



SCOPE OF SERVICES

Solicitation Number: CLMP207

Project Name: Engineering Services for Electric Service Delivery

PROJECT FOR:

CITY OF AUSTIN, AUSTIN ENERGY, THROUGH ITS CAPITAL CONTRACTING OFFICE

PROJECT TITLE:

Engineering Services for Electric Service Delivery

OBJECTIVES OF THE PROJECT:

Provide engineering and associated services, for Austin Energy's Transmission, Substation, Distribution, Planning, Project Management, Operations, Public Involvement and Real Estate, and Network Engineering Groups.

BACKGROUND:

The selected firm shall serve as Electric Service Delivery's professional consultant and shall provide technical consultation and advice to Austin Energy (AE). The firm shall be capable of producing turnkey project and construction drawing packages. The firm shall also be capable of supplying on-site (at AE offices) engineering, technical, and drafting personnel as needed. The specific skills required and duration of time will be provided in each scope of work that is issued to the firm.

All tasks required to complete the work shall be performed by the firm or by their subconsultants under the supervision of the firm on a case by case basis. AE reserves the option to participate in the work to the degree deemed necessary or appropriate. When AE exercises the right to perform any part of the work, the firm shall cooperate with the assigned AE staff.

ANTICIPATED SERVICES:

An authorized AE representative, with input and assistance of the firm, shall develop for each assignment a scope of services consistent with AE's specific needs per assignment. Work is not to begin until the approved AE representative and the firm have agreed to a scope, schedule, and cost for each task or group of tasks and a notice to proceed (NTP) is issued. ***All designs for construction and engineering reports shall be stamped with an approved State of Texas Professional Engineering seal.*** The anticipated scope of engineering services AE may require is described below. Assigned projects may require only portions of the described scope of services. Related engineering services necessary for the implementation of a project may also be required.

A. Design Criteria Services:

In conjunction with AE, the firm shall, recommend general design criteria and methods for the design, performance and operation of new or upgraded AE transmission, substation, distribution, lighting, and network facilities. The objectives will define the scope of technical design features and establish a set of standards and methodology to review, analyze and recommend design options. The criteria shall, as a minimum, address the following:

- Safety Applicable Codes and Standards Reliability
- Electric and Magnetic Fields (EMF) Aesthetics
- Electric System Operations Economics
- Right-of-Way Requirements
- Environmental Impact and Permitting
- Feeder Analysis
- Failure Analysis
- Lightning Protection and Grounding
- Technical Training
- Drafting Services
- Power Quality Problem Resolution
- Civil/Structural Design Services
- Equipment Analysis and Selection
- Underground Distribution Design
- Street and Security Lighting Design
- Overhead Distribution Design
- Equipment/System Protection Coordination and Selectability

B. Transmission Design

1. Use PLS-CADD to perform, design and modify new and existing transmission lines and provide an "ISSUE FOR CONSTRUCTION" drawing package which includes plan and profiles, sag charts, hardware and structure details, materials lists, foundation designs and all related design calculations.
2. Use SAG10 software and sagging templates to make design modifications to existing hand-drawn manual drawings.
3. As-built existing lines utilizing existing information AE has and, performing some level of field reconnaissance, obtain necessary additional information.
4. Perform design of underground transmission lines.
5. Analyze existing lattice towers and their foundations for increased loading.
6. Obtain necessary permits to construct a transmission line (e.g., railroad crossings, Texas Department of Transportation (TxDOT), Federal Aviation Administration (FAA), environmental, counties, etc.).

C. Substation Design

1. Perform design and modification of new and existing substations to include material lists, foundation, drainage, and containment designs, and all related design calculations.
2. Must be able to design stations utilizing open air, enclosed switchgear and gas insulated substation (GIS) equipment.
3. Design substation feeder get-a-ways.
4. Obtain necessary permits to construct a transmission line (e.g., railroad crossings, Texas Department of Transportation (TxDOT), Federal Aviation Administration (FAA), environmental, counties, etc.).

D. Relay Design

1. Perform engineering and design of existing and new protective relay and control systems for AE's transmission, substation and distribution system.
 - a. Provide in-the-field construction support to technicians of relay design projects.
 - b. Generate as-built drawings of relay design projects.
2. Generate work instruction, trip check procedures, check-out guidelines and other procedural documentation for protective relay and control projects.
3. All work to be performed per AE and industry standards.
4. Extensive knowledge of electro-mechanical and microprocessor relay design is required.
5. Personnel performing the work described in "Relay Design" will predominately be required to work out of AE's offices.
6. Minimum 2 years' experience with relay drafting and design is required.

E. System Protection and Control

1. Perform system engineering and relay settings for new and existing transmission, substation, and distribution projects.
2. Personnel performing this work will predominately be required to work out of AE's offices.
3. Evaluate supervisory control and data acquisition (SCADA)/ energy management system (EMS) system and practices.
4. Evaluate and analyze system power quality abnormalities and develop resolutions.
5. All work to be performed per AE and industry standards.
6. Extensive knowledge of electromechanical and microprocessor relay design required.

F. Planning

1. Perform equipment outage analysis to determine continuous load requirements for all equipment.
2. Develop electrical loading criteria for all equipment during overload conditions. Develop a thermal loading model for transformers based on the Institute of Electrical and Electronics Engineers (IEEE) transformer loading guide.

3. Perform conductor selection analysis.
4. Perform AE system performance studies and associated analysis, including electric and magnetic field (EMF) effects, audible noise, radio and television interference; line resistance, reactance and losses; lightning effects; transient and switching surge effects; and grounding.
5. Perform distribution, network, and transmission expansion and contingency planning using industry standard tools. Experience in using Siemens' PSS®E transmission analysis package, PSCAD, and ABB's Foresite load-forecasting package is highly desirable.
6. Perform steady state load flow, stability analysis, short circuit, and EMT analyses.
7. Use industry accepted techniques to analyze system load forecasts to determine proper load allocation. Prepare local area forecast for Distribution and Network Planning Studies.

G. Grounding and Shielding

1. Design substation grounding systems to achieve touch and step voltages anywhere within the substation proper and to the substation perimeter fence that are less than or equal to the IEEE Std. 80 (latest revision) "IEEE Guide for Safety in AC Substation Grounding" recommended values. All grounding system designs shall be accomplished using the Current Distribution, Electromagnetic interference, Grounding and Soil (CDEGS) structure analysis software package developed and marketed by Safe Engineering Services & technologies, Ltd. (SES), Montreal, Quebec, Canada. SES can be reached at 1-800-668-3737.
2. Design grounding systems for transmission and distribution line structures to achieve specified maximum ohm values to remote earth.
3. Evaluate grounding systems of existing transmission, distribution, and network systems and facilities to assess their performance based on the IEEE Std. 80 (latest revision) or other criteria as set forth by AE. Perform ground system resistance tests using the Fall-of-Potential method in accordance with IEEE Std. 81 (latest revision), "IEEE Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Ground System" for use in the analysis and modification of existing grounding systems with no external or interconnecting grounds. However, for large or interconnected grounding systems, in low resistivity earth (< 750hm-m), and for grounding systems that have numerous extended grounding conductors (distribution neutrals, OHGWs, etc.), the ground system impedance test shall be conducted in accordance with IEEE Std. 81.2 (latest revision), "IEEE Guide for Measurement of Impedance and Safety Characteristics of Large, Extended or Interconnected Grounding Systems."
4. Perform studies and design solutions to resolve and address lightning issues within the AE system.

H. Distribution Design

1. Design, review, and approve overhead distribution feeders and service requests.
2. Design, review, and approve lighting for roadways and security.
3. Determine and design appropriate lighting levels for all illumination requirements at AE.

4. Design, review, and approved underground distribution feeders, downtown network feeders, and device requests.
5. Perform pole loading analysis using O-Calc software.

I. Drafting and Computer Aided Design (CAD) Services

1. On-site drafting personnel, when needed, shall be located at Kramer Lane and St. Elmo service centers. One (1) person at each site shall be capable of coordinating all work to meet requested deadlines. Drafting services can also be off-site with the capability of transferring documents electronically.
2. Revise existing drawings and prepare new drawings utilizing both manual and electronic methods. Manual shall include pencil and ink. Electronic shall be prepared in AutoCAD format (latest revision).
3. Utilize AE's drafting standards and conventions, unless otherwise mutually agreed.
4. Reproducible engineering drawings shall be available in paper, sepia, Mylar or blue line, as needed by AE.
5. Able to generate and furnish plan and profile drawings from GIS format survey information files.
6. Minimum experience level shall be four (4) years' experience with AutoCAD 2014 (no Microstation or other incompatible software).
7. Ability to transfer files through a shared website/server.

J. Standards, Specifications, and Guidelines

1. Prepare, submit, review, and revise engineering design and construction standards as required.
2. Develop performance standards and prepare specifications for equipment, conductors, and hardware necessary for assisting in procuring materials detailed in AE's standards.
3. Develop Project Manuals by a registered professional engineer in the State of Texas for issuance for bid (IFB) projects (e.g., control houses, substation enclosures, etc.).

K. Equipment and Materials

1. Analyze materials and equipment shop samples, catalog data, schedules, shop drawings, and shop and mill tests as required.
2. Perform and assist in the analysis of failed components and systems in use at AE.
3. Analyze and evaluate existing construction, hardware, and equipment standards to determine suitability for existing and planned loads as required. Review and analyze available engineering data, develop computerized load models, prepare graphics, report calculations and findings, and make recommendations to remedy existing or potential problems.
4. Perform in-service equipment tests and analysis per manufacturer-listed requirements.

L. Permitting and Environmental

1. Develop erosion and sedimentation control plans to meet all ordinances and regulatory requirements.
2. Develop water quality and drainage designs to meet any applicable local, state and federal requirements.
3. Develop alternative schemes and provide final designs for landscaping and visual screening of electrical system facilities.
4. Incorporate design elements determined applicable from the Sustainable Design Checklist for Municipal Buildings/Projects in compliance with Volume 1 of the City of Austin Sustainable Building Guidelines.
5. Prepare storm water pollution prevention plans (SWPPP) per Environmental Protection Agency (EPA) requirements for sites over one acre of disturbance.
6. Prepare permit drawings for projects requiring Site Development, General Permit or Demolition permits through the City of Austin.
7. Prepare permits and associated drawings for projects required for other jurisdictions such as Texas Commission on Environmental Quality, counties (e.g., Travis County), etc.
8. Prepare studies required to supplement permit drawings.
9. Act as AE's agent in the approval of permits.

M. Right-Of-Way (ROW) and Siting Services

The scope of work for a particular assignment may include the development and acquisition of ROW requirements for AE transmission and distribution systems. The firm(s) may also perform siting studies and develop siting requirements, as specified by AE, for new construction or for modifications to existing facilities. Criteria for right-of-way and siting analysis shall include applicable ordinances, regulations, standards and codes, land-use and compatibility issues, line clearances, right-of-way and site access, safety, cost, and other pertinent factors. Services required for right-of-way and site acquisitions may include, but shall not be limited to the following:

1. Determine right-of-way widths for various overhead and underground transmission and distribution designs and configurations.
2. Prepare right-of-way strip maps for proposed line routes.
3. Prepare individual boundary survey and legal descriptions based on approximately five hundred tracts to be acquired (fee simple or easements)

The transmission system operates at 69kV, 138kV, and 345kV voltages. The distribution system operates at 12.5kV. The network operates at 15kV and 34.5kV.

N. Public Involvement Services

The scope of work for a particular assignment may include the following identified activities. All work will be done in accordance with City of Austin and AE standards.

1. Review proposed project maps and descriptions to assist in defining ROW related concerns.
2. Prepare public notices on behalf of AE.
3. Attend meetings to discuss ROW considerations /alternatives
4. Contribute to Routing Analysis (impacts of alternative, estimated ROW cost for each alternative).
5. Pre - Acquisition Services, as required.
 - Prepare initial property owner contract list for use by AE in distribution of ROW agent introduction letters, if desired by AE.
 - Research preliminary ownership and easement information.
 - Develop right of way maps, surveys, and legal descriptions of needed property rights.
 - Provide detailed right of way cost estimates on a parcel by parcel basis.
 - Assist in preparing and obtaining any Rights of Entry necessary for surveying, geotechnical investigations, appraisal, and environmental services.
6. Acquisition Services, as required based on the acquisition of approximately 500 tracts (easement or fee):
 - Title Services
 - Initial Appraisal
 - Introductory Letter
 - Negotiation Services
 - Title Curative Facilitation
 - Facilitate Closings
 - Condemnation Support
7. Project Administration
 - Prepare Monthly Status Reports of all parcel and project activities.
 - Participate in project review meetings as requested.
 - Provide project files complete with all correspondence, title, appraisal, survey, Permission to survey, offers to purchase, and fully executed closing documents to AE in electronic format.

PROPOSED PROCUREMENT SCHEDULE

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|-----------------------------|--------------------|
| Submittal Due Date: | September 30, 2016 |
| City Council (Anticipated): | January 2017 |
| Contract Execution: | March 2017 |

COST ESTIMATE:

The City anticipates developing and executing a professional services agreement with a three year term for an estimated not-to-exceed amount of \$6,450,000, or \$2,150,000 per year, or until available funding authorization is expended. The firm will be compensated under a standing contract for varying amounts depending on the job assignment.

Authorization of services shall be contingent upon annual Council approval of the CIP budget and extensions of this contract. *This contract does not in any way guarantee payment by AE to whether a subconsultant or prime firm, will be evaluated under Consideration Item 6-Major Scopes of Work-Comparable Project Experience.* In addition, the City has identified Other Scopes of work that MAY materialize during the course of the project. The City does not guarantee that the scopes listed under Other Scopes of work will materialize on this contract.

If the prime firm(s) intend(s) to enter into a subconsulting agreement on a scope of work not listed below, the prime firm(s) is/are required to contact SMBR and request an updated availability list of certified firms in each of the scopes of work for which the prime consultant intends to utilize a subconsultant.

MAJOR AND OTHER SCOPES OF WORK:

Below is a list of the major scopes of work that the City has identified for this project. ****There must be representation for all major scopes of work listed in the prime’s statement of qualifications. The experience of the firms listed to perform the Major Scopes of Work, whether a subconsultant or prime firm, will be evaluated under Consideration Item 6 – Major Scopes of Work – Comparable Project Experience.***

In addition, the City has identified Other Scopes of work that MAY materialize during the course of the project. The City does not guarantee that the scopes listed under Other Scopes of work will materialize on this contract. If the prime consultant intends to enter into a subconsulting agreement on a scope of work not listed below, the prime consultant is required to contact SMBR and request an updated availability list of certified firms in each of the scopes of work for which the prime consultant intends to utilize a subconsultant.

*** Major Scopes of Work**

Electric Utility Protection and Control Engineering
Electrical Engineering

Other Scopes of Work

Surveying Services
Right-Of-Way (ROW) Services
Drafting and CAD Services
Civil Engineering
Drainage Engineering
Foundation Engineering
GIS Services
Laboratory and Field Testing Services
Concrete Testing Services
Geotechnical – Soils
Public Information Services

Environmental Permitting Services

Notes:

- Construction Inspection is **NOT** a subconsultant opportunity. These services will be performed in-house or under a separate contract, if needed, and will be determined when project assignment is made.
- Participation at the prime or subconsultant level may create a conflict of interest and thus necessitate exclusion from any contracts resulting from the work performed in the design phase.
- If the City determines that a conflict of interest exists at the prime or subconsultant level, the City reserves the right to replace/remove the prime or instruct the prime consultant to remove the subconsultant with the conflict of interest and to instruct the prime consultant to seek a post-award change to the prime consultant's compliance plan as described in City Code § 2-9B-23. Such substitutions will be dealt with on a case-by-case basis and will be considered for approval by Small and Minority Business Resources (SMBR) in the usual course of business. The City's decision to remove a prime or subconsultant because of a conflict of interest shall be final.
- A consultant performance evaluation will be performed on all professional services contracts. This evaluation will be conducted at the end of each Preliminary, Design and Construction phase.
- Please review the City of Austin's Public Participation Principles

<http://austintexas.gov/page/public-participation-principles>

CITY OF AUSTIN PUBLIC PARTICIPATION PRINCIPLES: Accountability and Transparency

The City will enable the public to participate in decision-making processes by providing clear information on the issues, the ways to participate, and how their participation contributes to the decision.

Fairness & Respect

The City will maintain a safe environment that cultivates and supports respectful public engagement and will expect participants to do so in turn.

Accessibility

The City will respect and encourage participation by providing ample public notice of opportunities and resources and accommodations that enable all to participate.

Predictability & Consistency

The City will prepare the public to participate by providing meeting agendas, discussion guidelines, notes, and information on next steps.

Creativity & Community Collaboration

(Inclusivity and Diversity)

The City will use innovative, proven, and customized engagement solutions that are appropriate to the needs of the projects and the participants.

Stewards of Resources

The City will balance its commitment to provide ample opportunities for public involvement with its commitment to delivering government services efficiently and using City resources wisely.