



REQUEST FOR PROPOSALS
for
GLOBAL POSITIONING SATELLITE (GPS)
AUTOMATED VEHICLE LOCATION (AVL)
SYSTEM

October 2020

Issued By:

City of Fargo, North Dakota
Public Works
402 23rd Street N.
Fargo, ND 58102



The City of Fargo Public Works is issuing a Request for
**GLOBAL POSITIONING SATELLITE (GPS) AUTOMATED VEHICLE LOCATION
(AVL) SYSTEM**

Contractor will deliver one (1) original proposal and five (5) copies to the following Address:

City of Fargo Auditors Office
Global Positioning Satellite Automated Vehicle Location System Request for Proposals
City Hall
225 4th Street N.
Fargo, ND 58102

Office hours are 7:45 am to 4:30 pm, Monday through Friday, excluding holidays.

Proposal Due Date and Time

2:00 p.m. Wednesday, November 4, 2020

Proposals received after the above cited date and time will be considered late and are not acceptable.

- Please make sure the envelope or package is marked:
“Global Positioning Satellite Automated Vehicle Location System RFP”
- Please make sure to use the included Proposal Sheet
- Any questions regarding this RFP contact Paul Fiechtner at (701) 476-6606.

Thank you for your interest.

SECTION I: GENERAL INFORMATION

A. OBJECTIVE:

The City of Fargo is requesting proposals from qualified vendors to provide the Department of Public Works (DPW) with a Global Positioning Satellite (GPS) Automated Vehicle Location (AVL) System for use in our DPW vehicles. The City wishes to acquire all necessary hardware, firmware and software necessary for a web based Vehicle Tracking system that will allow DPW staff to receive, integrate, review and store GPS data in “real time” intervals.

The vendor shall provide a GPS/AVL system that performs and functions as outlined in Sections II and III.

Summary of Proposed Objectives:

1. AVL for City’s snow removal fleet and street sweepers (70 Units)
 - a. GPS location, tracking, monitoring and web-based tracking;
 - b. GPS navigation route management and dispatch software;
 - c. Customer Portal for snow removal mapping;
 - d. Two-way messaging between dispatch and vehicle;
 - e. Alerts and geo-fencing;
 - f. Data collection; and
 - g. Reporting (Dashboard Capability)
2. **Option:** AVL for other areas of Public Works Fleet if City so desires
(Possibility of up to fifty additional vehicles total)
 - a. Streets and Sewers (25 Units)
 - b. Mains and Hydrants (15 Units)
 - c. Forestry (10 Units)
3. Integration with specific vehicle systems. Including vehicles for:
 - a. Plowing, salt/sand spreading and liquid applications
 - b. Street sweeping
 - c. General
4. Integration with the City of Fargo’s Esri based Enterprise Geographical Information System (GIS) and Cityworks asset management and work order system.
5. Ability to display, in real-time, current vehicle locations and plowed areas for current storm through a website that customer (citizens/general public) will be able to view.

B. ISSUING OFFICE

This RFP is being issued by the City of Fargo, North Dakota, Department of Public Works. All correspondence regarding this RFP must be addressed to:

Ben Dow
Director of Operations
Public Works
402 23 St N
Fargo, ND 58102
(701) 241-1453
bdow@fargond.gov

Paul Fiechtner
Services Manager
Public Works
402 23 St N
Fargo, ND 58102
(701) 241-1453
pfiechtner@fargond.gov

C. PROPOSALS

One original and five copies of the proposal must be submitted. The information included should be as concise as possible. The total submittal shall not be more than 50 pages, with material on two sides. All fee proposals must be submitted in a separate sealed envelope to be included with proposal packet by RFP due date. All envelopes for proposals and/or separate fee proposals must be clearly marked “**Global Positioning Satellite Automated Vehicle Location System Request for Proposals**” in bold type.

All proposals must be submitted to the City of Fargo Auditors Office, 225 4th Street North, Fargo, ND 58102 at or before 2:00 p.m., November 4, 2020. Proposals received later than the time and date specified will not be considered.

Office hours are 7:45 a.m. to 4:30 p.m. Monday through Friday, excluding holidays.

To be considered each vendor must submit a response to this RFP using the information provided in Sections II and III. No other distribution of proposals is to be made by the submitter. An official authorized to bind the submitter to the proposal’s provisions must sign the proposal in ink.

Each proposal must remain valid for at least one hundred twenty days from the due date of proposals to this RFP.

The City of Fargo reserves the right to waive any irregularities in any proposal, to reject any or all proposals, and to accept a proposal in the best interest of the City.

D. SELECTION CRITERIA

Responses to this RFP will be evaluated using a point system as shown in Section III. A selection committee comprised of members from the City’s Public Works Department and Information Technologies Department will complete the evaluation.

E. CHANGES IN RFP

All corrections as well as any additional RFP provisions that the City may decide to include, will only be made as an official addendum, and will be sent to each vendor recorded as having received a copy of the RFP. Any addendum issued shall become part of the RFP and will be incorporated in the proposal.

F. DISCLOSURES

Under the Freedom of Information Act, the City is obligated to permit review of its files, if requested by others. All information in a submitter’s proposal is subject to disclosure under this provision. This act also provides for a complete disclosure of contracts and attachments thereto.

G. TYPE OF CONTRACT

Those who wish to submit a proposal to the City should and will be required to complete and sign a Professional Services Agreement prior to award.

H. COST LIABILITY

The City of Fargo assumes no responsibility or liability for costs incurred by the consultant prior to the execution of a Professional Services Agreement.

I. SCHEDULE

A general timeline for the Global Positioning Satellite Automated Vehicle Location System project will proceed as follows:

- October 21th – November 4th Request for Proposal (RFP) available for consultants
- November 4th (2:00 p.m.) RFP Deadline
- November 4th – November 11th Selection Team evaluates/interviews/selects
- November 16th City Commission approval of RFP selection
- November 17th Award contract
- November 23rd Respondent begins work
- December 31st Project completed

Final project schedule will be negotiated based on the ultimate scope of work and agreed upon work plan by the City and the selected respondent.

SECTION II: BACKGROUND AND SCOPE OF WORK

A. BACKGROUND

The City of Fargo Department of Public Works has a fleet of vehicles by which it helps to provide a wide range of services. These include service for street maintenance, water distribution, storm and sanitary collection, forestry, etc. Understanding the location of city equipment is one of the keys to providing high quality services to the citizens.

The City of Fargo Department of Public Works currently utilizes an AVL system that has been in place since 2012. There is a strong desire from City staff, as well as customers, to utilize a more dynamic location system that will include current technology available on the market, route progress, route optimization, and detailed material tracking. This would serve as the basis for better management of the City's field operations as well as providing highly useful dynamic information to the City's customer.

Additionally the City has a robust Geographic Information System (GIS) that uses ESRI's ArcGIS software and the Cityworks asset management and work order software as a foundation for inventory of City infrastructure. Integration with the ESRI and Cityworks system will be important.

Upon completion of the AVL installation the intention would be to focus on providing a higher quality and more efficient service to the City's customers.

B. SCOPE OF WORK

1. Implementation of an AVL system for up to seventy (70) City vehicles with an option to do an additional fifty (50) units if so desired by City.

Implementation will be focused in the following order:

- a. City snow fleet (59 units)
 - a. Sander (5)
 - b. Anti-Ice (4)
 - c. Plow Truck with Sander (5)
 - d. Plow Truck (15)
 - e. Plow Grader (11)
 - f. Plow Loader (8)
 - g. 1 Ton Truck Plow (3)
 - h. Sidewalk UTV Plow (8)
- b. Street Sweeper (6 units)
- c. Mowing Equipment (5)

Option:

- a. Streets and Sewers (25 Units)
- b. Mains and Hydrants (15 Units)
- c. Forestry (10 Units)

2. Vendor shall be charged with providing a total Global Positioning System (GPS) to include a complete system of hardware, software, training, and support.
3. All hardware, firmware and software shall be provided by the selected vendor allowing for the City to have a single source for all future issues related to ongoing support.
4. Communication shall be enabled via wireless data services through cellular telephone network and internet connectivity. City does not desire to have separate cellular contract with cellular provider. City wishes to have respondent include unlimited cellular transmission service subscription agreement. Preference will be given to vendor that provides unlimited cellular communication within service subscription agreement (Service Subscription Agreement that includes cellular transmission, software and map updates, customer support to include in field product support, hardware, and web based hosting of dashboard utility with data stored at city and/or vendor stored data).
5. The operational concept shall allow for real-time communication of collected data in areas that provide adequate cellular data coverage.
6. Respondents to this RFP must explain, in detail, and provide pricing for how the proposed system's data collection will take place. Respondent shall also provide details of the system's data security policies.
7. Respondent shall provide a detailed list of systems mapping and reporting capabilities.

8. Respondent shall provide remote assistance within one hour of problem detected and on site within 24 hours if needed.
9. Respondents shall provide all details of warranty information to include length and limitations.
10. Respondent shall provide options for “scalability” of the agreement to add units such as rented equipment. Respondents shall also detail options to scale down such as a seasonal standby mode.
11. Respondents shall provide a detailed installation and maintenance plan for the GPS system and sensors, to include full instruction manual for AVL system.
12. Respondents shall provide two separate days of training for AVL administrator and operators. Separate training will be provided to service personnel for proper care, maintenance, and repair, including training documents.
13. Respondent shall complete and submit Attachment B (GPS/AVL Hardware/System Specifications) with proposal.

TECHNICAL REQUIREMENTS

1. Computing Standards

The system must support the following standards identified below and listed in Table 1:

- a. Microsoft SQL Server 2016 or above (central database).
- b. Microsoft .NET Framework.
- c. ESRI integration (ArcGIS Enterprise, ArcGIS Online, Cityworks Java Script map).
- d. Browser-based user interface for reporting (e.g., external public viewing and internal usage via a web-based dashboard).

2. Data and Integration for city data storage option

- a. All activity tracking and spatially enabled data shall be transferred real-time to a SQL Server 2019 or later database along with quantitative data from all device sensors.
- b. All data captured by the system shall have the ability to integrate with other relational databases residing on City SQL Server 2012/2016 database servers.
- c. The City currently uses SQL Server Integration Services (SSIS), and/or web services to complete data integration with the spatial databases.
- d. Respondents to this RFP must explain, in detail, how the proposed system will integrate with the City’s current environment.
- e. Operator entry of data into fields should be defined and required with specific data formats (data constraints) that are consistent for the required entry (e.g., user field – JONES vs. 04556; however, JONES and 04556 are the same user – the use of non-consistent entries makes data analysis more difficult and can return unexpected or inaccurate reporting).

- f. Enforce referential integrity at both the vehicle device data collector that transmits the data and at the receiving database that stores the information after receiving data transmission.
 - g. The in-vehicle data collection device should re-poll in instances where data was not received or data is not within valid ranges.
 - h. The system should transmit from the vehicle to the central database only the data elements actually collected. The receiving systems should parse the data to identify which fields were actually collected and identify the data fields not sent as being null or not collected and updating the database accordingly.
3. Data and Integration
- a. Communication should be enabled via wireless data services through the cellular telephone network and internet connectivity (e.g., CDMA, 3G/4G).
 - b. The operational concept shall allow for real-time communication of collected data in areas with adequate cellular data coverage. GPS and telematics data shall be stored on-board the AVL control unit when cellular signal is weak or lost and sent when the cellular connection is regained. GPS devices must have internal battery for antenna and power disconnect alerts.
 - c. Transmit only valid data collected to reduce record size and transmission time.
 - d. Provide a check sum to validate the data was properly received.
4. Reporting
- a. A browser-based application for citizen and customer viewing on the City’s website is required for activity tracking and real-time vehicle location during snow-storm events. The system must be accessible from a variety of desktop browsers and mobile devices including android and iOS-based tablets and phones.
 - b. Application should allow for City specific information to be displayed with vehicle information (i.e. Plow districts, Vehicle Unit #, etc...).
 - c. A browser-based application for internal reporting and analysis using Microsoft SQL Server Analysis Services and/or Microsoft SQL Server Reporting Services would be an ideal solution for the City. In lieu of aforementioned solution, other reporting solutions can be proposed and will be considered (e.g., Crystal Reports).
 - d. Provide for the ability to export data to standard file types (csv, xml, xls, etc...).

| System | Standard | Provider |
|--|--|-----------------------|
| Browser | Edge, Chrome, Firefox (Internet Explorer is not supported) | Microsoft Corporation |
| Databases Server Data-warehouse Extract, Transform, Load Services | SQL Server 2016/2019 | Microsoft Corporation |
| | SQL Server 2016/2019 | Microsoft Corporation |
| | SQL Server Integration Services (SSIS) 2016/2019 | Microsoft Corporation |
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| Geospatial Databases (GIS) Geo, Info. Systems GIS Web Server | ArcGIS Enterprise V 10.8 | ESRI |
| Office Suite | Office 2016 | Microsoft Corporation |
| Programming | Microsoft .NET Framework Version 4.7.2 or higher | Microsoft Corporation |
| Reporting Services | SQL Server Reporting Services (SSRS) 2016/2019 | Microsoft Corporation |
| Server Operating System(s) | Windows Server 2016/2019 | Microsoft Corporation |
| Workstation Operating System | Windows 10 | Microsoft Corporation |

SECTION III: REQUIRED INFORMATION

The City reserves the right to not consider any proposal which is determined to be unresponsive or deficient in any of the information requested for evaluation.

A. PROFESSIONAL QUALIFICATIONS – 10 points

1. State the full name and address of your organization and, if applicable, the branch office or other subordinates that will perform, or assist in performing, the work hereunder. Indicate whether it operates as an individual, partnership, or corporation. If as a corporation, include the state in which it is incorporated. If appropriate, indicate whether it is licensed to operate in the State of North Dakota.
2. Include the number of executive and professional personnel by skill and qualification that will be employed in the work. Show where these personnel will be physically located during the time they are engaged in the work. Indicate which of these individuals you consider key to the successful completion of the project. Identify individuals who will do the work on this project by name and title. Resumes or qualifications are required for proposed project personnel who will be assigned to the project. Qualifications and capabilities of any sub consultants shall be included.
3. State history of firm, in terms of length of existence, types of services provided, etc. Provide number of years in industry under present name and if in business less than 10 years under present name, please disclose any prior business identity and date(s) of transition. Identify the technical details that make the firm uniquely qualified for this work.

B. PAST INVOLVEMENT WITH SIMILAR PROJECTS – 30 points

The written proposal must include a list of specific experience in the project area and indicate proven ability in developing detailed designs and implementing similar projects for the firm and the individuals to be involved in the project. The proposal should also indicate the ability to have projects completed within the budgeted amounts. A summary of related projects with the original deadline and cost estimate versus the actual project completion date and final cost of the project is to be included with this section. Provide 3-4 references from agencies with projects of similar nature completed in the last 3 years. It shall include

the agencies name, address, telephone number, project title, project description and contact person.

C. PROPOSED WORK PLAN – 35 points

A detailed work plan is to be presented which lists all tasks determined to be necessary to accomplish the work of the project. The work plan shall define resources needed for each task (title and person hours) and staff persons completing the project element tasks. In addition, the work plan shall include a time line schedule depicting the sequence and duration of tasks showing how the work will be organized and executed. The work plan shall be sufficiently detailed and clear to identify the progress milestones, i.e., when project elements, measures, and deliverables are to be completed. Additional project elements suggested by the proposer to be necessary to the project are to be included in the work plan and identified as proposer-suggested elements. Please discuss proposed connectors, switches, sensors, etc... Identify all of those, if any, who will be subcontracted to assist you with this project, and the extent of work for which they will be responsible. Include similar reference data for subcontractors and employees as requested above for the main proposer. Include any other information that you believe to be pertinent but not specifically asked for elsewhere.

D. FEE SCHEDULE – 25 points

Fee quotations shall be submitted in a separate sealed envelope with the proposal. Fee quotations are to include equipment, services, the names, titles, hourly rates, overhead factors, and any other details by which the overall and project element costs have been derived. The fee quotation is to relate in detail to each item of the proposed work plan, including the proposer-suggested project elements and proposer-suggested contingencies, if any. The vendor selected to be interviewed shall be capable of justifying the details of the fee proposal relative to personnel costs, overhead, how the overhead rate is derived, material, and time. The proposed fee must detail the costs for each of the tasks and is recommended to itemize costs of major individual components. The fee proposed must include the total estimated cost for the project, when it is 100% completed (Please see Attachment A for example). This total may be adjusted after negotiations with the City and prior to signing a formal contract, if justified.

E. AUTHORIZED NEGOTIATOR

Include the name and phone number of person(s) in the organization authorized to negotiate the Professional Services Agreement with the City.

F. REVIEW

The consultant Selection Committee will evaluate each proposal by the above-described criteria (A through C) and point system, to select the firms to be interviewed. After firms have been selected, the Committee will evaluate criteria D for each selected firm and may re-evaluate criteria C based upon knowledge of the fee proposals for the selected firms. The Committee will contact references to verify material submitted by the proposers. The City will determine whether the final scope of the project to be negotiated will be entirely as described in this Request for Proposal, or a revised scope. The Selection Committee will then schedule telephone interviews with the firms selected to be interviewed. The firms

selected for interview will be given the opportunity to discuss in more detail their proposals, qualifications, past experience, proposed work plan and their fee proposal. The interviews may include up to one-half hour of presentation via web by the consultants, followed by approximately one hour of questions and answers. Presentation aids may be used during the interviews. The firms interviewed may be re-evaluated by the above criteria (A through D), following the interviews and an adjustment to scoring will be made if appropriate. After evaluation of the proposals, further negotiation with the selected firm may be pursued. This may lead to the award of a contract by City Commission. The City may reject all proposals if they are determined to be unsuitable by the selection committee.

ATTACHMENT A

**CITY OF FARGO
PROPOSAL FORM
GPS/AVL SYSTEM**

Vendor proposes to furnish and install a GPS/AVL system in accordance with this Request for Proposals (70 Units):

\$ _____

Option: Vendor proposes to furnish and install additional fifty GPS/AVL units if city so desires:

\$ _____

Monthly Data Fees (pooled data plan): Covers airtime charges for data transmitted for seventy units. What is the cost per/mb of data used and system must work on a "pooled data plan"*

\$ _____

Option: Additional monthly data fees to cover option of an added fifty units:

\$ _____

Total: _____

Total with Option: _____

Annual subscription: Covers system access fees (to be on the cellular networks) and maintenance, website access and upgrades. Please include the cost per vehicle and the total accumulated cost for one year.

\$ _____

Maintenance and Support fees: Cover any new release within the GPS application (website updates and firmware updates). Also include the cost of on-going phone technical support.

\$ _____

*Ex: 70 assets within the City of Fargo. For the month of September the entire fleet consumed 50 mb worth of data. The total bill would be 50 x (whatever the per/mb fee was/is).

ATTACHMENT B:

| GPS/AVL Hardware/System Specifications | | Yes | No |
|---|--|------------|-----------|
| 1 | System shall capture data in four dimensions: distance, time, odometer and angle (Latitude, Longitude). | | |
| 2 | Each GPS device shall have its own separate private IP address (added security for all collected data). | | |
| 3 | Device shall provide a serial connection, minimum of five (5) discrete inputs. (The variety of connectors provides flexibility in reading spreader controller, plow positions, hoist positions, etc. as needed.) | | |
| 4 | GPS logging shall be provided using an intelligent logging algorithm that provides for high definition data and minimizes cellular data communication overhead. | | |
| 5 | Device shall support over-the-air firmware updates (allows for updating the device without the need to physically connect to each unit to manually update them). | | |
| 6 | Includes all necessary hardware items, processors, antennas, etc. to be fully operational on installation. | | |
| 7 | Device will provide Store and Forward capabilities. (System collects vehicle activity data and geo-stamp data and stores onboard until data can be securely transmitted to provide a detailed historical record of activity while in the field). | | |
| 8 | Device will provide the ability to detect and report previous power loss if unit is disconnected then reconnected. (This reports if someone was to disable the system during their shift whether inadvertent or intentional). | | |
| 9 | Device GPS receiver will be accurate to 2.5 meters or less. (Provides accurate mapping data for corresponding application rates from spreader controller). | | |
| 10 | Data transmission rates must be remotely configurable by the end user. Some fleet vehicles will require real-time reporting. | | |
| 11 | Event reporting includes turn by turn reporting. (Example: 15 degree change in direction heading shall cause GPS data to be sent which will ensure adequate coverage of corners or intersections, ramps, and critical infrastructure) | | |
| 12 | System shall allow for driver identification for vehicle operation and reporting of data to include operator of the vehicle. | | |

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| 13 | If vehicle is equipped with application spreader/anti-ice controller that collects granular, pre-wet and direct liquid applied data, device is able to connect to other vendor control for transfer of all data being collected. Vendor partnership agreement in place if needed. | | |
| 14 | Device meets SAE J1455 environmental specifications and provides +/- 25g shock rating (Provides a ruggedized solution in the high abuse environment that the device will be used in). | | |
| 15 | Device operation temperature ranges from -40 F to 140 F and humidity up to 95%. | | |
| 16 | Device has less than 8mA typical current drawn in key-off mode. | | |
| 17 | Vehicle-mounted hardware is all solid state with no moving parts and is located within an enclosure that is dustproof and splash proof. | | |
| 18 | System has a web-based solution accessible from any web browser with the appropriate User Name and Login credentials. | | |
| 19 | System will provide unlimited user logins at no additional cost. | | |
| 20 | System includes the ability to integrate directly with the vehicles engine computers that are equipped with Data-Bus capability (without interference or disturbance of this connection for its intended purposes). | | |
| 21 | Data-Bus interface is capable of reading vehicle codes, actual odometer, actual vehicle speed (not just GPS derived speed) actual fuel consumption, idle time, engine hours (with PTO on and off) and status of all sensors. | | |
| 22 | All fault code data collected from Data-Bus interfaces accessible through web based application that decodes and provides user with configurable notifications of vehicle error code (not strictly code). | | |
| 23 | System includes email and/or SMS text message notification when vehicle has critical engine fault code. | | |
| 24 | System provides Daily, Weekly, Monthly and Custom usage reports to accurately display vehicle utilization as well as hourly usage reports to reflect how many minutes in each hour a vehicle was in use. | | |
| 25 | System provides a platform for user-configurable notification that has escalating capabilities with alerts including but not limited to; speed, excess idle, activity, power loss, low battery, etc. | | |
| 26 | If vehicle is equipped with application spreader/anti-ice controller that collects granular, pre-wet and direct liquid applied data, system provides Daily, Weekly, Monthly and Custom material usage reports. | | |
| 27 | System provides a vehicle mileage report with user selectable date ranges showing miles traveled per day and first start/last stop times for each day in the selected date range. | | |

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| 28 | System provides an input usage report with real-time and selectable date ranges showing sensor information such as plow position, sander on/off, gutter brooms up/down, rear main broom up/down, and numerous other sensors commonly found on road maintenance vehicles. Report must be able to show all activity or be run on a single equipment sensor input such as plow position. | | |
| 29 | System includes the ability to implement geo-fencing based on user selected areas as well as sending alerts via email/sms text message when the geo-fences are breached. | | |
| 30 | System provides a web-based dashboard utility that reports and maps the vehicle fleet, group or individual vehicle information (including sensor information) with regard to location, speed, distance, mileage by geo-zone or geo-fences or any area as configured by the city. | | |
| 31 | System has a Web-based dashboard with the ability to display, in real-time, the current vehicle location and plowed areas throughout an active snow event. | | |
| 32 | System has a web-based dashboard with the ability to display, in real-time, route progress as a percentage to completion. | | |
| 33 | System provides a generic interactive map showing all plow status throughout snow event that can be placed on city website that customers (a/k/a citizens) will be able to view. | | |
| 34 | Provides GPS navigation and optimized routing. | | |
| 35 | Supports UDP and TCP communication protocols. | | |
| 36 | System has dispatch capabilities allowing for two-way communication between in-vehicle device and dispatcher. | | |
| 37 | Provides a REST service of current vehicle locations that can be displayed in the Cityworks JavaScript map and ArcGIS Enterprise/ArcGIS Online. | | |
| 38 | Future capabilities of the system include logging of Pre/Post Trip Inspection and Logbook Hours | | |
| 39 | Future capabilities of the system include ECM diagnostics for vehicle maintenance and repairs. | | |
| 40 | Future capabilities of the system include driver behavior diagnostics. | | |
| 41 | Future capabilities of the system include Photo and Video recording of a “dash-cam”. | | |

Number

Deviation Explanation

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