

(Rev. 2/6/2018)

**Consultant Services
Solicitation**
(Electronic Submission Required)

ITS – Project Development, Design & Oversight



Addendum 1

Project No. S-ST99(628)
Signal Coordination using AI & Machine Learning

~~September 26, 2019~~

October 2, 2019

**UTAH DEPARTMENT OF TRANSPORTATION
Solicitation**

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PART ONE

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Consultant Services Solicitation Overview

The Utah Department of Transportation is soliciting services identified in Part Three (Project Information and Evaluation Criteria) of this document. Consultant Services will follow guidelines outlined in the [Consultant Services Manual of Instruction](#) (MOI) and in this Solicitation.

Solicitation is defined as the document used by UDOT to obtain a Consultant's Proposal.

Proposal is defined as a Consultant's response to UDOT's Solicitation.

- 1. Communication:** Pursuant to Utah Code 63G-6a-1503(3), beginning the date that the solicitation is issued until the selection of a Consultant has been made, **Consultants may not contact or communicate with any member or potential member of a Selection Team except through the following official communication process:**

Consultants may contact the UDOT Contract Administrator to schedule one-on-one appointments for project or scope of work discussions with the UDOT Project Manager (PM) (and Local Government Project Manager) regarding this Solicitation. Consultants may only communicate through these official designated appointments for project-related questions. A date has been designated for appointments for these discussions in the Selection Schedule outlined in Part Three (Project Information and Evaluation Criteria). Consultants desiring to meet with the UDOT PM or any UDOT employee must contact the UDOT Contract Administrator via email to request an appointment PRIOR to the deadline identified in the Selection Schedule outlined in Part Three (Project Information and Evaluation Criteria).

UDOT desires to make the most efficient use of resources for all parties involved with the established communication process. The one-on-one meeting with UDOT should not be viewed as a marketing tool and is not part of the Consultant Selection process.

Consultants may contact the UDOT Contract Administrator or other Consultant Services staff with any format or process questions.

- 2. Subscription to the UDOT Consultant Services Update Service:** UDOT recommends Consultants interested in this project subscribe to the [UDOT Consultant Services Update Service](#) on the UDOT website.

If there are any changes affecting the Solicitation, notice will be sent out via an e-mail through the update service.

- 3. Review of the Solicitation documents:** Consultants are responsible for reviewing and understanding the content and requirements of the Solicitation. Read and review each section carefully to ensure proposals meet the outlined requirements. If the Consultant identifies any mistake, error, or ambiguity in the Solicitation during the procurement process, it is the duty of the Consultant to notify the Contract Administrator via email.

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4. **Conflict of Interest:** UDOT expects Consultants to act with integrity and professional ethics. When there is a potential conflict of interest, Consultants are required to either not submit for the project or disclose the potential conflict to the Consultant Services Manager prior to submitting a proposal. The Consultant Services Manager will coordinate with the UDOT Conflict of Interest Review Team for a determination by UDOT. For additional information, refer to the UDOT [Consultant Services Manual of Instruction](#) (MOI). Additional Conflict of Interest requirements may be identified in Part Three of this Solicitation.
5. **Applicable Federal and State Regulations:** The Consultant will conform to all applicable state and federal regulations.
6. **Conditions of Proposal:** All costs related to the preparation of the Proposal and any related activities such as interviews are the sole responsibility of the Consultant. UDOT assumes no liability for any costs incurred by Consultants during the selection and contract negotiation process.
7. **Financial Screening:** Consultants are required to be financially screened at the appropriate level for this Solicitation. For additional information on financial screening requirements, refer to the [Consultant Services Manual of Instruction](#) (MOI). If the selected Consultant is unable to complete the financial screening process within 2 weeks of selection, the Proposal will be determined non-responsive and UDOT may move on to negotiate with the new first-ranked responsive Consultant.
8. **Contract Terms and Conditions:** It is the Consultants' responsibility to review and understand UDOT's Standard Terms and Conditions contained in the UDOT [Contract Terms and Conditions](#). These terms and conditions will apply to any contract resulting from this Solicitation.
9. **Health Reform – Health Insurance Coverage in State Contracts Requirements:** As required by UCA 72-6-107.5, effective March 17, 2016, UDOT will not enter into a contract of \$2,000,000 or more with a prime Consultant or \$1,000,000 or more with a sub-Consultant without demonstration of compliance regarding the offering of "Qualified Health Insurance Coverage" to their employees. Prior to issuing a Notice to Proceed, the Consultant must demonstrate compliance with the provisions of Administrative Rule R-916-5. A Consultant's inability to adequately demonstrate compliance may be grounds for determining a Proposal non-responsive and UDOT moving on to negotiate with the new first-ranked responsive Consultant.
10. **Debarment Certification:** Federal regulations require certification by prospective participants (including contractors, subcontractors, and principals) as to current history regarding debarment, eligibility, indictments, convictions, or civil judgments. The selected Consultant will be required to certify in accordance with contract Standard Terms and Conditions.
11. **Right to Cancel or Reject:** UDOT reserves the right to cancel the Solicitation at any time when it is in UDOT's best interest. UDOT also reserves the right to accept or reject any or all Proposals submitted in response to the Solicitation.
12. **Required Personnel Qualification:** The Consultant will be responsible to ensure all personnel proposed are qualified through training, experience, and appropriate certification for the tasks assigned and will have a working knowledge of UDOT standard practices.

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13. **Proposed Project Staff:** The Consultant is expected to provide a Consultant Proposed Staffing Plan for the project, as outlined in Part Three (Project Information and Evaluation Criteria). The plan should state the certification and education levels of the individuals proposed for use on this contract including sub-Consultants' personnel. The plan must be included in the Proposal but will not count against the maximum allowed pages.

UDOT's requirement for listing current or former UDOT employees as personnel in a Proposal is as follows:

1. If a Consultant lists a former UDOT employee on the Proposal who officially left UDOT employment prior to the submission date of the Proposal, the Consultant will not be disqualified.
 2. If the Consultant lists someone who has not yet left UDOT employment, even if the employee plans to retire or quit soon, the Consultant will be disqualified.
 3. If a Consultant lists a former or current UDOT employee who was involved in the development of the Solicitation for this project, the Consultant will be disqualified.
 4. These requirements apply to prime and sub-Consultants.
14. **Key Personnel:** Key Personnel are those individuals specifically identified in the Proposal as being set forth to effectively manage all aspects of the work in a quality, timely and efficient manner. When Consultants list Key Personnel, the Consultant is agreeing to make the personnel available to complete work on the contract at whatever level the project requires.
15. **Audits:** Prior to final contract award, an audit may be conducted by UDOT of the selected Consultant. This audit will be for the purpose of ensuring the selected Consultant is financially capable of performing the contract, the cost information and prices quoted are reasonable, and the selected Consultant has adequate accounting practices to ensure accurate tracking of contract costs. UDOT reserves the right to inspect Consultant records associated with this project, including financial records, as deemed necessary during the term of the contract.
- Prior to final acceptance of the contract work, UDOT may conduct a closing audit of the Consultant. This closeout audit will be performed upon completion of the contract to verify the accuracy of all billings and compliance with the contract provisions.
- In the event that a proposing Consultant has failed to pay UDOT monies due to UDOT for over payment on past projects, UDOT has the right to reject and/or disqualify the Consultant's Proposal. Disqualification will be based on audit findings, determinations, and recommendations made by the UDOT Fiscal Audit Division.
16. **Work site Safety:** Utah Code 63G-6a-403 states UDOT may request the Consultant submitting a Proposal to provide information about the Consultant's work site safety program, including any requirement that the person imposes on sub consultants for a work site safety program and any other pertinent information.

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17. **Disposition of Proposals:** Proposals and their content become the property of UDOT and are treated as non-public records until the Contract has been executed by all necessary officials of the Consultant and UDOT. The Proposal of the successful Consultant will be open to public inspection for a period of one year after the Contract has been executed.
18. **Consultant Debriefing:** As part of the Proposal evaluation, UDOT may provide constructive criticism of the Proposals submitted for this project.

Debriefing information may consist of scores of the first-ranked Consultant's proposal/interview and the scores, strengths and weaknesses of the Consultant's own proposal/interview.

The proposal and strengths identified in the selected Consultant's proposal/interview will be available for review in-person at the Consultant Services division, for a period of one year after the Contract has been executed.

Consultants may contact the Contract Administrator for a formal debriefing.

19. **Notice to Proceed (NTP):** NTP will be issued by Consultant Services division after contract execution. Authorization to begin work from any other source is invalid and will result in non-payment for services provided prior to authorized notification to begin work.
20. **Change in Key Personnel During Negotiations or after Notice to Proceed (NTP):** If after entering negotiations with the first-ranked Consultant, the Consultant is unable to provide the Key Personnel (prime or sub-Consultant) identified in the Proposal at the levels determined necessary for the project by the PM, the Consultant will be required to notify the PM and the Consultant Services Contract Administrator. The Consultant will then be offered the opportunity to propose a revised Project Team. The UDOT Selection Team will review the revised Project Team to determine if it is equal to or better than the originally proposed team. If UDOT determines the revised Team is equal to or better than the originally proposed team, negotiations will continue. If UDOT determines the revised team is not equal to or better than the originally proposed team, negotiations will be discontinued and UDOT will move on to the second-ranked Consultant. If the change in Key Personnel is after NTP and UDOT does not approve the change, UDOT reserves the right to cancel the contract and/or reflect the change on the Consultant Project Evaluation.

21. **Protests:** All protests with respect to this Solicitation must be in writing, and will follow the requirements in Utah Code Sections §63G-6a-1602 et seq. Deliver a copy of any protest to:

Executive Director
Utah Department of Transportation
4501 South 2700 West, 1st Floor
P O Box 141245
Salt Lake City, UT 84114-1245

Any protest not set forth in writing within the time limits specified in §63G-6a-1602 is null and void and will not be considered.

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22. **Insurance Certificates:** The Consultant is required to provide UDOT with Certificates of Insurance meeting the current guidelines. Current insurance requirements can be found within the [Consultant Services Manual of Instructions](#) (MOI).

23. **Required Completion and Acceptance Criteria:** Progress payments will be made for work in progress. Final invoice payment will be made after: all of the work has been completed; the final estimate, project records, and documentation have been received and accepted by UDOT as accurate and complete; and a Consultant Evaluation has been performed.

24. **Government Records Access and Management Act (GRAMA):** UDOT will maintain a nonpublic process for the duration of this Solicitation. Pursuant to Subsection §63G-2-305(6) of the GRAMA, all records related to this Solicitation, including, but not limited to Proposals, evaluation, and selection procedures, and any records created during the evaluation and selection process will remain nonpublic records until the Contract has been executed by all necessary officials of the Consultant and UDOT. The GRAMA, Utah Code Ann., §63G-2-101 et seq., provides in part that certain records are protected if properly classified.

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PART TWO

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Solicitation Method and Requirements Streamlined Solicitation

1. **Solicitation:** This Solicitation follows the Streamlined Solicitation processes and procedures outlined herein.

UDOT Consultant Services staff facilitates Selection Teams through the ranking and selection of Consultants to provide engineering services for transportation related projects. Consultant selection is a Qualification-Based Selection (QBS) process, where the primary factor in selection is the qualification-based criteria outlined by the Selection Team in Part Three (Project Information and Evaluation Criteria), rather than the cost of engineering services. Cost is a secondary factor after a Consultant is selected and the contract negotiation process begins.

2. **Proposal Deadline:** Submit one (1) electronic PDF file of the Proposal by email to the email address specified and prior to 11:00 AM on the submission date identified in the Selection Schedule in Part Three (Project Information and Evaluation Criteria). Proposals will not be accepted after the 11:00 AM deadline.
3. **Qualification Based Selection:** This is a Qualifications Based Selection (QBS) process based on United States Code (USC) Title 40, Chapter 11, Sections 1101 – 1104 (Selection of Architects and Engineers, otherwise known as The Brooks Act). Consultant fees are not a factor in the ranking of Consultants to provide the requested services.
4. **Consultant Fee Discussion:** Consultant fees are not a factor in the selection ranking of a Consultant to provide services. All price/cost related items which include, but are not limited to past, present or future fees associated with Consultant contracts, direct salaries / wage rates, indirect cost rates, and other direct costs are prohibited from being used in Proposals. Consultant fee discussions are not allowed. Do not include any reference to Consultant fees (past, present, or future) in the Proposal.
5. **Financial Screening:** UDOT requires Consultants to be financially screened at the appropriate level for this Solicitation. The time it takes a Consultant to complete the Financial Screening process varies and therefore UDOT encourages Consultants to submit their [Financial Screening Application and Questionnaire](#) as soon as possible.

Consultants may obtain the Financial Screening Application and Questionnaire from the UDOT website. For questions, contact the Consultant Services Financial Screener at (801)965-4138. A Consultant's Financial Screening status is effective for the period of one year from the time the Consultant is approved.

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6. **Guidelines for Preparing Streamlined Proposals:** These guidelines were developed to standardize the preparation of a Proposal by Consultants for engineering services on a UDOT project. Submitting a Proposal is the beginning of the selection process and is used as the basis for selecting or for short-listing Consultants. The purposes of the guidelines are to ensure consistency in format and content in the Proposals prepared by Consultants and submitted to UDOT. It is highly recommended that Proposals are written and presented to UDOT in a clear and concise format which will not distract from the content of the material presented.

The following table outlines the Proposal instructions and guidelines. Any penalty or disqualification actions are clearly identified in the table. Violations that do not result in a penalty or a disqualification action may still affect the Consultant’s overall Proposal score as part of the evaluation process.

Proposal Instructions and Guidelines		
Instruction	Description of Requirement	Violation Penalty or Disqualification
Page Limits	Provide only the allowable number of pages as identified in Part Three (Project Information and Evaluation Criteria)	Additional pages will be removed
Page Sizes	Provide only the allowable page sizes identified in Part Three (Project Information and Evaluation Criteria)	Pages violating size requirement will be removed
Consultant Proposed Staffing Plan	Provide a copy of the Consultant Proposed Staffing Plan with no additional information beyond that which is required, as identified on the sample form	If additional information is provided, the Staffing Plan will be removed
Margins	Provide one-inch (1”) margins throughout the Proposal; Consultant Name/Logo and Page Headers/Footers may be within the margins	Guideline
Font and Line Spacing	Use a 10-point [or greater] Arial or Times New Roman font	Guideline
E-mail	Do NOT send Proposals directly or indirectly to any known or presumed Solicitation Selection Team members or other UDOT personnel outside of the prescribed UDOT email address	Guideline
PDF Submission	Send Proposals via e-mail in PDF format	Guideline
Proposal Deadline	Send Proposals to cssog@utah.gov prior to the 11:00 AM deadline on the date identified in Part Three (Project Information and Evaluation Criteria)	Disqualification
Interviews	If interviews are required, attend the date and time instructed by Consultant Services	Disqualification

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Fee Discussion	Submit a Proposal without any reference to Consultant fees on this project or any past, present or future project	Disqualification
Cover Page	Provide a complete Cover page, including a signed, verbatim Acknowledgement as identified in Part Three (Project Information and Evaluation Criteria)	Disqualification
UDOT Staff	Provide a team that does not include any current UDOT employees or former UDOT employees who were involved in the development of this Solicitation	Disqualification
Financial Screening	Complete the UDOT financial screening process at the appropriate level, identified in Part Two (Solicitation Method and Requirements)	Disqualification

1. **UDOT Right:** UDOT reserves the right to disqualify a Proposal when the intent of the Solicitation process is violated. UDOT Consultant Services staff may utilize the provision of Utah Procurement Code 63G-6a-114 to determine an error is immaterial.

2. **Selection Team:** The Selection Team members will receive copies of each responsive Proposal submitted. They will review and score the Proposals individually based on the evaluation criteria identified in Part Three (Project Information and Evaluation Criteria) and submit their scores and comments to the Contract Administrator. The Contract Administrator will tally and compile the scores and comments.

The Selection Team will then meet to discuss the Proposals and comments from individual Selection Team members and determine whether interviews are necessary or whether the selection may be made based on the averaged scores from the Proposals. Final Proposal score results are the average of voting Selection Team members' scores.

Most Streamlined Solicitation selections will be based on the Proposal scores. However, if the Selection Team determines it is necessary to conduct interviews in order to make a selection, the Selection Team will develop the format of the interviews and provide instructions on the interview format to each Consultant invited to participate.

3. **Selection Interviews:** The Streamlined Solicitation is intended to reduce the level of effort required to compete for and administrate the selection process. Interviews will take place in the event the first-place ranking is a tied score for two or more Consultants, or other extenuating circumstances.

If the Selection Team determines interviews are necessary, project-specific topics will be provided to each team that is invited to participate in the interview process. Proposal scores will be carried over and will be weighted at 30% of the final score. The remaining 70% of the final score will be based on the interview.

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4. **Selecting By Consent (SBC):** The SBC process will be used to score the interview. SBC is a scoring process that aids the Selection Team in developing final ranking through a collaborative process. In this process each segment and question of the interview is weighted in advance during the Selection Team Meeting. After the interviews are conducted, the Selection Team scores each segment and question by “consent”. Consent is defined as the willingness of all Selection Team members to accept a decision reached by a collaborative process.

5. **Qualitative Assessment Guidelines:** Throughout the scoring process (for Proposals and interviews) the Selection Team will use the following Qualitative Assessment Guidelines when scoring. These guidelines are used to help ensure consistency in scoring.

Qualitative Assessment Guidelines	
9 – 10	The Proposal demonstrates a complete understanding of the subject and qualifications that significantly exceed expectations and the stated requirements. Proposal contains many strengths and minor weaknesses, if any.
6 – 8	The Proposal demonstrates a strong understanding of the subject and qualifications that exceed expectations and the stated requirements. Weaknesses, if any, are minor. Proposal contains strengths that outweigh the weaknesses.
3 – 5	The Proposal demonstrates an adequate understanding of the subject and qualifications that meet expectations and the stated requirements. Proposal contains strengths that are offset by the weaknesses.
1 – 2	The Proposal demonstrates a vague understanding of the subject and qualifications that fall below expectations and the stated requirements. Proposal contains weaknesses that outweigh the strengths.
0	The Proposal is unacceptable. The Proposal fails to meet expectations and the stated requirements. Proposal contains many weaknesses and only minor strengths, if any.

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PART THREE

Rev. 11/15/16

**Project Information & Evaluation Criteria
Streamlined Solicitation**

Project Information	
Project Number	S-ST99(628)
Project Name	Signal Coordination using AI & Machine Learning
PIN Number	17963
Requested Services	ITS – Project Development, Design & Oversight
Source of Funding	State
Contact Information	
UDOT Contract Administrator	Carlie Torres UDOT Consultant Services Box 148490 4501 South 2700 West Salt Lake City, Utah 84129-5998 catorres@utah.gov (801) 965-4387
UDOT Project Management	Mark Taylor Project Manager Utah Department of Transportation Traffic Management Division

Consultant Selection Schedule

Date	Action
Thursday, September 26, 2019	Posting of Solicitation on UDOT Consultant Services Project Advertisement website
Monday, September 30, 2019	Deadline to request a one-on-one discussion meeting
Wednesday, October 02, 2019	Appointments to discuss the project
Thursday, October 10, 2019	Proposals are due electronically by 11:00 AM.
Wednesday, October 23, 2019	Selection Team Meeting
Tuesday, October 29, 2019	Consultant Selection Interviews (if necessary)
Tuesday, October 29, 2019	Consultant Selection
Wednesday, October 30, 2019	Pre-Negotiation Meeting with Selected Consultant

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Background:

The Utah Department of Transportation (Department) is using this solicitation to hire a Consultant that has experience in Artificial Intelligence (AI) and Machine Learning (ML). The Consultant will use computer systems to provide optimized traffic signal timing and phasing using the Department's Automated Traffic Signal Performance Measures (ATSPM) data logs as the primary data source. Other data sources can be used to supplement, but not replace, the ATSPM data including GPS, Vehicle to Infrastructure (V2I), travel time data, and other relevant data sources. The Consultant will source or provide all data sources outside of the ATSPM data.

The selected Consultant will enter into a one-year contract with the option for up to four (4) additional one-year contracts at the Department's discretion and dependent on funding, need, and performance. No amount of work is guaranteed as a result of this selection. The Department may at any time and for any reason cancel the contract during the contract year by providing the Consultant with a two-week written notice.

Contract Goals:

The overall project objective and goal is to develop new signal coordination plans using the ATSPM data logs, AI, and ML and furthering the Department's Strategic Goals of Zero Crashes, Injuries and Fatalities; Optimize Mobility; and Preserve Infrastructure. The vision is "Keeping Utah Moving." Emphasis will be placed on working closely with a high level of collaboration with the Department's Statewide Signal Engineers in developing robust traffic signal coordination plans that meet the Department's needs and objectives as defined in the Traffic Signal Management Plan (TSMP). See the following link for additional information – (https://udottraffic.utah.gov/ATSPM/Images/TSMP_UDOT_v1-2_2-5-16.pdf). The TSMP Sections 1.4 and 1.5.2 discusses the Department's goals for traffic signal operations that provides for the orderly and efficient movement of all modes of transportation by providing smooth and equitable flow of traffic.

Requirements and Qualifications

The consultant must utilize a solution that meets or exceeds the requirements below:

- Shall utilize existing hi-resolution ATSPM data being collected by the Department's traffic signal controllers (Econolite ASC/3, Cobalt, and Intelight Maxtime). The Department will provide the winning Consultant access to pull raw data on a daily basis via a web API that is currently in development. Additional data sources are optional but must not incur additional licensing costs to the Department and shall not require additional equipment or hardware.
- Shall utilize advanced AI techniques by performing tasks that normally require human intelligence such as visual perception, decision-making and self-correction.
- Shall utilize advanced ML techniques that provides the ability to automatically learn and improve from experience without being explicitly programmed.
- ~~Shall use AI and Micro-Simulation for optimization.~~

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- Shall not require additional hardware including additional sensors or controller hardware.
- Shall not require manual counts or other manual-type data collection.
- ~~Shall~~ **Should** optimize multiple objectives including side street delay, split failures, directional progression, and travel time. The solution ~~must~~ **should** be capable of optimizing these objectives on a network level **with consideration for dilemma zones on high speed approaches and overall safety**.
- ~~Shall demonstrate past execution of accurate performance predictions (within +/- 5%) in real-world applications.~~
- No provision shall be made for travel or on-site implementation. The Department's Engineers, or their staff, will implement plans after review and will monitor for issues once they are in place. The Department reserves the right to reject coordination plans for further review and/or refinement and the plans will only be implemented once the Department's Statewide Signal Engineers deem them ready.

Project Locations:

Project 1 (UDOT Region 3): SR-73/SR-145 from Sunset Drive to Market Street near Eagle Mountain, Utah (6 signalized intersections)

- SR-73 & Sunset Drive (Signal #6149)
- SR-73 & Ranches Parkway (Signal #6146)
- SR-73 & Mt. Airey Drive (Signal #6185)
- SR-73 & Foothill Blvd/800 West (Signal #6145)
- SR-145 & Crossroads Blvd (Signal #6007)
- SR-145 & Market Street (Future Signal)

Project 2 (Region 2): SR-36 from Vine Street to Saddleback Road near Tooele, Utah (16 signalized intersections)

- SR-36 (Main Street) & Vine Street (Signal #7819)
- SR-36 (Main Street) & Utah Avenue (200 North) (Signal #7818)
- SR-36 (Main Street) & 400 North (Signal #7816)
- SR-36 (Main Street) & 600 North (Signal #7815)
- SR-36 (Main Street) & 1000 North (SR-112) (Signal #7814)
- SR-112 (1000 North) & 200 West (Signal #7821)
- SR-36 (Main Street) & 1280 North (Signal #7813)
- SR-36 (Main Street) & 2000 North (Signal #7812)
- SR-36 (Main Street) & 2400 North (Signal #7811)
- SR-36 & Erda Way (Signal #7805)
- SR-36 & Bates Canyon Road (Signal #7804)
- SR-36 & Village Blvd (Signal #7803)
- SR-36 & Stansbury Parkway (Signal #7802)
- SR-36 & SR-138 (Mills Jct.) (Signal #7801)
- SR-138 & Stansbury Parkway (Signal #7806)
- SR-36 & Saddleback Blvd / I-80 EB Off-ramp (Signal #7800)

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Project 3 (UDOT Region 1): Riverdale Road from I-15 to 36th Street near Ogden, Utah
(13 signalized intersections)

- Riverdale Road (SR-26) & I-15 (Signal #5026)
- Riverdale Road (SR-26) & 1500 West (Signal #5004)
- Riverdale Road (SR-26) & I-84 (Signal #5003)
- Riverdale Road (SR-26) & 1050 West (Signal #5002)
- Riverdale Road (SR-26) & 900 West (Signal #5001)
- Riverdale Road (SR-26) & 700 West (Signal #5000)
- Riverdale Road (SR-26) & 550 West (Signal #5020)
- Riverdale Road (SR-26) & 300 West (Signal #5009)
- Riverdale Road (SR-26) & 4030 South (Signal #5008)
- Riverdale Road (SR-26) & Wall Avenue (SR-204) (Signal #5007)
- Riverdale Road (SR-26) & Chimes View Drive (Signal #5005)
- Riverdale Road (SR-26) & 36th Street (Signal #5012)
- 36th Street & Wall Avenue (SR-204) (Signal #5006)

Project 4 (Region 3): Pioneer Crossing from Mill Pond Road to 2300 West near Lehi, Utah
(6 signalized intersections)

- Pioneer Crossing (SR-145) & 2300 West (9550 West) (Signal #6038)
- Pioneer Crossing (SR-145) & 1700 West (Signal #6037)
- Pioneer Crossing (SR-145) & 1100 West (8730 West) (Signal #6032)
- Pioneer Crossing (SR-145) & 500 West (Signal #6036)
- Pioneer Crossing (SR-145) & Center Street (Signal #6018)
- Pioneer Crossing (SR-145) & Mill Pond Road (Signal #6035)

Project 5 (UDOT Region 4): SR-9 from 2600 West to 500 North near Hurricane, Utah
(7 signalized intersections)

- SR-9 (State Street) & 2600 West (Future Signal)
- SR-9 (State Street) & 2260 West (Signal #8154)
- SR-9 (State Street) & 1150 West (Signal #8155)
- SR-9 (State Street) & 700 West (Signal #8156)
- SR-9 (State Street) & 300 West (Signal #8157)
- SR-9 (State Street) & Main Street (SR-59) (Signal #8158)
- SR-9 (State Street) & 500 North (Future Signal)

*Projects above were identified at inception and may change based on Department needs. Additional projects may be identified in the future and additional phases may be added based on technology advancements and infrastructure changes (adding/removing signals and phasing).

Scope of Work

The consultant will be expected to provide services and support for each task listed below. The tasks will most likely be accomplished concurrently with each other but have been split out for clarity.

Task 1 – Calibration and setup of AI and ML models/programs

- Objective: Setup and calibrate a model/program that uses AI and ML for each of the five projects listed under the “Project Locations” shown above. The objective of the model/program is to develop

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new traffic signal coordination plans that provide for the orderly and efficient movement of all modes of transportation by providing for smooth and equitable flow of traffic and as outlined in the Requirements and Qualifications, and Task 2 below.

- Methodology: The Consultant shall coordinate with the Department to create a model/program that considers the following:
 - a. Signal coordination plans that can be developed quickly, **both on the spot**, and at a regular interval (such as bi-monthly **(every two months)**) for at least three time-of-day periods Monday through Friday (morning, off-peak, afternoon/pm). In addition, at least one time of day period for Saturday and at least one for Sunday.
 - b. Optimize for split time and offsets. The ideal model will also account for cycling sequence changes for better progression, where permissible given safety considerations.
 - c. Limit controller from going into transition. It is assumed that a good model will generally avoid this but the consultant needs to know that split times less than the pedestrian walk + ped clear + yellow + red clear will result in:
 - i. Coordinated Phase: Controller not running coordination
 - ii. Side Street Phase: Controller adjusting the offset for up to multiple cycles after serving a pedestrianPedestrian volumes typically dictate the Department’s tolerance of lowering the split below the pedestrian minimum time on the side streets.
 - d. Options to provide balanced, one-way, or favored progression schemes
 - e. Cycle length minimum and maximum constraints
 - f. Accommodate minimum split constraints
 - i. Absolute split minimum by phase type (left turn, thru)
 - ii. Pedestrian minimum
 - iii. Coordinated phase minimum
- Deliverables: **This task has no specific deliverables but is required to accomplish Tasks 2 and 3. Show and describe the ML & AI algorithm details and the data sets used for these algorithms in a brief report to the Department prior to deliverables in Task 2.**

Task 2 – Development of traffic signal coordination plans

- Objective: Develop optimized traffic signal coordination plans for each intersection from the five projects listed under “Project Locations” for at least the following time periods: Monday through Friday morning, off-peak, afternoon/pm; and at least one time of day period for Saturday and at least one for Sunday.
- Methodology: Utilize the calibrated model to develop signal coordination plans.
 - a. The Department will provide all relevant existing timing and sequence information to the Consultant and will provide consultation on current conditions and phasing as required.
 - b. The Consultant is expected to collaborate with and seek approval for the proposed cycle lengths and sequence changes with the Department’s Signal Engineers prior to and during development.
 - a. Regions 1 and 3 – Devin Squire
 - b. Regions 2 and 4 – Matt Luker
 - c. The cycle lengths and sequences must be approved prior to development by the

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Department.

- d. Signal coordination plans shall include the cycle length, offset, split time for each phase; coordinated phases, and sequencing.
 - e. Split times shall be provided in “Split” format (green+yellow+red clearance) rather than just green time and correctly allocate time so that they can be programmed into the controller without any additional calculations by the Department.
 - f. Offsets shall reference the beginning of the first coordinated green phase (NEMA TS2 style).
- Deliverables: Signal coordination plans in spreadsheet format. These shall be delivered on the following schedule:
 - a. Project 1: 3 months after Notice to Proceed (NTP) and then again on months 5, 7, 9 and 11
 - b. Project 2: 4 months after NTP and then again on months 6, 8, 10 and 12
 - c. Project 3: 5 months after NTP and then again on months 7, 9, and 11
 - d. Project 4: 6 months after NTP and then again on months 8, 10, and 12
 - e. Project 5: 7 months after NTP and then again on months 9 and 11

*This schedule was identified based on current need and may be modified for future contract years.

Task 3 – Analysis report summarizing work performed, project impacts, and benefits received.

- Objective: Provide an analysis report summarizing work performed, project impacts, and benefits received. The Department will provide ATSPM data and travel time data from its HERE data set that shall be included in that report. The Consultant is free to explore other data sources for reporting so long as the Department doesn’t incur any additional costs.
- Methodology: Provide an analysis report with the following information at a minimum:
 - a. Arrivals on green for the mainline directions (on approaches where the Purdue Coordination Diagram is available).
 - b. Split failure reductions (on approaches where the Split Failure metric is available).
 - c. Main line travel time from start to end of corridor using the Department’s HERE data set.
 - d. Pedestrian delay
 - e. Estimated cost savings in delay time savings using the value of delay time published by the Texas A&M Institute (<https://tti.tamu.edu/tti-publication/value-of-delay-time-for-use-in-mobility-monitoring-efforts/>). Volume can be measured in ATSPM or UDOT AADT (<https://www.udot.utah.gov/main/f?p=100:pg:0:::V,T:,528>) can be used.
 - f. Predictive accuracy of the Model
- Deliverables:
 - a. An interim analysis report delivered within 4 weeks of the first implementation of each project (5 reports total).
 - b. An annual (final) analysis report that summarizes the annual benefits for each individual project including any additional implementations of timing plans and a summary of the benefits combining all five projects.

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1. **Contract Completion:** If all year(s) of this selection are utilized, the approximate time-frame will be a total of **60 months** from Notice to Proceed.
2. **Required Percentage of Work for Prime Consultant:** The Consultant must perform work valued at not less than 40% of the total contract amount with its own staff.

3. **Proposal Organization:**

Technical PDF

- Cover Page
- Project Team
- Capability of the Firm(s)
- Approach to the Project
- Consultant Proposed Staffing Plan
- Form BC (Business Confidentiality), if applicable

4. **Proposal Section Requirements:**

Cover Page: The Cover Page is one page. It may be on the Prime Consultant's letterhead and will consist of the following with no additional information:

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Cover Page	
Date	
PIN No., Project Name and Description	
Prime Consultant	
Prime Consultant's Federal ID#	
Sub-Consultants (if any)	
Primary Contact	
Primary Contact Name (Prime)	
Address	
City, State, Zip	
Email	
Office Phone	
Cell Phone	
Secondary Contact	
Secondary Contact Name (Prime)	
Address	
City, State, Zip	
Email	
Office Phone	
Cell Phone	
Acknowledgement	
<p><i>I understand the acceptance and completion criteria, submittal, financial screening requirements, contract selection types and contract caps. My firm will comply with all state and federal contracting requirements applicable to the project. I understand UDOT policies, procedures and processes may change during the duration of the project and will comply with any changes required by UDOT. I have fully and accurately disclosed any debarment, license issues, and/or investigations being performed by any governmental entity. Employees listed on the staffing plan are current bona fide employees of the Consultant. As authorized to sign for my organization, I certify the content of this proposal to be true, accurate and all matters fully disclosed as requested in the Solicitation. I understand any misrepresentations or failure to disclose matters in the proposal is immediate grounds for disqualification.</i></p>	
Signature	
Name	
Title	

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The information is not required to be in this exact format, as long as each item of requested information is presented, with no additional information. Proposals will be considered non-responsive and will be disqualified if the Cover Page is not attached to the Proposal; if the Acknowledgement is not included on the Cover Page; and/or if there is additional information included on the Cover Page.

No evaluation points are assigned to this section and the Cover Page will not count as one of the allowed pages.

Project Team: The Selection Team will evaluate how well the qualifications and experience of the proposed project team members relate to the specific project. The Selection Team will score Proposals based upon the following criteria:	
% of Section Total	Project Team Section Criteria
10	Project Team organizational charts including sub-Consultants (see sample Project Team Organizational Chart available on the UDOT website). Identify Consultants and individuals that will be providing key services on the project (including all technical expertise necessary to perform the outlined Scope of Work).
45	Describe the qualifications, experience, and availability of Key Personnel on your proposed project team. Correlate the qualifications and past experience with the Contract Goals and the outlined Scope of Work.
45	Provide a table of all active and completed projects by team members during the last five years. The Consultant shall provide the Department at least one previous project where ATSPM data logs, AI, and ML were implemented to improve traffic signal timing. The table headings should include the following items. (See sample Project Related Experience Chart available on the UDOT website). Columns may be combined in order to consolidate information. <ul style="list-style-type: none"> - Name of Project Manager / Team member(s) - Year - Type of Project - Project Name - Project Location - Project Description - Services Performed / Specific Project Role - Client - Reference Contact and Telephone Number
50	Maximum points available for this section of the Proposal (out of 100).

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Capability of the Firm(s): The Selection Team will evaluate the Firm(s) capability to perform the work. The Selection Team will score Proposals based upon the following criteria:

% of Section Total	Capability of the Firm(s) Section Criteria
40	Describe your project team firms' capability, experience and unique qualifications to perform the specific type of work identified in the Scope of Work.
10	Describe your project team firms' internal quality and cost control procedures.
10	Discuss the logistics relating to how the project team firms will provide the services requested.
40	Choose a similar project identified in the Project Team section and discuss in detail what your project team firms did to make that project a success.
20	Maximum points available for this section of the Proposal (out of 100).

Approach to the Project: The Selection Team will evaluate how well you have planned a basic course of action, what alternatives and/or preliminary approaches are proposed, and what provisions are identified for dealing with potential impacts. The Selection Team will score Proposals based upon the following criteria:

% of Section Total	Approach to the Project Section Criteria
45	Describe the course of action proposed to meet the Contract Goals and Scope of Work. Be realistic, clear and concise.
35	Discuss your project team firms' collaboration efforts with each other and with the Department, and how you plan to work together for a successful project.
20	Identify risks, challenges, conflicts and potential mitigation.
30	Maximum points available for this section of the Proposal (out of 100).

A maximum total of 100 points is available for the Technical Proposal.

- Consultant Proposed Staffing Plan:** The Consultant is expected to provide a [Consultant Proposed Staffing Plan](#). Consultants are not required to use this example form, as long as all necessary information is included. The Staffing Plan must identify the certification and education levels of the individuals proposed for use on the contract, including sub-Consultants' personnel. When Consultants list personnel on the Proposed Staffing Plan, the Consultant is agreeing to make the personnel available to complete the services in the contract at whatever level the project requires.

The Consultant Proposed Staffing Plan must be included in the Proposal, but will not count as one of the allowed pages. No other information is allowed on these pages. If additional information is provided, the Staffing Plan will be removed. No evaluation points are assigned to this section.

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6. **Claim of Business Confidentiality:** The GRAMA, Utah Code Ann., §63G-2-101 et seq., provides in part that certain records are protected if properly classified. Consultants are responsible for determining which information, if any, they wish to be protected under a Claim of Business Confidentiality, and are responsible for taking appropriate action to do so. An entire Proposal may not be protected under a Claim of Business Confidentiality. To protect information under a Claim of Business Confidentiality, the Consultant must, at the time the information is provided to UDOT, include a [Form BC - Claim of Business Confidentiality](#). It is the responsibility of the Consultant to complete Form BC in accordance with Subsection §63G-2-309 and submit to UDOT as an attachment to the Proposal. If nothing in the Proposal is being protected under a Claim of Business Confidentiality, a Form BC is not required.
7. **Four (4) Page Maximum:** Pages exceeding the maximum limit will be removed from the Proposal prior to distribution to the Selection Team. The Cover Page, Consultant Proposed Staffing Plan and Form BC (if applicable) do not count towards the page maximum.

A maximum of 4 single sided pages (which includes 8 ½" x 11" and 11" x 17" pages, where each 11" x 17" page counts as two 8 ½" x 11" pages).

Do not include a reference or link to additional information. If Proposals contain references or links, UDOT Consultant Services will remove them from the Proposal.

8. **UDOT Reference Items:**

- UDOT ATSPM use and information is available online at the UDOT website www.udottraffic.utah.gov/ATSPM
- UDOT Consultant Services Manual of Instruction is available online at the UDOT website www.udot.utah.gov/go/CSManuals.
- Other UDOT manuals are available online from the UDOT website at www.udot.utah.gov/go/Manuals.
- UDOT 2019 Strategic Direction & Performance Measures are available online from the UDOT website at www.udot.utah.gov/go/StrategicDirection.