snow removal, particularly in adverse weather conditions.
- 3. Enhanced Safety for Vulnerable Road Users (VRUs)
 - Qualitative Impact: Prioritize the safety of pedestrians and cyclists through early detection and warning systems.
 - ▶ Rationale: VRU detection systems integrated into the CV infrastructure will enhance visibility and awareness, ensuring the safety of vulnerable road users in key areas.
- 4. Integration with Multimodal Transportation Systems
 - Qualitative Impact: Seamlessly integrate CV technologies with the broader Multimodal TSMO Plan.
 - ▶ Rationale: The CG-EVP will serve as a foundational component for future multimodal innovations, fostering an intelligent and connected transportation network.
- 5. Environmental Impact and Sustainability
 - Qualitative Impact: Contribute to sustainability goals by reducing fuel consumption and emissions.
 - Rationale: Optimizing transportation operations with CV technologies aligns with environmental sustainability efforts, addressing climate and air quality concerns.
- 6. Equity and Accessibility
 - Qualitative Impact: Deploy the CG-EVP system in historically disadvantaged communities for increased safety and accessibility.

▶ Rationale: Addressing equity concerns is a key goal to ensure that benefits reach communities with higher vulnerability and historically lower accessibility.

Anticipated Costs of At-Scale Implementation

The estimated costs for at-scale implementation encompass the deployment of CV technologies at all signalized intersections within the city. While specific figures are subject to detailed planning and budgeting, the investment will cover the installation of additional RSUs, OBUs, and VRU detection systems. The costs will also include system integration, ongoing maintenance, and potential expansion to accommodate a broader range of CV applications. **Table 1** outlines estimated costs for the overall project.

Table 1. Estimated Project Costs

Item Description	Unit Cost	Quantity (EA)	Total Co	st
Road Side Unit (RSU)	\$ 5,500.00	48	\$	264,000.00
On-Board Unit (OBU)	\$ 5,500.00	55	\$	302,500.00
SCMS Enrollment	\$ 30,000.00)	\$	30,000.00
Central System for CV	\$ 100,000.00)	\$	100,000.00
Data Management	\$ 100,000.00)	\$	100,000.00
Device Configuration	\$ 50,000.00)	\$	50,000.00
Bench Test	\$ 25,000.00)	\$	25,000.00
Installation Costs	\$ 100,000.00)	\$	100,000.00
Project Management	\$ 100,000.00)	\$	100,000.00
Data Analytics	\$ 50,000.00)	\$	50,000.00
Systems Engineering Analysis	\$ 25,000.00)	\$	25,000.00
LiDAR Units	\$ 25,000.00	3	\$	75,000.00
VRU Application	\$ 10,000.00)	\$	10,000.00
HMI Integration	\$ 5,000.00)	\$	5,000.00
Application Support from Vendor	\$ 20,000.00)	\$	20,000.00
Sum Total			\$ 2	L,256,500.00
Contingency at 10%			\$	125,650.00
Grand Total			\$ 2	1,382,150.00

The Benefit Cost Analysis (BCA) will adhere to the methodology delineated in the BCA guidance released by USDOT in January 2023. It will amalgamate data supplied by the City of Greeley with information gathered through dedicated research efforts to underpin this comprehensive analysis, employing methodologies consistent with the stipulations outlined in USDOT's Benefit-Cost Analysis Guidance for Discretionary Grant Programs.

Spanning a 30-year analysis period commencing at project implementation, the BCA aligns with USDOT guidelines, ensuring synchronization with the project's useful life without exceeding 30 years. All monetized benefits and costs are projected in 2021 dollars, with future expenditures discounted using a 7 percent real rate (except for CO2 savings, discounted at 3 percent). The estimated benefits for the project will be closely tied to the performance measures identified in Stage 1, encompassing travel time savings for emergency response, enhanced efficiency in snow removal operations, improved safety for Vulnerable Road Users (VRUs), and reductions in emissions.

Supporting Historical Data:

To inform project goals and performance measures for at-scale implementation, the CG-EVP team will analyze historical data related to emergency response times, snow removal efficiency, and VRU safety metrics. Previous transportation infrastructure investments, especially those involving signalized intersections and emergency services, will provide valuable insight into the baseline conditions and help establish realistic performance targets for the CG-EVP at scale. This historical context will contribute to evidence-based decision-making and goal setting for the project's broader implementation.

PERFORMANCE MEASURES FOR STAGE 1

In Stage 1 of the Connected Greeley – Emergency Vehicle Preemption (CG-EVP) Pilot evaluation, the focus sharpens on quantifying the impact of the proof-of-concept. This section outlines the key evaluation questions, performance measures, and associated targets that will guide the assessment process. The detailed metrics are conveniently organized in **Table 2**, providing a comprehensive framework to systematically evaluate how the CG-EVP system addresses critical challenges, enhances emergency services, optimizes snowplow operations, and fosters a safer environment for Vulnerable Road Users. As the evaluation unfolds, it sets the stage for informed decision-making and lays the groundwork for the atscale implementation envisioned in subsequent project stages.

Table 2. Evaluation Questions and Performance Metrics: Navigating the Impact of the CG-EVP Pilot

Eva	aluation Question	Performance Measure	Performance Target
1.	How effectively does the CG-EVP Pilot reduce emergency response times?	 Average emergency response time before and after implementation Percentage reduction in response times 	Achieve a minimum 15% reduction in average emergency response times
2.	What impact does the CG-EVP Pilot have on the efficiency of snowplow operations?	 Total snow removal time on pilot routes Number of stops during snowplow operations before and after implementation 	Target a 10% reduction in total snow removal time and a 20% decrease in stops during snowplow operations
3.	How successfully does the CG-EVP Pilot enhance safety for Vulnerable Road Users (VRUs)?	 Number of incidents/near misses involving VRUs before and after implementation Effectiveness of VRU detection systems 	 Achieve a 25% reduction in incidents/near misses involving VRUs at high-pedestrian intersections Achieve a 90% accuracy in detecting VRUs
4.	To what extent is the CV technology integrated into the broader Multimodal TSMO Plan?	 Implementation of transit signal priority/preemption Integration with other CV applications 	Successfully implement transit signal priority at key intersections and demonstrate compatibility with other CV applications

Evaluation Question	Performance Measure	Performance Target
5. What environmental impact does the CG-EVP Pilot have in terms of reducing emissions?	 Greenhouse gas emissions associated with emergency response and snow removal operations - Fuel consumption reduction 	Aim for a 15% reduction in greenhouse gas emissions and a 10% decrease in fuel consumption
6. How effectively does the CG-EVP system address equity concerns in historically disadvantaged communities?	 Response time disparities in historically disadvantaged areas Accessibility improvements 	Measure and target a significant reduction in response time disparities and enhanced accessibility in historically disadvantaged communities

EVALUATION METHODOLOGY FOR STAGE 1

The evaluation of the CG-EVP Pilot's proof-of-concept during Stage 1 will encompass a multifaceted approach to thoroughly assess its performance and efficacy. The primary comparison for this evaluation will be against a pre-deployment baseline, using historical data on emergency response times, snowplow operations, and VRU safety metrics. By systematically analyzing these key performance indicators, the CG-EVP team will gauge the tangible improvements brought about by the CG-EVP system and identify areas for optimization.

Quantitative methods will play a crucial role in the evaluation, with predefined performance measures serving as benchmarks. Reductions in emergency response times, improvements in snowplow efficiency, and environmental impact metrics will be rigorously measured against predefined targets to quantify the tangible benefits of the proof-of-concept. This quantitative analysis will provide a solid foundation for assessing the project's success and informing decisions for at-scale implementation.

To complement the quantitative assessment, the CG-EVP team will use qualitative methods to capture stakeholder feedback, user experiences, and lessons learned. The team will use surveys, interviews, and workshops to gather insight from emergency service personnel, snowplow operators, and other stakeholders involved in or impacted by the CG-EVP Pilot. This qualitative feedback will provide a nuanced understanding of the system's performance from the perspective of end-users and operators, contributing to a holistic evaluation.

Furthermore, the CG-EVP team will consider industry standards and benchmarks to contextualize the project's performance within the broader landscape of smart transportation initiatives. This comparative analysis will help position the CG-EVP Pilot within established norms to facilitate a comprehensive understanding of its impact and effectiveness.

Throughout the evaluation process, the CG-EVP team will conduct regular debriefing sessions and collaborative discussions to address challenges, share best practices, and capture recommendations for future deployments. This iterative feedback loop will ensure continuous improvement and position the CG-EVP Pilot as a valuable resource for municipalities and entities considering similar CV technology deployments.

Challenges, best practices, and recommendations for future deployers will be systematically collected through a feedback loop involving project stakeholders, operational staff, and end-users. Regular debriefing sessions, workshops, and surveys will capture the experiences and insights of those directly involved in the Stage 1 deployment. The CG-EVP team will document challenges encountered during the proof-of-concept stage, along with successful strategies and best practices that emerge. This

knowledge-sharing approach will not only contribute to refining the ongoing project but also serve as a valuable resource for other municipalities or entities considering similar CV technology deployments in the future.

INTRODUCTION

Situated in the heart of Weld County, Colorado, the City of Greeley is poised for a transformative leap into a connected and resilient future. This data management plan revolves around Greeley's ambitious initiative outlined in the "Greeley on the Go" Transportation Master Plan. The City envisions a modernized transportation infrastructure accommodating emerging technologies and prioritizing safety and resilience.

In pursuit of this vision, Greeley, through the SMART Grant, initiated the Connected Greeley – Emergency Vehicle Preemption (CG-EVP) Pilot. This groundbreaking project will assess and deploy connected vehicle (CV) technologies, focusing on enhancing emergency vehicle preemption (EVP) for fire trucks, ambulances, and snowplows. The legacy Opticom system will be retired to make way for Advanced Traffic Controllers (ATC) and Roadside Units (RSUs) to facilitate secure passage through signalized intersections. Additionally, the CG-EVP Pilot will integrate Vulnerable Road User (VRU) detection systems using CV technology in emergency and snowplow vehicles.

Key components of this initiative include RSUs at 43 intersections, onboard units (OBUs) on 50 snowplows and emergency vehicles, and VRU detection systems at 3 key intersections. The objective is to enhance emergency response times while systematically measuring and refining infrastructure effectiveness. Stakeholder-defined key performance indicators (KPIs), such as average response time and detection accuracy, foster a resilient transportation ecosystem.

Addressing the challenges of exponential growth, the CG-EVP Pilot will tackle critical issues in emergency services and snowplow operations. With a commitment to efficient emergency response and safe snow removal operations, CV technologies promise to improve response times, enhance safety, and minimize disruptions to traffic flow.

This data management plan will extend beyond the project, aligning with the near completion of Greeley's first Multimodal Transportation Systems Management and Operations (TSMO) Plan. Lessons learned from the CG-EVP Pilot will contribute to components of the Multimodal TSMO Plan, emphasizing goals like data integration, standardization, and cost-effective infrastructure investments.

In summary, the CG-EVP Pilot will not only address current transportation challenges but also lay the foundation for a connected and adaptive transportation ecosystem. This data management plan ensures insights gained contribute to immediate improvements and align with the long-term goals of Greeley's transportation vision. Subsequent sections detail a comprehensive plan for managing CG-EVP Pilot data, emphasizing scalability and future integration possibilities.

DATA OVERVIEW AND GOVERNANCE

Efficient data collection lies at the core of the CG-EVP Pilot. This section delineates the diverse data sources and types, as well as the meticulously designed methodology for data collection. The pivotal components of data generation in the CG-EVP Pilot include RSUs, OBUs, and traffic signal controllers. These devices serve as the conduits for crucial information that flows into the CV Central System and Traffic Signal Central System before making its way to the Data Management Hub.

Data Sources

- Roadside Units (RSUs):
 - RSUs are strategically placed at 43 intersections, forming a critical part of the CV technology infrastructure.
 - ▶ RSUs serve as data nodes, collecting information related to traffic conditions, emergency vehicle positions, and VRU detection.
- 2. On-Board Units (OBUs):
 - ▶ OBUs are installed on 50 snowplows and emergency vehicles, actively participating in the CV ecosystem.
 - ▶ OBUs play a pivotal role in relaying real-time data about vehicle locations, emergency response situations, and potential VRU interactions.
- 3. Traffic Signal Controllers:
 - At the heart of traffic management, traffic signal controllers orchestrate the flow of vehicles through signalized intersections.
 - Communication with the Traffic Signal Central System allows these controllers to share data on signal phases, timings, and any preemption requests from emergency vehicles or snowplows.

Data Types and Characteristics

The data collected in the CG-EVP Pilot will encompass a diverse range, reflecting urban transportation intricacies. Real-time traffic conditions, emergency vehicle positions, VRU interactions, signal phases, and timings constitute essential data types. The scale of data collection is significant, given RSUs at 43 intersections, OBUs on 50 vehicles, and integration with traffic signal controllers at numerous intersections. Continuous monitoring and event-driven data collection methodologies amplify real-time data volume, providing a comprehensive understanding of dynamic traffic scenarios.

Disclosure risks primarily pertain to emergency response operations' sensitive nature and personally identifiable information protection. To mitigate risks, robust encryption protocols, access controls, regular audits, and compliance with data protection regulations will be implemented within the Data Management Server.

The data repository's long-term value will extend beyond immediate insights, serving as a rich resource for future transportation planning, trend analysis, scenario modeling, and evolving traffic pattern identification. The data will be stored in secure repositories, including the CV Central System and Traffic Signal Central System, with the Data Management Server acting as the central repository. The server's scalability will accommodate expanding data volumes, providing a foundation for long-term data utilization and Greeley's transportation strategy evolution.

The data produced will be stored using non-proprietary formats like JSON or CSV for enhanced accessibility and interoperability.

Data Management Server

The linchpin of the data management architecture is the Data Management Server, a secure and robust repository for storing, processing, and managing the wealth of data generated by the CG-EVP Pilot. Key attributes of the Data Management Server include:

1. Security and Compliance:

- Implements industry-standard encryption protocols to safeguard sensitive information.
- Adheres to data protection regulations, ensuring compliance with privacy and security standards.

2. Scalability:

- Designed to handle increasing data volumes as the pilot expands and additional use cases are integrated.
- Scalable infrastructure accommodates future upgrades and enhancements.

3. Interoperability:

- Supports seamless integration with diverse hardware and software components.
- Adheres to open data specifications, enabling compatibility with various vendors and manufacturers.

4. Redundancy and Reliability:

- Implements redundancy measures to ensure data integrity and system reliability.
- Regularly undergoes testing and maintenance to mitigate the risk of system failures.

Data Collection Methodology

The data collection methodology involves the following:

- ▶ Continuous Monitoring: RSUs and OBUs continuously monitor and collect data in real-time, providing an up-to-the-minute understanding of traffic conditions and emergency situations.
- ▶ Scheduled Data Aggregation: Periodic aggregation of data from RSUs, OBUs, and traffic signal controllers allows a comprehensive analysis of overall system performance.

DOCUMENTATION

In alignment with best practices for CV projects, specifically using Cellular Vehicle-to-Everything (CV2X) technology, the CG-EVP Pilot will adhere to established standards, with a focus on SAE J2945/1 for data communication between CVs and infrastructure. Additionally, traffic signal controller standards will be considered, with a particular emphasis on the National Transportation Communications for Intelligent Transportation System (ITS) Protocol (NTCIP).

- Documentation Format/Standard: Project documentation will adhere to the SAE J2945/1 standard for CV2X technology, ensuring that all documentation aligns with the guidelines for CV2X communication. This approach promotes consistency and compatibility within the specific context of CV2X technology.
- ▶ Directory and File Naming Convention: A systematic directory and file naming convention will be used to organize and categorize project-related documents and data. This convention will follow a logical structure, incorporating elements such as project phase, date, and content description; for example, "YYYYMMDD_ProjectPhase_Description."
- ▶ **Project and Data Identifiers**: Project-specific and data identifiers will be assigned to streamline the organization and retrieval of data. These identifiers will also encompass traffic signal controller standards, ensuring a consistent approach to data organization and retrieval within the broader context of the Connected Vehicle ecosystem.

Implementation Strategy

The implementation strategy will include the following:

- Centralized Documentation Repository: All project-related documentation and metadata will be centralized in a designated repository, accessible to relevant stakeholders. This repository will use version control systems to track changes and updates, enhancing collaboration and traceability.
- Metadata Standards: Metadata will adhere to the guidelines outlined in SAE J2945/1 for CV2X technology and, when applicable, NTCIP standards for traffic signal controllers. This dual-standard approach ensures a comprehensive and standardized description of CV data and traffic signal information.
- ▶ Regular Documentation Audits: Scheduled audits of project documentation will be conducted to ensure accuracy, completeness, and relevance. This proactive approach aims to identify and rectify any discrepancies, foster data integrity, and maintain the usability of documentation.

Long-Term Benefits

The implementation of robust documentation and metadata standards offers several long-term benefits. It ensures the reproducibility of the project, allowing future teams to build on current insights. Standardized documentation facilitates knowledge transfer, thereby reducing dependencies on specific individuals. Additionally, adherence to metadata standards enhances data discoverability, enables seamless integration with other systems, and promotes data-sharing initiatives.

DATA SHARING AND PROTECTION

Data sharing in the CG-EVP Pilot will be conducted with a stringent focus on privacy, security, and controlled access. The project recognizes the value of sharing data for research, analysis, and broader insights within the transportation community, while simultaneously acknowledging the need to safeguard sensitive information.

Data Sharing Principles

- Controlled Access: Data sharing will be executed on a controlled access basis. Access to project data will be granted only upon request and subject to a thorough review process.
- Post-Project Sharing: Data sharing will commence after the conclusion of the CG-EVP Pilot. This approach allows for the comprehensive analysis of the project's outcomes before disseminating data to external parties.
- Request and Review Process: External parties seeking access to project data must submit formal requests. A review committee, including project stakeholders, will evaluate each request, considering the purpose, scope, and intended use of the data.

Data Protection Measures

- ▶ **Anonymization**: Personally identifiable information will be anonymized or removed from the shared datasets to protect the privacy of individuals and entities involved in the project.
- Encryption: Shared data will be encrypted during transfer and storage to ensure secure transmission and prevent unauthorized access.
- Access Controls: Access controls will be implemented to restrict data access to authorized individuals or organizations. User authentication and authorization mechanisms will be in place to manage access levels.
- Legal and Ethical Compliance: Data sharing will comply with legal and ethical standards, including data protection regulations and guidelines. Proper documentation of data usage agreements and adherence to privacy laws will be ensured.

DATA STORAGE AND BACKUP

Data Storage Infrastructure

As the City of Greeley embarks on its initial steps into the CV ecosystem, the data storage infrastructure for the CG-EVP Pilot is designed to be adaptive and scalable. The project recognizes the dynamic nature of the CV landscape and aims to continually assess and enhance its data storage capabilities for sustained efficiency.

Retention Policy

- ▶ Retention Duration: The retention policy for project data extends for a minimum of 5 years post-completion of the CG-EVP Pilot. This prolonged duration will allow the City of Greeley to consistently review and extract valuable insights as the project matures, aligning with potential regulatory considerations and emerging industry standards.
- Adaptive Retention Approach: The extended retention duration is not just about preserving historical data; it signifies an ongoing process of evaluation and learning. As the project evolves, the City of Greeley will remain agile, adapting its retention strategy to the changing needs of the CV ecosystem.
- Scalability and Sustainability: The storage infrastructure is designed with an eye on sustainability. Instead of developing fixed tools, the project adopts a flexible approach, constantly assessing the efficiency of current storage solutions and remaining open to adopting more sustainable practices as the project matures.

Data Backup Procedures

- Regular Evaluations: Continuous evaluations of data backup procedures will be conducted to proactively address any emerging risks or inefficiencies. This approach ensures that backup processes remain effective and aligned with evolving project requirements.
- Adaptive Redundancy Measures: Redundancy measures will be adaptive, aligning with the evolving needs of the project. The City of Greeley will stay vigilant to emerging technologies and industry best practices, integrating innovative redundancy measures as they become available.
- Dynamic Data Versioning: The approach to data versioning will be dynamic, allowing for flexibility in retrieving specific datasets at different points in time. This dynamic versioning supports ongoing assessments and the continuous improvement of data management practices.

Adaptive Strategies for the Future

As the project progresses, the City of Greeley will focus on reviewing the efficiency of existing storage practices and remain vigilant for more sustainable solutions. This adaptive approach ensures that the data storage and backup strategies align with the evolving landscape of the CV ecosystem, fostering resilience and sustainability.

DATA DISSEMINATION AND COLLABORATIVE USAGE POLICIES

Reuse Policy

The CG-EVP Pilot is committed to fostering the reuse of project data to maximize its utility and contribute to broader initiatives within the transportation community. The reuse policy encourages the responsible and ethical utilization of project data by external parties for research, analysis, and innovation.

- Open Access: The project data, upon completion, the City of Greeley will make the project data available for reuse to interested parties, researchers, and organizations. Open access to data aligns with the project's commitment to transparency and collaborative knowledge-sharing.
- Data Sharing Portal: A dedicated data sharing portal the City will establish a dedicated data sharing portal to facilitate the reuse of project data. This platform will provide easy access to datasets, documentation, and metadata, promoting seamless reuse by external stakeholders.

Redistribution Policy

The redistribution policy outlines the guidelines for sharing project data beyond the initial recipient. This policy seeks to ensure responsible dissemination of information while safeguarding against unauthorized or inappropriate use.

- Authorized Redistribution: Authorized recipients of project data are permitted to redistribute the data to other parties for specific purposes outlined in their original request. However, redistributions must be accompanied by adherence to the project's terms and conditions.
- Documentation and Attribution: Redistributed data must be accompanied by appropriate documentation and attribution to acknowledge the source and contributors. This ensures transparency and provides due credit to the original project.

Derivative Products Policy

The CG-EVP Pilot recognizes the potential for the creation of derivative products based on its data. The derivative products policy outlines the conditions and guidelines for developing and disseminating products derived from the original project data.

- **Derivative Product Authorization**: Individuals or organizations seeking to create derivative products from project data must obtain explicit authorization from the project stakeholders. This ensures that the creation of derivative products aligns with the project's goals and ethical considerations.
- Quality Assurance: Derivative products must maintain a standard of quality and accuracy. Those creating such products are responsible for ensuring the reliability of the information and must communicate any modifications made to the original data.

Monitoring and Compliance

To uphold the integrity of the reuse, redistribution, and derivative products policies, the CG-EVP Pilot will implement a monitoring mechanism. Regular reviews will be conducted to ensure compliance with established guidelines, and any deviations will be addressed promptly.