North Central Texas Council of Governments

NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS

METROPOLITAN PLANNING ORGANIZATION

REQUEST FOR PROPOSALS

FOR PLATFORM AVAILABLE TO MEASURE THE PERFORMANCE OF THE TRAFFIC SIGNALS IN THE DALLAS-FORT WORTH REGION

March 17, 2023

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FOR A PLATFORM TO MEASURE THE PERFORMANCE OF THE TRAFFIC SIGNALS IN THE DALLAS-FORT WORTH REGION

INTRODUCTION

The North Central Texas Council of Governments (NCTCOG) is requesting written proposals from firms for a platform with data available to measure the performance of the traffic signals in the 10-county Dallas-Fort Worth (DFW) Non-Attainment Area. The desired platform should be capable of tracking performance measures to monitor and document signal and arterial performance. All performance measures shall be achievable without implementation of new hardware or direct access (physical or virtual) to the traffic signal cabinet or controller. Performance measures will indicate corridors as candidates for applying traffic signal improvements, such as retiming. The desired platform should be able to track performance measures such as signal delay; red/green arrival ratio; travel times; turning movement counts; and pass through. The platform will require multiple individual user accounts from one or multiple different municipalities and their consultants. The populated data/database generated throughout the duration of the contract is to be archived and made available by the vendor to NCTCOG at the completion of the contract.

NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS

The North Central Texas Council of Governments is a voluntary association of, by, and for local governments, and was established to assist local governments in planning for common needs, cooperating for mutual benefit, and coordinating for sound regional development. NCTCOG's purpose is to strengthen both the individual and collective power of local governments and to help them recognize regional opportunities, eliminate unnecessary duplication, and make joint decisions.

Since 1974, NCTCOG has served as the Metropolitan Planning Organization (MPO) for transportation in the Dallas-Fort Worth Metropolitan Area. NCTCOG's Transportation Department is responsible for regional transportation planning for all modes of transportation. The Department provides technical support and staff assistance to the Regional Transportation Council (RTC) and its technical committees, which compose the MPO policy-making structure. In addition, the Department provides technical assistance to the local governments of North Central Texas in planning, programming, coordinating, and implementing transportation decisions.

PROJECT OVERVIEW

Traffic congestion is ranked as one of the highest concerns of travelers in the Dallas-Fort Worth area, which causes delay on freeway and arterial facilities and is one of the major causes of the increased fuel consumption and vehicular emissions that lead to the degradation of air quality standards in the region. Arterial congestion accounts for 35 percent of the total congestion in the region, in turn adding emissions to a region currently designated as a non-attainment area. To improve the air quality and alleviate arterial congestion in the region, effective, low-cost strategies need to be implemented. NCTCOG and regional transportation partners have implemented efforts to coordinate traffic signal systems through the Regional Traffic Signal Retiming Program to allow traffic to progress efficiently through corridors and reduce idle emissions generated.

The Dallas-Fort Worth area has experienced rapid growth in the past several years, which has resulted in an increasing number of traffic signals and corridors that need retiming. Within the Dallas-Fort Worth region there are approximately 7,000 traffic signals. In the past, NCTCOG selected corridors through a Call for Projects (CFP), but it is now interested in using a performance-based platform to select traffic signals and corridors in the region suitable for retiming. NCTCOG is planning to use this data-driven approach to prioritize traffic signal

improvements and identify corridors to implement traffic signal retiming/synchronization on an ongoing basis.

PURPOSE AND NEED

The purpose of this project is to provide a traffic signal and arterial performance measures platform to NCTCOG and its partner agencies. The goal of the project is to procure a firm which can provide a web-based platform with data available to measure the performance of the traffic signals and arterials in the 10-county Dallas-Fort Worth Non-Attainment Area for three years, in addition to three, one-year optional renewals. While other contract types may be considered, software as a service is the preferred contract type to provide the performance measures platform.

PROJECT SUPPORT

The project will be conducted under the guidance and supervision of a Project Review Committee (PRC), which may include members of NCTCOG and city/transportation engineers or city managers of cities in non-attainment counties. The responsibilities of the PRC will be to serve as the principal technical review committee for this project. NCTCOG will serve as the project manager to implement a mutually agreed upon scope of work, monitor progress of firm(s) activities, and serve as a liaison between the firm(s) and other partners. The selected firm(s) will enter into a contract with NCTCOG for the agreed upon scope and budget. NCTCOG shall also serve as the contract manager and procurement administrator for the project.

WORK PROGRAM

The work program for the platform with data available to measure the performance of the traffic signals in the 10-county Dallas-Fort Worth Non-Attainment Area is summarized by the tasks outlined below. Firms are invited to propose modifications to these tasks and to exercise creativity in responding to the project's needs. Modifications to the tasks and task sequencing which will

improve the effectiveness of the platform, while containing costs, are encouraged. Firms may also propose tools to achieve outcomes (beyond those minimally required).

SCOPE OF WORK

Introduction

It is NCTCOG's expectation to obtain the most qualified firm(s) to design, develop, implement, operate a web-based traffic signal performance measures platform for the region. The platform should be capable to track performance measures identified by NCTCOG and regional partners to monitor and track signal performance to select suitable corridors as top priority for traffic signal improvements. The platform will also need to have the flexibility to allow all regional partners to monitor the performance of their signals. NCTCOG intends to implement the platform within six (6) months from the time NCTCOG gives the Notice to Proceed to the firm(s). NCTCOG expects the project lifecycle to be organized in a phased approach as outlined below:

- **Phase 1: Vendor's Basic Platform** – The firm(s) is expected to develop and implement a platform with vendor owned data that offers services in accordance with the required functional requirements for Phase 1 outlined in this RFP.

- **Phase 2**: **Platform External Data Usage** – The firm(s) is expected to enhance the platform that can supplement data provided by NCTCOG such as regional model volumes and traffic counts.

- **Phase 3: Platform Accommodates Advanced Signal Information** – The firm(s) is expected to enhance the platform that can accommodate traffic signal timing, geometrics, and automated traffic signal performance measure (ATSPM) data. This would be data that would need to be provided from NCTCOG partner agencies.

Services provided under this contract will consist of major tasks as described below:

Task 1.0 - Project Administration

The firm(s) shall prepare a detailed Project Management Plan (PMP) to provide a platform with data available to measure the performance of the traffic signals in the 10-county Dallas-Fort Worth Non-Attainment Area, description of the tasks to be undertaken in the work program, a project

schedule to include deliverables and anticipated meetings, a quality control/quality assurance plan, and outline of project administrative procedures. The draft PMP will be prepared and submitted to NCTCOG for review and comment. A final PMP will be prepared in response to comments received from this review. The firm(s) shall prepare meeting notes of PRC interviews, work sessions, and meetings. The firm(s) should anticipate monthly or more frequent meetings with NCTCOG during the development and testing of the platform and monthly meetings throughout the project duration.

The PRC review and approve all pertinent documents before the firm(s) move forward to develop, deploy, and maintain the platform. These key deliverables and functional requirements will form the basis of developing the final design specifications and testing of the platform.

Task 1 – Deliverables

The consultant firm(s) will generate the files, reports, and meeting minutes outlined above and provide this to NCTCOG as indicated and in total at the close of the project. All information will be provided in electronic format, compatible with Microsoft Office Application and Adobe PDF format, along with paper copies. The firm(s) will develop and maintain an information system to facilitate schedule and information sharing, document control, and issue tracking. The firm(s) will prepare Monthly Progress Reports and submit monthly invoices.

Task 2.0 Platform Development and Deployment

This task includes all work associated with the services provided by the firm(s) to design, build, integrate and deploy a fully functional traffic signal and arterial platform which meets the Traffic Signal Performance Measures and Technical Specifications of the platform outlined in this document. The firm(s) will develop a test plan that includes all components of the platform. Components of the platform will be tested through a series of subsystem tests. Defects

encountered during testing will be addressed prior to deployment of the platform. Defects will be corrected, and the appropriate tests will be repeated until the platform passes the subsystem tests and the system acceptance test.

Traffic Signal Performance Measures

NCTCOG is planning to use a data-driven approach to prioritize traffic signal improvements and identify corridors to implement traffic signal retiming/synchronization on an ongoing basis. Recommended performance measures are intended to identify and evaluate traffic signals and corridors to meet NCTCOG's goals and objectives. The firm(s) that respond to this RFP shall provide the number of samples, standard error and confidence interval of the following traffic signal performance metrics. These samples should include data by time period, by approach, by movement and by signal. Please provide a sample data set of at least one week worth of data for the Northwest Highway corridor from Inwood Road to Shady Brook Lane including 13 traffic signals, (see attachment). Outlined below are the basic required performance measures for Phase 1 of the platform. All of these measures should be documented and included in the RFP response.

1) Average Delay per Vehicle
    a) By time period, by movement, per approach, intersection, and user-defined corridor
2) Travel Time Reliability
    a) Quantify 95th percentile travel time along user defined corridor
    b) Quantify 5th percentile travel time along user defined corridor
    c) Quantify average travel time along user defined corridor
3) Intersection Delay
    a) By time period, by movement, per approach, intersection, and user-defined corridor
4) Average arrivals on green

a) By time period, by movement, per approach, intersection, and user-defined corridor

5) Average Split Failures
    a) By time periods, by movement, per approach, intersection, and user-defined corridor
6) Peak Period Split Failures
    a) By time period, by movement, per approach, intersection, and user-defined corridor
    b) AM Peak, Mid-Day Peak, PM Peak and Weekend
7) Off-Peak Split Failures
    a) By time period, by movement, per approach, intersection, and user-defined corridor
    b) AM Peak, Mid-Day Peak, PM Peak and Weekend

Below is a list of traffic signal performance measures that may be included but are not limited to Phase 2 of the platform development. These measures will require NCTCOG to provide volume data to incorporate into the platform.

1) Total Delay for Individual Signals and Per Mile for Corridors
    a) By time period, by movement, by direction, and by vehicle classes
2) Travel Time Reliability Weighted by Traffic Volumes
    a) By time period, by movement, by direction, and by vehicle classes
3) Level of Service (LOS)
    a) By time periods, by movement, by approach, by movement, by signal
4) Volume Capacity Ratio (V/C)
    a) By time periods, by movement, by approach, by movement, by signal

Metrics provided as part of Phase 3 of the platform will include data from our partner agencies. The use of the performance measures recommended will continue to evolve as NCTCOG moves forward to advance this process. These may include the following, but not limited to:

1) Effect of school zones on average delay

2) Intersection geometrics
3) Intersection traffic signal timing information
4) Capability of integrating, downloading, and exporting ATSPM data gathered from controllers

The performance measures mentioned above were used to guide development of functional requirements for a data platform to be used in identification, selection, evaluation, and monitoring of traffic signals and corridors.

Required Platform Functionality

NCTCOG is seeking a traffic signal performance platform to demonstrate traffic signal or corridor level performance monitoring and insights, prioritize traffic signal synchronization corridors, and fix operational issues at signalized intersections. Solutions that would collect and aggregate actionable data and provide benefits to the traveling public and agencies operating the transportation systems should be submitted. The following functional requirements should include, but are not limited to the following:

1) Capability to quantify performance of all traffic signals in the entire 10-county project area.
2) Capability of evaluating traffic signal data and providing decision support for both regional operational practices and assisting various O&M agencies in monitoring the performance of signalized corridors.
3) The performance platform should be map-based web application for evaluation of traffic operation on corridors and at signals.
4) The platform should be a hosted server architecture that is provided, operated, and maintained by the firm(s) in an offsite location.
5) The platform should have an automated process in place to send notification to the firm(s) and NCTCOG if the data feed or services experience a failure.

6) It is desired that the platform provide at least one year of historical data prior to project start for all recommended performance measures.
7) User Interface to select:
    a. Analysis locations should offer selection by area, sequence of roadway segments as a corridor or individual signalized intersection, and
    b. Date and times, and
    c. Performance measures
8) User selectable data resolution for all performance measures
    a. By Time Period (time of day, day of week, month, duration)
9) Capability of downloading data in a usable format (i.e., CSV, etc.).
10) Capability to provide visual representation of data and performance measures
11) Provide alerts based on user-defined thresholds, including
    a. Specific performance measures
    b. Specific corridors
    c. Specific intersections
    d. Ability to pause or silence alarms

12) Performance measures calculated exclusively via crowd-sourced probe-based data without implementation of new hardware or direct access (physical or virtual) to the traffic signal cabinet or controller as described in Phase 2 and Phase 3.
13) Provide unlimited access to users at regional partners
14) Scalable to additional intersections
15) Scalable to additional counties
16) Compare performance of multiple signals or corridors. The user should be able to draw a polygon and comparisons.

17) Scoring system sorting ability /weight factor to rank the selected signals based on combination of the performance measures. The user should be able to define and ability to adjust.
18) The platform should be able to capture the system's performance measures more than 500 feet from the stop bar.
19) The platform will provide a user guide for the website.
20) Performance measures data should be provided with no more than one week delay.
21) An Application Programming Interface (API) is desirable.

Phase 1 of this task will commence at contract Notice to Proceed and conclude once the platform becomes operational, no later than six (6) months after Notice to Proceed. This will be followed by Phase 2 and Phase 3. Please outline these multiple phases in the response to this RFP.

Task 2 – Deliverables

The Traffic Signal Performance Measures Platform for Phase 1, Phase 2 and Phase 3 and supporting documentation comprise the deliverables. The firm(s) will host the web-based platform. The final deliverables will be delivered to NCTCOG as electronic files. All information will be provided in electronic format, compatible with Microsoft Office Application and Adobe PDF and other appropriate formats. All data collected as part of the system analysis should be provided electronically.

Task 3.0 Operate and Maintain Traffic Signal Performance Measures Platform

The firm(s) shall operate and maintain the Traffic Signal Performance Measures Platform for a period of three years, with three additional one-year optional renewals. The firm(s) will collect information, prepare documentation on the planned and actual operation and maintenance requirements, and update system engineering documentation for use by agencies in future procurements.

At a minimum, the Traffic Signal Performance Measures Platform will meet the specifications listed in this scope of work. The firm(s) shall propose required system uptime, system accessibility, system performance, system availability and maximum allowable downtime for updates as part of the Proposal.

The firm(s) will provide documentation on the anticipated versus actual operation and maintenance requirements. The firm(s) will provide documentation on the actual operation and maintenance requirements, for use by agencies in future procurements.

Task 3 – Deliverables

The Traffic Signal Performance Measures Platform operation and maintenance of the system and subsystems comprise the deliverables, including the following:

- Process Platform data on a weekly basis
- Updates for new data elements

Task 4.0 Project Closeout

The Project closeout is the last task of the regional traffic signal performance measures platform where the following tasks shall be performed:

• Package all final deliverables and final inventory information to provide to the client.

• Contract Closeout Report.

• Review final billing details.

• Assist NCTCOG with moving all project documentation from the Project including database to a location specified by NCTCOG, and data to be property of NCTCOG for planning activities.

• Verification that objectives and deliverables were met, acceptance is formalized, and all activities are completed and administratively closed out.

• Lessons learned should be documented throughout the project and conducted postmortem to the project and included in the final documentation.

SCHEDULE AND BUDGET

This project has an anticipated Notice to Proceed date in the July 2023 timeframe. The Traffic Signal Performance Measures Platform will be developed over a six-month period, with maintenance and operations during the remaining 36 months, with three one-year optional renewals for a total of 72 months. The firm(s) will develop a schedule of tasks with completion dates and methodologies for the development of the Traffic Signal Performance Measures Platform. NCTCOG will select all the identified tasks or a subset of the tasks to be completed. This project will have a budget of approximately $400,000. Suggested modifications to the schedule will be considered. Based on funding availability, NCTCOG reserves the right to modify the base contract term and optional renewal terms. Responses to this RFP should include estimated annual fees for Software as A Service Tiers.

CONSULTANT SELECTION CRITERIA

The Consultant Selection Committee (CSC) will review all proposals and select a firm it considers qualified to undertake the project. The following criteria will be used to evaluate the proposals:

1. Project Understanding	30 percent
2. Scope of Services	25 percent
3. Project Manager/Staff Qualifications	20 percent
4. Knowledge of the Dallas-Fort Worth Area	10 percent
5. Firm Qualifications/Consultant References	10 percent
6. Project Schedule	5 percent

If the CSC determines that interviews will be required before a final decision can be made, the interviews will take place at NCTCOG offices in Arlington, Texas, during the week of May 1, 2023. Proposers should be willing and able to attend these interviews, if necessary. Firm(s) who are invited to an interview will be notified by the close of business on Friday, April 28, 2023, that an interview has been scheduled. Costs for developing the proposal and costs attributed to interviews (and subsequent negotiations) are at the proposer's own expense and will not be reimbursed by NCTCOG.

CONTRACT AWARD

Following final negotiations of the work plan and costs satisfactory to NCTCOG, the firm(s) will be asked to execute a contract with NCTCOG. A Notice to Proceed will be issued upon execution of the contract. NCTCOG reserves the right to reject any and all proposals, to contract for any or all portions of the project with the selected firm(s), or to hire multiple firms.

The successful responder(s) to this Request for Proposals is expected to provide qualified personnel to accomplish each portion of the work in this study. NCTCOG will maintain the right to request the removal of any personnel found, in its opinion, during the course of work on this project, to be unqualified to perform the work.

The Sample Contract, provided in this transmittal, contains federal requirements which must be included with all proposals submitted. Appendices C through J of the Sample Contract contain compliance requirements and certification forms which must accompany the proposal. **Failure to comply with these requirements may result in finding the Proposal non-responsive.**

The Texas Legislature has adopted House Bill 1295. In short, the law states that a governmental entity or state agency may not enter into certain contracts with a business entity unless the

business entity submits a disclosure of interested parties (Form 1295) to our agency at the time of a signed contract. As part of contract development, the Consultant will be asked to complete the disclosure of interested parties electronically and submit through the Texas Ethics Commission website. NCTCOG will provide a specific contract number associated with the award for inclusion in the submittal. Once submitted, the Consultant will be requested to return an e mail confirmation of submittal to NCTCOG. For more information about the process, please visit the following website for Frequently Asked Questions:

https://www.ethics.state.tx.us/resources/FAQs/FAQ_Form1295.php

DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION

Other requirements are that the Disadvantaged Business Enterprise participation must meet the 8.3 percentage goal identified for this type of procurement and that an Affirmative Action Plan is included in the proposal. Failure to comply with these requirements may find the proposal non-responsive.

QUESTIONS AND RESPONSES

All questions regarding the services required shall be directed in writing by email to TransRFPs@nctcog.org by the close of business on Friday, March 24, 2023. All questions and responses will be posted on NCTCOG's website at www.nctcog.org/rfp by the close of business on Wednesday, March 29, 2023. NCTCOG reserves the right to respond to inquiries as it deems necessary.

OVERALL PROCUREMENT SCHEDULE

This RFP shall be used to accept, review, and score proposals based on the following schedule with the intent of awarding a Cost-Plus Fixed Fee contract. The following represents the schedule of procurement activities leading to contract award:

Issue Request for Proposals	March 17, 2023
Last Day to Submit Questions	March 24, 2023
NCTCOG Q&A Posted to Website	March 29, 2023
Proposals Due & Proposal Public Opening	April 14, 2023
Consultant Selection Committee	week of May 1, 2023
Interviews (if needed)	week of May 8, 2023
Executive Board Approval	June 22, 2023
Execute Contract(s) 16	July 2023

NCTCOG reserves the right to make changes to the above-mentioned schedule. All such changes shall be made by an amendment to the RFP and shall be posted on NCTCOG's website at www.nctcog.org/rfp. It is the responsibility of the consultant to frequently check this website for information concerning amendments to the RFP.

*Public opening of the proposals will be done via Microsoft Teams on April 14, 2023 at 5:25 pm. A link to the Microsoft Teams meeting is below. Microsoft Teams is integrated with audio so you will only need to use the conference call number (below) if you are unable to access the Microsoft Teams App. The Teams App is available for download **HERE.**

Microsoft Teams meeting – Public Opening of Proposals

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Meeting ID: 290 751 185 586