

REQUEST FOR QUALIFICATIONS 2

2019-012



Engineering Services -Transmission,
Substation, and Distribution

Release Date: May 10, 2019
Proposals Due: June 4, 2019

Proposals must be submitted via E-mail to
PECbidresponse@peci.com

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003 - BACKGROUND

Pedernales Electric Cooperative, Inc. ("PEC") is a private electric utility owned by the members we serve. On behalf of our member/owner community, PEC is an industry-recognized leader providing outstanding service and reasonably priced electricity to homes and businesses for more than 80 years. We service more than 300,000 meters in twenty-four counties in Texas. Our Headquarters is located in Johnson City, Texas. PEC has offices located throughout its service area.

PEC's operational commitment is to provide reliable electricity and excellent service to members at competitive prices and to guide responsible stewardship of our resources and provide a rewarding, fair, and safe work place for our employees. As a cooperative, PEC is owned by the "members" it serves. Members—not stockholders—invest in the Cooperative through their electric billings and share in the Co-op's margins. Because of this unique business model, PEC members demand the best service, reliability, and management.

PEC's Engineering Department through this request for qualifications ("RFQ2") seeks proposals ("Proposals") from qualified persons or entities ("Respondents") interested in Engineering services for Substation, Transmission, and Distribution

004 - SCOPE OF SERVICE

The Respondent's RFQ2 response must include the necessary labor and other associated services to develop the following scope and deliverables.

Our Engineering Department has projects throughout the PEC service area requiring Engineering services on an as-needed basis. Respondents may submit proposal for one or both scopes (see below Exhibits 3 and 4). If Respondent is submitting a proposal for both scopes please submit all documents listed in Section 016 – Attachment for each scope.

Exhibit 3 – Engineering Services – Transmission and Substation

Exhibit 4 - Engineering Services - Distribution

005 - ADDITIONAL REQUIREMENTS

Performance Bond. If the contract is in excess of \$100,000, the selected Respondent shall provide a Performance Bond made payable to PEC, executed by a corporate surety acceptable to PEC who is licensed pursuant to the Texas Insurance Code in the full amount of the Contract price to cover the selected Respondent's faithful performance of the obligations under the contract. Said Performance Bond must be in a form acceptable to PEC. Said Performance Bond shall further provide that the surety shall indemnify for all damages or losses resulting from the principal's default. Said Performance Bond shall further guarantee the principal's performance of all terms and obligations under the contract. Said Performance Bond must have attached thereto a Power of Attorney as evidence of the authority of the person executing the Performance Bond to bind the surety. This Performance Bond must be executed and delivered to PEC prior to commencement of work under the contract.

Respondent's failure to deliver Performance and/or Payment Bonds to PEC which comply with the requirements herein within 10 days after demand shall be a material breach of the contract.

Identification:

1. Respondent Vehicle(s) Logo - The Selected Respondent's vehicle(s) including subcontractor vehicle(s) must be clearly marked with the company name. Vehicle(s) must be easily identified by a respective company logo.
2. Uniform and ID Badges - All Selected Respondent's personnel including subcontractor's personnel, must wear respective company uniforms and ID Badges at all times.

Background Checks:

At PEC's request, and at any time, Respondent shall provide to PEC for its review (documentation consisting of a written resume or curriculum vitae of each proposed individual who Respondent anticipates will provide Services or perform any portion of the Services. The resume or curriculum vitae shall contain the information set forth below. Before assigning an individual to act whether as an initial assignment or a subsequent assignment, Respondent will notify PEC in person or by electronic mail of the proposed assignment, will provide PEC with a written resume or curriculum vitae, and will obtain PEC's approval. Personnel who PEC determines in its sole discretion at any time do not have the requisite skills to perform the tasks or activities assigned to them shall not be permitted to perform any portion of the Services. Respondent shall not assign any of the Services or permit such party to perform any portion of the Services without PEC's prior written approval. :

- *Whether the proposed personnel is a full-time employee of Respondent;*
- *The educational background and relevant experience of the personnel; and*
- *The home base from which the personnel will travel to PEC's site.*

Respondent may be requested to conduct employee background checks, which may include controlled substance testing, criminal background screening, and a motor vehicle record check to the extent allowable by law.

PEC, at its sole discretion, may request a criminal background check on any personnel entering PEC or PEC's member's property.

PEC reserves the right to audit or perform background checks on Respondent's personnel to confirm satisfaction with PEC requirements.

Respondent will confirm in writing that its personnel assigned to perform Services has successfully met Respondent's screening and background checking requirements conducted or caused to be conducted for each such personnel either as a part of their hiring or prior to assignment to perform Services under an SOW ensuring that each of Respondent's personnel meet the minimum qualifications of the position and has successfully completed all employment eligibility, background checks and screening.

All costs related to such background checks shall be the responsibility of Respondent.

INTELLECTUAL PROPERTY

If selected, Respondent agrees to abide by the following regarding intellectual property rights:

Intellectual Property Rights. As used herein, "Intellectual Property Rights" means copyrights, trademarks, patents, inventions, trade secrets and all other intellectual property rights as may exist now or hereafter into existence and all renewals and extensions thereof and improvements and modifications thereto. All pre-existing Intellectual Property Rights of PEC that are utilized in connection with Respondent's performance of the services hereunder shall remain the sole and exclusive property of PEC, as the case may be.

All inventions, improvements, discoveries, ideas, concepts, data, developments, technology, computer programs and software, formulas, designs, processes, techniques, know-how and works of authorship, including all modifications, enhancements, and improvements thereto, whether patentable or copyrightable or not in any deliverables under the Agreement, whether such deliverables were created alone or in cooperation with others (including but not limited to employees and contractors of PEC), shall be the sole and exclusive property of PEC; and subject to PEC's full payment for the services actually delivered to PEC and except as otherwise specifically provided in the Agreement, PEC shall own all right, title, and interest in and to any such deliverables and all Intellectual Property Rights in any such deliverables (collectively, the "PEC Proprietary Rights"); provided, however, that Respondent shall retain the right to any general skills and know-how that Respondent may develop as a result of Respondent's provision of the services.

Subject to PEC's full payment for the services actually delivered to PEC, Respondent hereby assigns, and agrees to cause Respondent to assign to PEC all such PEC Proprietary Rights, and Respondent agrees to execute (and cause persons under its control to execute, including subcontractors or personnel) at PEC's sole cost and expense such further documents as may be reasonably necessary to reflect PEC's ownership of and title to such PEC Proprietary Rights, including without limitation recordable forms of assignment.

Respondent shall not allow any subcontractors or other personnel to perform any part of the services unless such personnel are first obligated to assign to PEC all such PEC Proprietary Rights as provided herein. Subject to PEC's full payment for the services actually delivered to PEC, Respondent hereby grants to PEC in connection with its use of the deliverables a non-exclusive, perpetual, non-transferable, fully-paid license, and agrees to cause its subcontractors or personnel to grant, royalty-free, worldwide, irrevocable right and license to use, for PEC's internal business purposes, any of Respondent's Intellectual Property Rights to the extent included in or required to use a deliverable as contemplated under the Agreement. Further, Respondent and PEC agree that any work of authorship, including but not limited to any computer program or software specifically designed for PEC, is a "work made for hire" within the meaning of 17 United States Code Section 101 in that it is a work that has been specially ordered or commissioned by PEC for use as a contribution to a collective work, as part of an audiovisual work, as a translation, as a supplementary work, as a compilation and/or as an instructional text.

Indemnification: In addition to all other indemnification obligations, Respondent shall hold PEC harmless, defend and indemnify PEC from the payment of any royalties, damages, losses or expenses including attorney's fees for suits, claims or otherwise, arising out of infringement or alleged infringement of copyrights, patents, materials and methods used in the project or misappropriates any trade secret of any third party. Further, if Respondent has reason to believe that the design, service, process or product specified is an infringement of an intellectual property right or misappropriation of any trade secret of any third party, Respondent shall promptly give such information to PEC.

Upon receipt of notification that a third party claims that the software, hardware or both the software and the hardware or any other deliverable infringes upon any United States patent or copyright or otherwise misappropriates any trade secret of any third party, Respondent will immediately at PEC's discretion:

- a) obtain, at Respondent 's sole expense, the necessary license(s) or rights that would allow PEC to continue using the software, hardware, or both the software and hardware or any other deliverable, as the case may be,;
- b) alter the software, hardware, or both the programs and hardware or any other deliverable so that the alleged infringement or misappropriation is eliminated; or
- c) Refund PEC such costs for any such software or hardware.

In addition, Respondent will reimburse PEC for any expenses incurred by PEC to implement emergency backup measures if PEC is prevented from using the software, hardware, or both the software and hardware or any other deliverable while the dispute is pending.

Respondent further agrees to:

- a) assume the defense of any claim, suit, or proceeding brought against PEC for infringement of any United States patent or copyright or misappropriation of a trade secret of a third party arising from the use and/or sale of the equipment or software under this Agreement,
- b) assume the expense of such defense, including costs of investigations, reasonable attorneys' fees, expert witness fees, damages, and any other litigation-related expenses, and
- c) indemnify PEC against any monetary damages and/or costs awarded in such suit;

Provided that:

1. Respondent is given sole and exclusive control of all negotiations relative to the settlement thereof, but that Respondent agrees to consult with PEC during such defense or negotiations and make good faith effort to avoid any position adverse to the interest of PEC,
2. the software, hardware, or both or any other deliverable is used by PEC in the form, state, or condition as delivered by Respondent or as modified without the permission of Respondent, so long as such modification is not the source of the infringement claim,
3. the liability claimed shall not have arisen out of PEC's negligent act or omission, and PEC promptly provides Respondent with written notice within 30 days following the formal assertion of any claim with respect to which PEC asserts that Respondent assumes responsibility under this section.

006 - TERM OF CONTRACT

The anticipated term of the proposed contract is 3 years with the option to renew for an additional two (2) years months from the effective date of award.

007 - PRE-SUBMITTAL CONFERENCE

A Mandatory Pre-Submittal Conference will be held at 201 S. Avenue F at 10:00 a.m., **Central Daylight Time**, on **May 20, 2019**. Respondents are encouraged to prepare and submit their questions in writing in advance of to the Procurement Specialist identified in Section 011 – Restrictions on Communication in order to expedite the proceedings. PEC's responses to questions received by this due date may be distributed at the Pre-Submittal Conference and posted with this solicitation. Attendance at the Pre-Submittal Conference is optional but highly encouraged.

R.S.V.P. is required, please R.S.V.P. with the names of attendees, no later than **May 17, 2019** to Procurement Specialist *Christina Garza, christina.garza@peci.com*

Any oral responses provided by PEC staff at the Pre-Submittal Conference shall be preliminary. Any oral response given at the Pre-Submittal Conference that is not confirmed in the written summary of the Pre-Submittal Conference or by a subsequent addendum shall not be official or binding on PEC. Only written responses shall be official and all other forms of communication with any officer, employee or agent of PEC shall not be binding on PEC.

008 - PROPOSAL REQUIREMENTS

Respondent's Proposal shall include the following items in the following order, noted with the appropriate heading as indicated below. If Respondent is proposing as a team or joint venture, provide the same information for each member of the team or joint venture.

Submit one complete electronic proposal in an Adobe PDF format unless otherwise indicated below, proposal must be organized in the order as described below.

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EXECUTIVE SUMMARY. The summary shall include a statement of the work to be accomplished, how Respondent proposes to accomplish and perform each specific service and any unique problems perceived by Respondent and solutions.

GENERAL INFORMATION FORM. Complete Attachment A, Part One of this RFP.

EXPERIENCE, BACKGROUND & QUALIFICATIONS OF RESPONDENT FIRM. Complete Attachment A, Part Two of this RFP.

APPROACH PLAN. Complete Attachment A, Part Three of this RFP.

PRICING SCHEDULE. Complete Attachment B of this RFP.

LITIGATION DISCLOSURE FORM. Complete and submit the Litigation Disclosure Form, found in this RFP as Attachment C. If Respondent is proposing as a team or joint venture, then all persons or entities who will be parties to the contract (if awarded) shall complete and return this form.

PROOF OF INSURABILITY. Each Respondent shall submit a copy of its current insurance certificate and affirm its commitment to insure for the types of coverages and at the levels specified in this RFP if awarded a contract.

VENDOR INFORMATION FORM. If PEC has not awarded your company a PO within the last 24 months, please provide the following documents:

- a. A completed [Vendor Information Form](#)
- b. A completed [IRS W9](#)
- c. A completed [PEC Electronic Payment Form](#)

SIGNATURE PAGE. Respondent must complete, sign and submit the Signature Page found in this RFP as Attachment D. The Signature Page must be signed by a person, or persons, authorized to bind the entity, or entities, submitting the proposal.

BID BOND. PEC requires Respondent to submit a Bid Bond, made payable to PEC, executed by a corporate surety acceptable to PEC who is licensed pursuant to the Texas Insurance Code and listed on the United States Department of the Treasury's Listing of Approved Sureties (Dept. Circular 570) in the amount of **\$1,000, or 5% of the total Contract value, whichever is greater.** The Bid Bond shall be valid for one hundred twenty (120) days following the deadline for submission of proposals. The Bid Bond must be accompanied by an original signed and notarized Power-of-Attorney bearing the seal of the issuing surety company and reflecting that the signatory to the Bid Bond is a designated Attorney-in-Fact. If Respondent is not selected, PEC will not collect on the Bid Bond but may keep an electronic copy and return the Bid Bond. Failure to include a Bid Bond with submittal will automatically disqualify Respondent from further award consideration.

Respondent must provide a copy of the Bid Bond in the electronic proposal packet; the original Bid Bond must be sent to PEC prior to the RFQ2 due date and time in a sealed package clearly marked with the project name, "RFQ2 2019-012, Attention: Christina Garza on the front of the package:**** Mailing Address: P.O. Box 1, Johnson City, Texas 78636 or Physical Address: 201 South Avenue F, Johnson City, Texas 78636. Respondents should note that delivery to the P.O. Box address in a timely manner does not guarantee its receipt in PEC's Procurement Office by the deadline for submission. Therefore, Respondents should strive for early submission to avoid the possibility of rejection for late arrival. **Hard copies of the Proposal should not be sent with Bid Bond.**

FINANCIAL INFORMATION. "Submit an electronic copy of Respondent's three most recent annual financial statements, prepared in accordance with Generally Accepted Accounting principles, audited by an independent Certified Public Accountant.

PROPOSAL CHECKLIST. Complete Attachment G.

Respondent is expected to examine this RFQ2 carefully, understand the terms and conditions for providing the goods or services listed herein and respond completely. **FAILURE TO COMPLETE AND PROVIDE ANY OF THESE PROPOSAL REQUIREMENTS MAY RESULT IN THE RESPONDENT'S PROPOSAL BEING DEEMED NON-RESPONSIVE AND THEREFORE DISQUALIFIED FROM CONSIDERATION.**

009 – CHANGES OR AMENDMENTS TO RFQ2

Changes or amendments to this RFQ2 made prior to bid opening shall be issued in writing via addendum either through PEC's solicitation website or direct e-mail transmission. If the RFQ2 was originally released through PEC's solicitation website it is each Respondent's responsibility to check that website for any addendum until the Proposal due date. Otherwise, changes or amendments to the RFQ2 will be transmitted directly to potential Respondents. No oral statement of any person shall modify or otherwise change or affect the terms, conditions or specifications stated in the RFQ2.

010 – SUBMISSION OF PROPOSAL

Submission Proposals.

Proposals must be submitted via E-mail to PECbidresponse@peci.com no later than 10:00 a.m., CDT on Thursday, June 4, 2019. No hard copies of Proposals (other than submitting any original Bid Bond as may be required). E-mail Subject field should be marked with the following project name and number, **RFQ2 2019-012 Engineering Services Transmission, Substation, and Distribution, Attn: Christina Garza.** Any Proposal or modification to a Proposal received after the due date shall not be considered, and will be deemed non-responsive.

Proposal Format. Each proposal shall be typewritten, single spaced and submitted on 8 ½" x 11" white paper. Font size shall be no less than 10-point type. All pages shall be numbered margins shall be no less than 1" around the perimeter of each page. Unnecessarily elaborate brochures, artwork, bindings, visual aids, expensive paper or other materials beyond that sufficient to present a complete and effective submission are not required. Websites, or URLs shall not be submitted in lieu of the written Proposal. Each Proposal must include the sections

and attachments in the order listed in the RFQ2 Section 008 Proposal Requirements. Unnecessarily elaborate artwork or other materials beyond that sufficient to present a complete and effective submission are not required. Failure to meet the above conditions may result in disqualification of the Proposal or may negatively affect scoring.

Modified Proposals. Any Proposal may be modified provided such modification is received prior to the due date for submission of Proposals and submitted in the same manner as the original Proposal. Please provide a cover letter with the modified Proposal, indicating it is a modified Proposal and that the original Proposal is being withdrawn.

Proposal Size. Attached files must not exceed twenty-five (25) megabytes.

Proposal Receipt. Receipt of Proposal will be emailed to the Respondent as proof of time and date stamp. Failure to receive an email from PEC may indicate the Proposal has not been received. It is the responsibility of the Respondent to obtain confirmation of receipt prior to the submission deadline addressed to procurement@peci.com and PECbidresponse@peci.com.

Correct Legal Name.

Any Respondent in its Proposal shall correctly state the true and correct name of the individual, proprietorship, corporation, limited liability company and /or partnership responsible for performing the services or delivering the goods requested in this RFQ2 (clearly identifying the responsible general partner and all other partners who would be associated with the contract, if any). No nicknames, abbreviations (unless part of the legal title), shortened or short-hand, or local "handles" will be accepted in lieu of the full, true and correct legal name of the entity. These names shall comport exactly with the corporate and franchise records of the Texas Secretary of State and Texas Comptroller of Public Accounts. Individuals and proprietorships, if operating under other than an individual name, shall match with exact Assumed Name filings. Corporate Respondents and limited liability company Respondents shall include the 11-digit Comptroller's Taxpayer Number on the General Information form found in this RFQ2 as Attachment A.

If an entity is found to have incorrectly or incompletely stated its name or failed to fully reveal its identity on the General Information form, the Procurement Manager, in her or his discretion, may suspend consideration of any Proposal at any point in the contracting process.

Firm Offer. All provisions in a Respondent's Proposal, including any estimated or projected costs, shall remain valid for ninety (90) days following the deadline date for submissions or, if a Proposal is accepted, throughout the entire term of the contract.

Cost of Proposal. Any cost or expense incurred by the Respondent that is associated with the preparation of the Proposal, the Pre-Submittal conference, if any, or during any phase of the selection process, shall be borne solely by Respondent.

Confidentiality, Ethics and Reporting

Open Records. PEC is subject to an Open Records Policy adopted by its Board of Directors and a Designation of Competitive Matters adopted by its Board of Directors. Any information deemed to be confidential or proprietary by Respondent should be clearly noted. PEC may withhold public access to such records or applicable portions thereof, when it is or contains information, including pricing information, that, if released, would give advantage to a PEC Competitor (as defined in the Designation of Competitive Matters) or bidder; trade secrets obtained from a person and privileged or confidential by statute or judicial decision; commercial or financial information for which disclosure would cause competitive hard to the person from whom the information was obtained; contract drafts, term-sheets, letters of intent, and other contract materials related to the items listed above. If another party requests access to information marked confidential, then PEC shall ask Respondent if the information may be released.

PEC Information. All information regarding PEC furnished or available to Respondent under this Agreement including, without limitation, any Purchase Order or any customer information, is confidential information (and shall be included within the defined term "Confidential Information") and shall not be disclosed by Respondent to any person or entity other than Respondent's employees having a need to know such information to perform Respondent's duties and obligations under this Agreement. Additionally, Respondent shall not disclose to any

third party, including, but not limited to Respondent's subcontractors, affiliates or agents, any Confidential Information without PEC's prior written consent. Respondent shall protect such Confidential Information with a degree of care at least as restrictive as it uses to protect its own confidential information, which in any event shall be no less than a reasonable degree of care. Respondent shall only use such Confidential Information solely in connection with performing the Services under this Agreement. Upon PEC's request, Respondent shall promptly return to PEC or destroy such Confidential Information, as PEC may instruct. If disclosure is required by law, then Respondent shall immediately notify PEC in writing of the existence, terms and circumstances surrounding the request so that PEC may, in its sole discretion, seek a protective order or other appropriate remedy and/or take steps to resist or narrow the scope of the disclosure sought by such request. Respondent shall use its best efforts to assist PEC in obtaining proprietary or confidential treatment of the information by the third party to whom the information is disclosed, and will, to the extent such remedies are available, seek protective orders limiting the dissemination and use of the information. Nothing herein diminishes PEC's right to challenge any law or legal proceeding requiring the disclosure.

Information Security. Respondent represents and agrees that it has and will maintain in place commercially reasonable precautions to safeguard the confidentiality, security and integrity of Confidential Information. These precautions shall include, as applicable, (A) contractual restrictions on access to the information by vendors and other third parties, (B) intrusion detection systems on all information systems of PEC maintained or controlled by Respondent, and (C) notification procedures for notifying PEC promptly in the event a security or information breach or disclosure is detected or suspected, as well as other response programs when there is a suspected or detected unauthorized disclosure, access or attempted access of PEC's information. These precautions shall include, as appropriate: (i) access controls to PEC's Information systems, including controls to identify and permit access only to authorized individuals and controls to prevent access to PEC's Information through fraudulent means, (ii) employee controls and training, (iii) physical access restrictions at locations where PEC Information is located; (iv) encryption of electronic PEC Information when appropriate or legally required and (v) a disaster recovery plan as appropriate to protect against loss or damage to PEC Information due to potential hazards such as fire or water damage or technological failures. Respondent agrees that it will (i) monitor the foregoing measures with periodic audits or testing and (ii) provide copies (or excerpts) of the same to extent Respondent is not otherwise subject to a confidentiality requirement or that disclosure of such audit or testing does not present a security risk for Respondent to inform PEC that Respondent is implementing such provisions. "PEC Information" includes any personal identifying information or sensitive personal information including information on members of PEC or otherwise contains materials that, in either party's reasonable determination, are the subject of relevant privacy law, rule or regulation.

Ethics and Reporting. PEC is subject to an Ethics and Compliance Reporting Policy adopted by its Board of Directors effective December 1, 2015 as may be amended from time to time. Any suspected violations of PEC's Code of Ethics, Conflict of Interest Policy, values, and standards of conduct are required to be reported to PEC management, consisting of any manager, director, officer, attorney of PEC or to PEC's Human Resources Department or PEC's Ethics and Compliance Officer.

011 – RESTRICTIONS ON COMMUNICATION

Each Respondent is prohibited from communicating regarding this RFQ2 or a Proposal with: (1) PEC Board members; (2) PEC employees from the time the RFQ2 has been released until the contract is awarded. These restrictions extend to, phone calls, e-mails and any other contact that results in the discussion of the RFQ2 and/or Proposal submitted by Respondent. Violation of this provision by Respondent and/or its agent may lead to disqualification of Respondent's Proposal from consideration.

However, Respondents may submit written questions concerning this RFQ2 to the Procurement Specialist listed below until 2:00 p.m., CDT on Wednesday, May 29, 2019. Questions received after the stated deadline will not be answered. All questions shall be sent by e-mail.

**Christina Garza, Procurement Specialist
Pedernales Electric Cooperative, Inc., Procurement Department
christina.garza@peci.com**

012– EVALUATION OF CRITERIA

PEC will conduct a comprehensive evaluation of each Proposal received in response to this RFQ2. PEC may appoint a selection committee to perform the evaluation (the "Evaluation Committee"). Each Proposal will be analyzed to determine overall responsiveness and qualifications under the RFQ2. Criteria to be evaluated may include the items listed below. The Evaluation Committee may select all, some, or none of the Respondents for interviews. If PEC elects to conduct interviews, Respondents may be interviewed and re-scored based upon the same criteria. PEC may also request additional information from any Respondent at any time prior to final approval of a selected Respondent. PEC reserves the right to select one or more, or none of the Respondents to provide services. Final approval of a selected Respondent is subject to PEC's Evaluation Committee and originating Department Manager.

Evaluation criteria:

Experience, Background, Qualifications (65 points)

Approach Plan (20 points)

Price (15 points)

013– AWARD OF CONTRACT AND RESERVATION OF RIGHTS

PEC reserves the right to award one, more than one or no contract(s) in response to this RFQ2.

A Contract (as defined herein), if awarded, will be awarded to the Respondent(s) whose Proposal(s) is deemed most advantageous to PEC, as determined by the Evaluation Committee and the originating Department Manager.

PEC may accept any Proposal in whole or in part. If subsequent negotiations are conducted, they shall not constitute a rejection or alternate RFQ2 on the part of PEC. However, final selection of a Respondent is subject to PEC's Evaluation Committee and originating Department Manager.

PEC reserves the right to accept one or more Proposals or reject any or all Proposals received in response to this RFQ2, and to waive informalities and irregularities in the Proposals received. PEC also reserves the right to terminate this RFQ2, and reissue a subsequent solicitation, and/or remedy technical errors in the RFQ2 process.

No work shall commence until PEC signs the Contract and Respondent provides the necessary evidence of insurance or bonds as may be required in this RFQ2 and the Contract. The Contract is not binding on PEC until executed by the originating Department Manager, the Chief Executive Officer or an officer of the Board of Directors as may be required by PEC's approval guidelines. . In the event the parties cannot negotiate and execute the Contract within the time specified, PEC reserves the right to terminate negotiations with the selected Respondent and commence negotiations with another Respondent.

This RFQ2 does not commit PEC to enter into the Contract, award any services related to this RFQ2, nor does the RFQ2 obligate PEC to pay any costs incurred in preparation or submission of a Proposal or in anticipation of the Contract.

If selected, Respondent will be required to comply with the requirements established herein.

Invoicing PEC will be invoiced monthly for all amounts payable by PEC pursuant to the terms hereof. Required documents will be provided to PEC by Selected Respondent for review and approval of invoices. Invoices are payable to the remittance name and address listed on the submitted invoice(s). Payments shall be made within thirty (30) days of receipt of undisputed invoice. No payment made to Selected Respondent shall be construed as an acceptance or approval of any of workmanship or materials or construed as a waiver of any claim or right that PEC may then or thereafter have against Selected Respondent.

Invoices must be accompanied by Selected Respondent's material invoice. Selected Respondents will apply their approved Respondent's Cost plus % to applicable line items order to determine price for material and equipment.

All invoices must be emailed to accounts.payable@peci.com with a copy to the appropriate district or location contact person.

No payment shall be due while Selected Respondent is in default in respect of any of the provisions of the Agreement, and PEC may withhold from Selected Respondent the amount of any claim by a third party against either the Selected Respondent or PEC based upon an alleged failure of the Selected Respondent to perform the Services hereunder in accordance with the provisions of the Agreement, the Purchase Order and any applicable Change Order or Change Directive.

The successful Respondent must be able to formally invoice PEC for services rendered, incorporating the iVUE-generated contract and purchase order numbers that shall be provided by PEC.

Conflicts of Interest. This RFQ2 is specifically intended to facilitate the evaluation and selection of a business-to-business partnership. All Respondents shall disclose any possible or actual conflict of interest that a Respondent may have with the interest of PEC. Possible or actual conflicts of interest include, but are not limited to, situations where an owner, investor or employee of a Respondent, or a relative of such a person, is a PEC employee or director, circumstances where a Respondent's clientele includes parties with interests adverse to PEC's interests. If a Respondent is uncertain whether a circumstance poses a conflict or possible conflict, the circumstance should be disclosed.

A Respondent will not be automatically disqualified based on a report of a conflict or possible conflict. However, PEC reserves the right to disqualify a Respondent based upon such a report, or upon failure to disclose a conflict or possible conflict. If a contract is awarded, failure to report a conflict or possible conflict may serve as grounds for PEC to terminate such a contract.

Failure to Disclose Relevant Litigation. Failure to disclose relevant, ongoing litigation which could relate to the goods or services provided in this RFQ2 or impact Respondent's ability to deliver the goods or services described in this RFQ2 may, at PEC's option, result in disqualification of consideration under this or any other procurement action issued by PEC.

Independent Contractor. Respondent agrees and understands that, if selected, it and all persons designated by it to provide services in connection with the Contract, are and shall be deemed to be an independent contractors, responsible for their respective acts or omissions, and that PEC shall in no way be responsible for Respondent's actions, and that no Respondent will have any authority to bind others or to hold out to third parties, that it has such authority.

Non-solicitation. Respondent shall not hire or solicit or endeavor to influence any personnel of PEC to seek employment or a contractor relationship with Respondent while this Agreement is in effect and for a period of six (6) months after termination or expiration of this Agreement without PEC's prior written consent. Notwithstanding the foregoing, PEC shall have the right to hire any individual who, without other solicitation, responds to employment advertising in the newspapers, trade publications, or other public commercial media or any unsolicited walk-in candidates.

Other Contracts. PEC may undertake or award other contracts for additional work at or near the site of Project under this Agreement. Respondent shall fully cooperate with the other contractors and with PEC and shall carefully adapt scheduling and performing the Services under this Agreement to accommodate the additional work, heeding any direction that may be provided by PEC. Respondent shall not commit or permit any act that will interfere with the performance of work by any other contractor or by PEC's employees.

014 – SCHEDULE OF EVENTS

Following is a list of **projected dates/times** with respect to this RFQ2:

RFQ2 Release Date	May 10, 2019
Mandatory Pre-Submittal Conference	Monday, May 20, 2019 @ 10:00 a.m.
Final Questions Accepted	Wednesday, May 29, 2019 @ 2:00 p.m.
Proposal Due	Tuesday, June 4, 2019 @ 10:00 a.m.

015 – RFQ2 EXHIBITS

RFQ2 EXHIBIT 1

INSURANCE REQUIREMENTS

If selected to provide the services described in this RFQ2, Respondent shall be required to comply with the insurance requirements set forth below:

INSURANCE

Respondent shall maintain or cause to be maintained the insurance required herein, together with any other type of insurance required by the Contract, with the following requirements and at the levels as provided below:

1. Policies shall be issued by insurance companies rated "A-/VII" or better, by Best's Insurance Guide and Key Ratings (or, if Best's Insurance Guide and Key Ratings is no longer published, an equivalent rating by another nationally recognized insurance rating agency of similar standing) or other insurance companies of recognized responsibility satisfactory to PEC, until all obligations of Respondent pursuant to the Contract have been fully discharged, unless otherwise stated herein.
2. Respondent shall obtain and maintain the insurance coverage specified below on an occurrence-basis, with the exception of Professional Liability insurance which may be on a claims-made basis. If Professional Liability insurance is provided on a claims-made form, then the insurance coverage must continue for a minimum period of two (2) years beyond the expiration or termination of the Contract, and any retroactive date must coincide with or predate the Effective Date.
3. Respondent shall require any subcontractors to provide and maintain during the term of their agreements the insurance coverages specified as follows, with limits of liability deemed appropriate by Respondent. In the event work is performed by a subcontractor, Respondent shall be primarily responsible for any liability arising directly or indirectly out of the services performed that is not otherwise covered by any subcontractor's insurance.
4. THE COVERAGE SHALL NOT BE CONSTRUED AS ESTABLISHING OR LIMITING RESPONDENT'S LIABILITY.
5. PEC shall be listed as an "additional insured" on all policies other than the Workers' Compensation and Professional Liability policies.
6. Respondent for itself and its insurers hereby waives subrogation against PEC, its directors, officers, employees and agents.
7. If Respondent fails to meet the requirements herein, PEC may suspend the Contract, withhold payments or terminate the Contract for breach.
8. PEC's receipt of or failure to object to any insurance certificates or policies submitted by Respondent or its subcontractors does not release or diminish in any manner the liability or obligations of Respondent or its subcontractors or constitute a waiver of any of the insurance requirements under this Contract.
9. All policies will be endorsed to specify that they are primary to and not excess to or on a contributing basis with any insurance or self-insurance maintained by PEC. (not applicable to Workers' Compensation insurance policies).
10. The policies shall also include standard severability provisions that state each insured is provided coverage as though a separate policy had been issued to each, except with respects to limits of insurance. The policies shall not contain a cross liability or cross-suit exclusion that prevents PEC from asserting claims against the Respondent or any other insured under the policies.
11. Respondent shall be responsible for premiums, deductibles and self-insured retentions, if any, stated in policies.
12. Types of Insurance and Minimum Coverage Requirements:

Type of Insurance	Minimum Coverage
1. Workers' Compensation	Statutory
2. Employer's Liability	Not less than \$1,000,000 per occurrence and \$1,000,000 per disease/each employee.
3. Commercial General Liability	Combined single limit of not less than \$1,000,000 per occurrence and \$2,000,000 in the aggregate,

	including endorsements for Premises/Operations, Personal Injury Liability, Independent Respondents Liability, Broad Form Property Damage Liability including Completed Operations, Products/Completed Operations, Explosion, Collapse and Underground Property Damage Liability, Blanket Contractual Liability assumed in the Contract, including indemnification liability, and Completed Operations Coverage (minimum 2 years past completion of Project) and endorsed to provide that aggregates limits apply on a per project basis. In the event the Respondent will use herbicide or pesticide, an endorsement for herbicide and pesticide applicator coverage and referenced on the certificate of insurance.
4. Automobile Liability	(owned, hired and non-owned, leased); with a combined single limit of not less than \$1,000,000
5. Professional Liability	If Respondent performing design, engineering or other professional services, with limits of at least \$1,000,000 for each occurrence and \$1,000,000 in the aggregate
6. Umbrella Insurance (Excess Liability)	Provides coverage at least as broad as and applies in excess and follows form of the primary liability coverages required above with minimum limits of \$5,000,000 per occurrence
7. Pollution Liability Insurance	Covering losses caused by pollution conditions that arise from the operations of Respondent coverage of not less than \$1,000,000 per occurrence and in the aggregate.

RFQ2 EXHIBIT 2

INDEMNIFICATION REQUIREMENTS

If selected to provide the services described in this RFQ2, Respondent shall be required to comply with the indemnification requirements set forth below and as to any intellectual property rights as may have been previously described in this RFQ2:

INDEMNIFICATION

RESPONDENT covenants and agrees to FULLY INDEMNIFY, DEFEND and HOLD HARMLESS, PEC and its employees, officers, directors, agents and representatives of PEC, individually and collectively, from and against any and all costs, claims, liens, damages, losses, expenses, fees (including reasonable attorney fees), fines, penalties, proceedings, actions, demands, causes of action, liability and suits of any kind and nature, including but not limited to, personal or bodily injury, death and property damage, made upon PEC directly or indirectly arising out of, resulting from or related to RESPONDENT'S activities under the Contract, including any acts or omissions of Respondent, any agent, officer, director, representative, employee, consultant or subcontractor of Respondent, and their respective officers, agents, employees, directors and representatives while in the exercise of the rights or performance of the duties under the Contract. The indemnity provided for in this paragraph shall not apply to any liability resulting from the negligence or willful misconduct of PEC, its directors, officers or employees, in instances where such negligence or willful misconduct causes personal injury, death, or property damage. IN THE EVENT RESPONDENT AND PEC ARE FOUND JOINTLY LIABLE BY A COURT OF COMPETENT JURISDICTION, LIABILITY SHALL BE APPORTIONED COMPARATIVELY IN ACCORDANCE WITH THE LAWS FOR THE STATE OF TEXAS, WITHOUT, HOWEVER, PEC WAIVING ANY DEFENSES OF THE PARTIES UNDER TEXAS LAW. In addition, RESPONDENT agrees to INDEMNIFY, DEFEND, AND HOLD PEC HARMLESS from any claim involving patent infringement, trademarks, trade secrets, and copyrights on goods or services supplied. This provision survives the termination of the Contract.

The provisions of this INDEMNITY are solely for the benefit of the parties hereto and not intended to create or grant any rights, contractual or otherwise, to any other person or entity. RESPONDENT shall advise PEC in writing within 24 hours of any claim or demand against PEC or RESPONDENT known to RESPONDENT related to or arising out of RESPONDENT's activities under the Contract and shall see to the investigation and defense of such claim or demand at RESPONDENT's cost. PEC shall have the right, at its option and at its own expense, to participate in such defense without relieving RESPONDENT of any of its obligations under this paragraph.

RFQ2 EXHIBIT 3

TRANSMISSION AND SUBSTATION SERVICES

Key Services Required:

1. Transmission Line Design – Engineering Services February 4, 2013 (refer to Transmission Line Design Specification below)

- Design of new transmission lines, upgrade of existing lines, and reroute of existing lines.
- Project Management and Coordination
- Material Specifications
- Construction Bidding on behalf of PEC
- Surveying
 - LIDAR
 - Topographical Ground Surveying
 - Easement boundary surveying and Easement Document Preparation
 - Utility Locates
 - Construction Staking
- Geotechnical Studies
- Detailed Project Cost Estimating
- Agency Utility Agreement Preparation/Coordination
- Vendor Drawing Review/Approval
- Contractor Material Submittals Review/Approval
- Construction Support
- Environmental
 - SWPPP
 - Permitting
- Drafting/Drawing Management
- Right of Way Services

2. Substation - Engineering Specification April 14, 2011 (refer to Substation Engineering Specifications below)

- Design of new substation and upgrade of existing substations
 - Civil/Structural Substation Design
 - Electrical Substation Design
 - Relay and Control Design
 - Project Management and Coordination
 - Material Specifications
 - Construction Bidding on behalf of PEC
 - Surveying
 - Geotechnical Studies
 - Vendor Drawing Review/Approval
 - Contractor Material Submittals Review/Approval
 - Construction Support
 - Environmental
 - SWPPP
 - Permitting
 - Drafting/Drawing Management
 -

3. Other Services that can be provided:

- Substation and transmission protective relaying and coordination
- Project Inspection and Project Management Services
- Transmission siting and routing selection
- Facilitate CCN application and filing
- Transmission easement analysis
- Expert witness testimony
- Environmental impact statements
- Right of way services
- Transmission Planning services
- Event Analysis
- Substation/Transmission standards analysis, development, and studies
- EMF studies
- Engineering, Procurement and Construction (EPC)
- NERC Compliance
- Training



TRANSMISSION LINE DESIGN - ENGINEERING SERVICES

February 4, 2013

SERVICES TO BE PERFORMED BY THE ENGINEER

The high voltage electrical transmission line design services to be performed by the Engineer shall include the following.

1.0 Project Administration

The Engineer shall provide project administration services as outlined below.

- 1.1 Monitor the progress of the Engineer's services and expedite the Engineer's services as required to maintain the project schedule as agreed between Pedernales Electric Cooperative, Inc. (PEC) and the Engineer.
- 1.2 Monitor the progress of the Engineer's subcontracted services and expedite those services as required to maintain the agreed project schedule.
- 1.3 Maintain files of all correspondence between PEC and the Engineer, and the Engineer and third parties. Copies of all correspondence between the Engineer and the third parties shall be issued to PEC.
- 1.4 The Engineer shall hold project meetings with PEC as requested by PEC in agreed upon location or by conference calls. Prepare memoranda of all conferences between PEC and the Engineer, and the Engineer and third parties. Conference memoranda shall be issued to PEC within one week of each conference.
- 1.5 Assign qualified and experienced personnel to the project for performance of the Engineer's services.
- 1.6 Prepare telephone memoranda of conversations pertinent to this project.
- 1.7 Maintain a file of public information relative to the project.

- 1.8 Maintain and pursue a quality assurance program to assure adequate control of the Engineer's services.
- 1.9 Issue a weekly status report to PEC, which summarizes the progress of the project. The summary shall include the services provided by the Engineer, the subcontracted services of the Engineer, material procurement, and construction.
- 1.10 Assist the Owner as required in preparing all applications to federal, state, county, local, and private agencies as required for the approval, licensing, construction, and operation of the transmission line facilities. The Engineer shall prepare TXDOT crossing permits, Federal Aviation Administration (FAA) permits, Corps of Engineers (CPE) permits, Railroad Crossing permits, Federal Fish and Wildlife Service permits, National Park Service, Balcones Canyonlands Conservation Plan permits and all others as required, for execution by PEC.

2.0 Project Planning and Control

The Engineer shall provide project planning and control services as outlined below.

- 2.1 Prepare, publish, and update a PROJECT DESIGN MANUAL and design criteria. The scope and content of this manual, as approved by PEC, will be the basis for detail design engineering. The PROJECT MANUAL shall contain sufficient detail to allow a reputable contractor to bid confidently and successfully construct the PROJECT. Technical specifications shall follow the Construction Standards Institute (CSI), National Rural Electric Cooperative Association (NRECA), and/or Rural Utility Services (RUS) formats, as approved by PEC. The following will be included if they are applicable to the project.
 - General description of the project
 - Mechanical loading criteria
 - Electrical Clearances
 - Electrical effects
 - Conductor
 - Shield wire
 - Conductor and shield wire accessories
 - Insulators
 - Structures
 - Foundations
 - Guying
 - Grounding
 - Right-of-way planning

- 2.2 On the basis of general schedule milestones established by PEC and the Engineer, develop and periodically update bar chart schedules for permits, licensing, engineering, design, procurement, and construction activities.
- 2.3 Prepare, publish, and update a project cost estimate for budget purposes and the estimate allocation of expenditures.
- 2.4 Prepare and submit to PEC weekly reports on design, cost, and schedule status of the project, in a format approved by PEC. Information on drawing schedules and percent completion shall be included. Any significant changes in design, project costs, or schedule during the preceding month shall be reported, the reasons for such changes shall be stated, and recommendations shall be made for appropriate action.
- 2.5 Participate in planning and design conferences with PEC and third parties as required.

3.0 Conceptual Design

In accordance with all applicable codes, the Engineer shall provide conceptual design services as outlined below.

- 3.1 Make soil resistivity tests along the transmission line route for use in detail design of the grounding systems.
- 3.2 Develop mechanical loading criteria for the analysis and design of the transmission line. The criteria shall include safety, meteorological, construction, and maintenance requirements. Establish overload capacity factors for all loads except those specified in safety codes.
- 3.3 Determine the most advantageous shield wire to meet the mechanical loading and span length requirements. The review shall include those sizes and types presently being used by PEC.
- 3.4 Determine the vertical clearances and minimum right-of-way requirements for the project. These requirements shall be based on safety requirements and for line operation less than 100 MPH wind conditions.
- 3.5 Perform an analysis to determine the advisability of conductor transpositions. Provide locations and structure details if transpositions are recommended.
- 3.6 The Engineer shall design using the National Electric Safety Code (NESC) Heavy District Loading factors.
- 3.7 To minimize any adverse effects to aesthetics, and natural and human resources, where practical, the following factors may be used in the design and placement of structures: Structures may be strategically located to make maximum use of topography and vegetation for screening. Where ROWs cross major highways or in scenic areas, the

transmission line structures may be strategically located for minimum visibility. Deadend and angle structures will generally be freestanding and unguyed.

4.0 Design Engineering

In accordance with the PEC's design criteria, the NESC, NEMA, ANSI, IEEE, NETA, and other applicable industry codes and standards, the Engineer shall provide design engineer services from the results of the routing analyses and conceptual design as outlined below.

- 4.1 Develop the structure series for the transmission line. The series shall include tangent, angle, deadend, and any special structures. The range of angles and heights for each structure type shall be indicated. Provide structure configuration for each structure type.
- 4.2 Develop load cases for structure design. The magnitude, direction, and location of each load for each load case shall be indicated.
- 4.3 Perform detailed design and analysis for each structure. Member sizes and connection details shall be provided. Prepare engineering drawings for structure procurement.
- 4.4 Prepare sag-tension data, sag templates for structure spotting and wire clearances, and wire stringing charts.
- 4.5 Select transmission line components based on design calculations. Components shall be documented on unit assembly drawings.
- 4.6 Prepare foundation detail drawings for each structure type utilized based on data furnished from the soil investigation.
- 4.7 Spot the structures and show wire clearances on the plan-profile drawings. Drawings shall indicate structure type, height, identification, station, property ownership and special conditions. If the line is an upgrade, the existing plan-profile drawings of the existing line will be provided by PEC if available.
- 4.8 The project work shall be performed under the direct supervision of a Professional Engineer(s) licensed to practice engineering in the state of Texas. The Firm providing the Professional Engineer(s) must be registered with the State of Texas to practice engineering in this state.
- 4.9 The Engineer shall perform work with its own engineering and design staff who are permanent employees of the company. Transmission line designers will have background in transmission line engineering and design and will have designed/managed similar high voltage projects. The Engineer shall submit experience list of similar projects with proposal.

- 4.10 The Engineer shall note and/or sign and seal drawings in accordance with laws of the State of Texas, by a licensed professional engineer of the State of Texas. The Engineer will provide PEC six paper copies of signed and sealed construction record drawings and copies of all construction record digital files.
- 4.11 The Engineer shall prepare for PEC's review an alignment of the transmission line unless otherwise provided by PEC. The alignment shall be prepared using PLS CADD. The alignment shall also display all surface and subsurface features that will impact the line design and construction.
- 4.12 The Engineer shall determine the type of structure, framing, insulation, and miscellaneous hardware for the transmission line unless otherwise provided by PEC.
- 4.13 The Engineer shall be responsible for the design of all fencing and gates required for PEC and construction access to the transmission line. The Engineer shall be responsible for determining these quantities.
- 4.14 The Engineer shall be responsible for conducting a grounding study and designing the required grounding method for the project including any fencing impacted by the project
- 4.15 The Engineer shall be responsible for conducting a lightning study and designing the required lightning protection system. A copy of the study and proposed protection system shall be submitted with the approval drawing package.
- 4.16 The Engineer shall model and analyze the transmission structures used in the design of the line. Structure models shall be developed in PLS Pole in order to integrate with designs performed in PLS CADD.
- 4.17 The Engineer shall provide a list of recommended spare parts for the project. This list shall also include the Manufacturer's (and original suppliers, if different) catalog number for all parts listed with prices for each.
- 4.18 The Engineer shall provide copies of material safety data sheets to PEC for all hazardous chemicals specified for each project. These documents will be provided prior to the products being procured.
- 4.19 The Engineer shall appear before regulatory agencies or other public meetings as required as a basic PROJECT Service.
- 4.20 The Engineer shall assist PEC in litigation arising from, or associated with, the planning, design, or implementation of the PROJECT. Provide expert witness testimony if needed.

5.0 Detail Design

- 5.1 PEC's standard conductor is 795 MCM 26/7 ACSR "Drake". PEC's standard shield wire is 3/8" 7-strand high-strength steel and fiber optic shield wire (0.571" diameter, 0.4144-lbs./ft wire weight and 20,711 rated breaking strength).
- 5.2 All structures will be designed to accommodate fiber optic shield wire (0.571" diameter, 0.4144 lbs./ft wire weight and 20,711 rated breaking strength) for future communication requirements.
- 5.3 The maximum shielding angle will be 30 degrees.
- 5.4 All newly installed facilities will be designed using:
 - a.) National Electrical Safety Code (NESC): NESC Heavy District Loading factors, which includes designing for ½" radial ice @ 0°F with a 4 psf wind.
 - b.) Extreme wind: One Hundred (100) miles per hour;
 - c.) Minimum temperature: -10 degrees Fahrenheit (F);
 - d.) Average conductor temperature of 93.33° C (200° F) using coefficients of emissivity and absorptivity of 0.5, ambient air temperature of 40.55° C (105°F), an elevation of 500 feet above sea level, East-West line orientation, 30 degrees latitude, 2:00pm solar conditions, clear atmosphere, and a wind velocity of 2 feet per second normal to the conductor.
 - e.) All structural components, conductors and overhead ground wires will be designed using the appropriate overload capacity factors, strength reduction factors, and tension limits given in ANSI C2-2012 (NESC) and the manufacturer's recommended strength ratings for hardware etc. when applicable. Where ANSI C2-2012 (NESC) is silent, engineering judgment will be used with guidance from RUS Bulletin 1724E-200. The NESC heavy loading district design factors will be utilized to determine tension limits and sags for all wires.
- 5.5 Each structure shall be solidly grounded and grounding resistance of less than 10 ohms is desired. A copper ground plate under each structure will be used initially, with additional ground rods driven if needed. Structures located within switchyards and substations will be connected to the substation ground grid.
- 5.6 Porcelain and/or polymer insulator assemblies will be used. Porcelain and/or polymer insulators will be used for dead end assemblies and the angle and tangent suspension assemblies. Insulator bird guards will be used to reduce the likelihood of outages due to contamination resulting from bird droppings.
- 5.7 Clearances will be checked using a maximum conductor operating temperature of 200 degrees Fahrenheit (F). The conductor operating temperature is predicated on a 105°F ambient temperature, 2 foot per second wind perpendicular to the line, 2:00 PM solar conditions, 30 degrees latitude, and 500 feet above MSL elevation. Unless PEC

determines a need for greater ground clearance, design clearances will be based on ANSI C2-2012 (NESC) with a nominal line-to-ground clearance of 30 feet. This allows for greater distribution flexibility as well as reducing electric and magnetic fields. Underbuild distribution will be designed for final ground clearance of 22 feet. Using a 30-ft clearance and allowing for a 2-ft tolerance (one foot for ground elevation accuracy and one foot for construction tolerance) will result in a 28-ft nominal ground clearance, which will be maintained for the 138 kV phases at 200 degrees F. In areas where this clearance is difficult to achieve, a ground clearance of 25-ft minimum (23-ft nominal) will be maintained. For distribution and telephone lines a clearance of 10-ft minimum will be maintained. Refer to the NESC C2-2012 for other minimum clearances recommended with a 2 foot adder. Clearances apply at all operating temperatures and/or ice conditions. When crossing other electric transmission/distribution lines, clearance will be checked for a) upper conductor @ 32°F w/ice vs. lower conductor @ 32°F w/no ice and b) upper conductor @ maximum operating temperature vs. lower conductor at 105°F.

6.0 Material Procurement

The Engineer shall provide material procurement services as outlined below.

- 6.1 Prepare three detailed specifications for the purchase of materials for the line. The specifications for the line shall be "Transmission Line Structures," "Transmission Line Phase Conductor and Shield Wire," and "Transmission Line Materials." The specifications shall incorporate the general and special conditions as required by PEC. Three paper copies and digital files will be supplied to PEC. Digital files will be made available to vendors as needed.
- 6.2 Review the proposals received, prepare detailed bid evaluations, and make recommendations to PEC.
- 6.3 Prepare conformed copies of all specifications as directed by PEC for formal contract execution by PEC.
- 6.4 Review, index, and distribute all manufacturers' drawings; handle all correspondence with suppliers regarding coordination of drawings, drawing approval, delivery, etc. Maintain files of manufacturers' drawings for transmittal at the proper time to the project field inspectors, the construction contractor, and to PEC.
- 6.5 Prepare change orders for modifications to the specifications when required.
- 6.6 Review progress payment invoices and make recommendations to PEC for payment.

7.0 Construction Contracts

The Engineer shall provide construction contract services for the work as outlined below.

- 7.1 Prepare complete specifications and contract documents for fixed cost bid units.
- 7.2 Prepare bid unit for each construction specification.
- 7.3 Review the proposals received, prepare detailed bid evaluations, and make recommendations to PEC.
- 7.4 Prepare conformed copies of all specifications as directed by PEC for formal contract execution by PEC.
- 7.5 Review, index, and distribute drawings; handle all correspondence with contractors regarding coordination of drawings.
- 7.6 Prepare change orders for modifications to the plans and specifications when required.

8.0 Construction Management

The Engineer shall provide construction management services as outlined below.

- 8.1 Provide periodic inspections to monitor and inspect all activities of the construction contractor to observe the progress and to ensure compliance with the specifications and contract documents. Recommend and specify the number and/ or the frequency of inspections and at what stages of construction to conduct inspections
- 8.2 Participate in pre-construction conferences with PEC and construction contractor as required.
- 8.3 Final Test and Commissioning shall be considered complete for the PROJECT once the facility has been energized and placed in service by PEC.
- 8.4 The Engineer shall prepare sketches required to resolve problems due to actual field conditions encountered.
- 8.5 Conduct walkthrough and provide a detailed punch list for contractor.

9.0 Engineering Completion

After the completion of construction, the Engineer shall provide the following services to complete the project design records.

- 9.1 Conform the construction drawings to agree to the construction records maintained by contractor and the construction management personnel.

- 9.2 Provide PEC with one set of the entire Engineer's as built construction drawings in PLS CAD and AutoCAD on a CD within sixty (60) days after construction is completed.

10.0 PEC's Engineering Responsibilities and Services

- 10.1 PEC shall review and approve all requested changes to the Scope of Services.
- 10.2 PEC shall review and approve the PRELIMINARY ENGINEERING REPORT and the PROJECT MANUAL.
- 10.3 PEC will review, approve or take other appropriate action on submittals of equipment, material lists, specifications, and design calculations only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Engineer shall be responsible for the adequacy of the performance, equipment, specifications, and design criteria required by the Contract Documents.
- 10.4 PEC shall review and respond to all documents submitted by the Engineer within an agreed time frame.
- 10.5 PEC shall furnish qualified persons to negotiate with landowners or tenants with respect to right-of-way authorizations, access, easements and the locations of transmission structures.
- 10.6 A PEC Line Inspector will provide daily inspections of work performed.
- 10.7 Engineer will furnish a list of materials and PEC will determine what PEC will supply from that list.

11.0 Engineer's Proposal

- 11.1 The Engineer's proposal should conform to the format prescribed below.

TAB A Qualifications and Experience: As part of the RFQ2 response, The Engineer shall answer, in full, the following: information about the firm including the legal name and address, the firm's number of employees, length of time offering engineering services, names and experience levels of all principals and if each is registered to perform electrical engineering services in the State of Texas. Please list the specific experience of all engineers and technical personnel who will be assigned to the project.

Provide PEC a detailed list of at least three similar projects completed in the last five years for like sized electric utility clients with a similar rural and urban mix. This list shall include a reference contact name and telephone number as well as a listing of the Firm's key personnel that participated in the project and to what extent they participated.

If subcontractors and/or other engineering firms are to be utilized to accomplish any part of this project, provide firm name(s), names and professional qualifications and specific experience of all engineers and technical personnel who will be assigned to the project.

TAB B Rates and expenses: Proposals are to clearly identify hourly rates for engineers, technicians, drafters, reproduction facilities, miscellaneous expenses, etc. needed to complete this project and an estimate of a "not to exceed" amount for services including expenses. The Engineer shall indicate the anticipated man-day and trip requirements associated with the following:

- Planning and design conferences.
- Corridor and route reconnaissance.
- Manufacturing inspection.
- Structure testing.

TAB C Project timeline: A Gantt chart or similar method will be provided showing the estimated timeline, including milestones for the projects completion and for the prescribed scope of engineering work as detailed.

TAB D Project design and methodology: A thorough description of the technical approach that will be used to satisfactorily complete the project shall be submitted. This shall demonstrate that the respondent has a clear and complete understanding of the scope of the project and the necessary equipment and staff to complete the project in a reasonable timeframe. This should include at a minimum:

- A. Guidelines used in analysis of work needed;
- B. Anticipated field work used to gather data;
- C. Typical report structure;
- D. Other deliverables normally furnished;
- E. Support needed from PEC to complete the project, including data and information needed from PEC;
- F. Anticipated frequency of status meetings to be held at PEC.

TAB E Project Issues: State any improvements or problems the Engineering firm foresees in the project as given in the project description, the RFQ2, and this document.

Engineering Proposal shall be submitted in electronic format only.

SUBSTATION ENGINEERING SPECIFICATION

1.0 GENERAL

This specification outlines the general procedures to be used in the performance of work by Consulting Engineers contracted with Pedernales Electric Cooperative Inc. (PEC) Substation/Transmission Engineering Department. This Specification covers the following: engineering design, detailed drafting, subsurface investigation and geotechnical report, bidding documents for the construction of a substation. This specification includes the number for drawings sets required and completing the required Network Operations Model Change Request (NOMCR) report for reporting to ERCOT. The Consultant is to provide the Construction Contract Notebooks for signatures between PEC and the construction contractor. PEC will provide the Contractor specific "Service Agreement". PEC's substation projects are at various locations in central Texas. The Project work shall be performed under the direct supervision of a Professional Engineer(s) licensed to practice engineering in the state of Texas. The company providing the Professional Engineer(s) must be registered with the State of Texas to practice engineering.

2.0 PROJECT PROCESS

- 2.1 **SEE ATTACHED CONCEPTUAL DESIGN DOCUMENT FOR PROJECT SCOPE REQUIREMENTS.**
- 2.2 Project development is summarized in Appendix A, Engineering Task List and Responsibility.
- 2.3 PEC will provide the Consultant a Conceptual Design Document (CDD) to define the basic design requirements of the project that is included as an attachment to this document. This document is generated internally to the Substation Design Engineering Department and has received input from various departments within PEC including maintenance, district offices and construction coordinators.
- 2.4 The CDD provides the general scope of work for the Consultant. All information included with the CDD is conceptual and is intended as a general guide. The CDD is the basis for the Consultant's Detailed Design Document (DDD) which will define the design details in words. The DDD may vary a bit from the CDD as a result of field visits, standards, or calculations completed by the Consultant, but generally should follow the concept provided in the CDD. The DDD may be routed to or reviewed by other departments for input prior to the completion of the project. The Submission of the DDD will be a normal part of the design but may not be required on every job. If the DDD is not specified in the CDD it may be requested at the kickoff meeting.
- 2.5 Project due dates shall be provided to the Consultant by PEC's Engineering Project Coordinator (EPC). With this information, the Consultant shall provide a project timeline, including, at a minimum, mandatory written weekly project updates, monthly meetings, drawing sets as specified in Appendix A and Appendix B, and the following events:
 - 2.5.1 At the Project kick-off meeting to be held in Johnson City and site visit if necessary.
 - 2.5.1.1 PEC will provide the "Service Agreement" for signatures between the Consultant and PEC.
 - 2.5.1.2 The Consultant is expected to provide an engineering project schedule that may be negotiated with PEC. PEC is expecting to set the project schedule at this meeting.
 - 2.5.1.3 PEC will provide the Technical Specification for the Construction of Substations at this meeting.
 - 2.5.1.4 PEC will provide reference and standard drawings at this meeting.

- 2.5.1.5 PEC will provide Pre-approved Material Packager list.
- 2.5.1.6 PEC will provide Pre-approved Construction Contractors list.
- 2.5.2 All approval drawings and document issued to PEC shall be one set of paper copies (24" X 36") as well as electronic PDF and DWG files. The drawings are to be a single PDF file and shall include all drawings as individual pages.
- 2.5.3 "Initial design review" meeting required with initial drawing set, and a rough DDD as a Word document. At this point the DDD should have sufficient detail to complete design process.
- 2.5.4 "Full Package Design" review no meeting required by the Consultant to include a of rough draft Specification document, along with the DDD. See Section 14.3 for details.
- 2.5.5 "For Bid Review" meeting is the 100% complete drawing set ready for the P.E. Seal, including the DDD, the owner furnish material spreadsheets, construction specifications, bid unit descriptions, all bid documents and electronic PDF & DWG files as described above. After corrections if any are made the drawings and documents are ready for bidding.
- 2.5.6 All bid documents, construction specifications, bid unit descriptions and bid tabulation sheet to be available on a File Transfer Protocol site. All bid document to electronic.
- 2.5.7 At this point the project schedule shall be updated including the bidding of the construction, all material consideration, transformer moves or new delivery, PEC's internal contract administration and drawing and documents for construction preparation.
- 2.5.8 The For Bid Package is ready to send out for bid. Should any Contractor request a hard copy of the drawings and / or documents we expect the Consultant to comply with no additional cost to PEC.
- 2.5.9 At this point the Consultant is to provide a Network Operations Model Change Request (NOMCR) report ready to send to ERCOT. The deliverable for this is to provide an Electrical One-Line and a description explaining the different phases of the construction. The Consultant is to coordinate with the ECP to complete this task.
- 2.5.10 PEC expects the Consultant to analyze all construction bids and provide a Construction Contractor recommendation letter. Should the Construction Contract need to be submitted to PEC's Board for approval the schedule will need to be extended by six weeks. Project Board approval level is (\$1,000,000.00 in cost or two year duration). If the project does not go to the Board the Construction Contract approval time is three weeks.
- 2.6 There may be little time between completing the design until the start of construction. Upon completion of the design the Consultant is expected to prepare for the following:
 - 2.6.1 Set up a File Transfer Protocol - FTP site for contractor access of bid documents. Issue the "For Bid" drawings, Construction Specification including bud unit descriptions and bid unit pricing sheet. Project schedule to be included.
 - 2.6.2 Generate an E-Mail letter soliciting bids from the pre-approved Contractors list provided by PEC. Refer to Appendix H.
 - 2.6.3 Generate an E-Mail letter soliciting bids from the pre-approved Material Packagers list provided by PEC. Refer to Appendix I.
 - 2.6.4 Letters to be approved by PEC's EPC prior to going out.
 - 2.6.5 Consultant to attend and conduct pre-bid meeting at the substation site. Handout to include meeting agenda and process for questions from the

contractors. All project related questions to be routed through the engineer only Contractor shall not contact PEC. Discussion between Consultant and EPC is encouraged.

- 2.6.6 All bidding questions by E-Mail only. Consultant to maintain a question and answer log. Consultant to provide answers by E-Mail only. Answer bidding questions after conferring with the EPC if needed.
- 2.6.7 Consultant to review all construction bids. Prepare a spread sheet containing all bids per bid unit. Pay special attention to exceptions to the bidding process, price and schedule. Before recommendation of a contractor it is expected to have discussion with EPC. At this point the EPC may have intimate knowledge of a particular contractor's schedule and may raise concerns or need to consider schedule impacts.
- 2.6.8 Prepare a contractor recommendation letter to the EPC for concurrence.
- 2.6.9 Prepare "For Construction" drawings (See PEC Guidelines For Drawing Sets). Appendix C.
- 2.6.10 Consultant to prepare "Contract Book" for signatures between PEC and the selected Contractor. See Appendix C.
- 2.6.11 Consultant to bring all "For Construction" drawings and attend the pre-construction meeting in Johnson City with the contractor. At this point the Contract book should be signed by PEC and delivered to Contractor for their execution..
- 2.6.12 Maintain a Contractor material submittal log see Section 3.0. See Appendix E.
- 2.6.13 Consultant to provide support to steel fabrication and construction if necessary.
- 2.6.14 Complete project closing tasks within 30 days of construction completion. See Appendix A – Implementation Task

3.0 MATERIALS AND PURCHASING PROCESS

- 3.1 Major equipment and long lead-time items are normally supplied by PEC. PEC will provide a current list of owner furnished materials for reference purposes. The Consultant shall review the major material list for equipment rating and quantities and shall provide PEC with corrections within three weeks following the engineering kick-off meeting.
 - 3.1.1 Major Equipment is Described As:
 - 3.1.1.1 Transformers
 - 3.1.1.2 Breakers
 - 3.1.1.3 Circuit Switchers
 - 3.1.1.4 High Side Switches
 - 3.1.1.5 CCVT's
 - 3.1.1.6 Wave Traps
- 3.2 For all major equipment, the Consultant will verify existing vendor drawings and report any deficiencies to the EPC. The Consultant will scan and place any paper copies of vendor drawings in an AutoCAD 2008 electronic file.
- 3.3 The Consultant is expected to invite Material Packagers from PEC approved Material Packagers list to provide all other materials not furnished by PEC, including Steel & Anchor bolts.
- 3.4 The Consultant to provide detailed steel fabrication drawings which indicate all dimensions for the fabrication of all substation structures.

- 3.5 The Material Packager shall provide detailed erection drawings, which show assembly of all structural members that will enable the Contractor to assemble the structures and set on the foundations.
- 3.6 The Consultant to provide the electrical / structural Auto-CAD drawings to the Material Packager. These drawings show a plan view and elevation view of the substation. Including side views, end views and sectional views to show dimensions and distances to be used for the construction of the substation.
- 3.7 The Material Packager shall provide a descriptive list of the material and / or table of equipment and material with proper item designators to refer to the corresponding item shown on the substation drawings described in 3.6. The equipment to be sufficiently described so that the Contractor can refer to the manufactures catalogs or cut sheets for details of the packager supplied material.
- 3.8 All Grounding connections of the equipment grounds to the ground bus and or grid shall be included with the material package. Drawings to include the mounting of straps or clamps for the grounding of the fence. Fence to be supplied by the contractor not the packager.
- 3.9 The Contractor is to have approved submittals from the Consultant prior to ordering any equipment. The following shall apply:
 - 3.9.1 Consultant to review and approve the contractor prepared or PEC suggested material submittal log prior to any materials purchased for the project.
 - 3.9.2 The log is to indicate the date of submitted materials for approval, the date of approval by the engineer, name of the approving engineer manufacturer name, and type or use of materials. The log shall be kept up to date and provided to the owner upon request or at least at the end of the project.
 - 3.9.3 Engineer to provide a "Material Approval" stamp including the company name with approval lines for the date and for the signature of the approving engineer.
 - 3.9.4 The material cut-sheet is to be stamped, dated and signed by the approving engineer with a scanned copy provided to the contractor and the owner.
- 3.10 Deviations from the Materials and Purchasing Process shall be coordinated with the EPC. The Consultant shall notify PEC if obsolete material or errors are found in the owner furnished material spreadsheet.
- 3.11 Since PEC contracts out fabrication of the relay panels, the Consultant is expected to provide one paper set of drawings to the panel supplier Per Appendix C.

4.0 CONTACTS

- 4.1 The Consultant's main contact shall be PEC's EPC.
- 4.2 The EPC will ensure the involvement of all PEC's departments and managers to resolve any issues that may arise.
- 4.3 The EPC shall be responsible to provide requested information to the Consultant in a timely manner.
- 4.4 PEC may assign alternate contacts as needed to directly assist the Consultant with drawing issues.
- 4.5 Weekly project updates are required by the Consultant. Refer to Appendix G. In addition, the Consultant and PEC's EPC are encouraged to discuss the project on a weekly basis until the design is complete. The purpose of these discussions is to minimize corrections and changes to the design, and the Consultant is encouraged to initiate these discussions as a part of the project schedule.

5.0 SUBSTATION SAFETY AND VISITING PROCEDURES

- 5.1 All personnel entering PEC's facilities are required to follow PEC's Safety Manual. Refer to Appendix J.
- 5.2 Prior to entering facilities, all Consultants and Contractors are required to review the procedures with the EPC or a designated contact.
- 5.3 The Consultant and any representatives of the Consultant must be accompanied by PEC personnel when entering the substation facilities.

6.0 COMPUTER FILES

- 6.1 The Consultant is expected to have a File Transfer Protocol (FTP) site.
- 6.2 All drawings and documents produced by the Consultant shall be electronically transmitted utilizing a FTP site. A compact disc sent to the EPC in the file type requested by PEC is acceptable. All electronic drawings and documents sent to PEC shall be in PDF and DWG. A single PDF file shall include all drawings as individual pages. The As-Built documents are to be sent to the EPC on the FTP site and/or a compact disc.
- 6.3 All electronic transmittals shall be compatible with AutoCAD 2008, Microsoft Office XP, and Microsoft Project 2000.
- 6.4 All drawings shall be "D" size (24"x36") only with the newest PEC title block.
- 6.5 All photographs shall be in a JPEG (*.jpg) format.
- 6.6 Material list should be in Excel (*.xls) or Word Document.
- 6.7 Each project submittal shall include a drawing / document index that describes all project documents. Where applicable, the following information should be included:
 - 6.7.1 Substation name and number
 - 6.7.2 Drawing number
 - 6.7.3 Drawing date
 - 6.7.4 Drawing description
 - 6.7.5 Indication of new or revision letter of drawings with revision comments.
 - 6.7.6 Document name
 - 6.7.7 Document type
 - 6.7.8 Document date

7.0 ENVIRONMENTAL

- 7.1 Environmental required form the Consultant group is provided in the CDD. The Consultant is responsible for addressing and completing all items in this section unless noted otherwise.
- 7.2 All procedures and documents referenced in this section will be supplied by the Consultant.
 - 7.2.1 Edwards Aquifer Water Pollution Abatement Plan
 - 7.2.2 Spill Prevention Control & Countermeasures (SPCC) Plan
 - 7.2.2.1 Review and approval by PEC Environmental Coordinator
 - 7.2.2.2 Follow PEC's SPCC Plan and Procedure Guideline for Installation of Secondary Containment.
 - 7.2.3 Storm Water Pollution Prevention Plan (SWPPP)

- 7.2.3.1 Consultant to provide Services for Storm Water Procedures and the following Storm Water Reference Documents:
 - How to Calculate Area
 - How to Perform Inspections
 - Qualified Inspectors
 - How to Develop the SWPPP
- 7.2.4 Cultural Resource Assessment
 - 7.2.4.1 Cultural Resource Assessment Procedure
- 7.2.5 Natural Resource Assessment (NRA)
 - 7.2.5.1 Natural Resource Assessment Procedure

8.0 ENGINEERING

- 8.1 The engineering tasks that are typically completed throughout a project are listed in Appendix A. This list also includes the responsibilities for PEC and/or the Consultant.
 - 8.1.1 The Consultant is to provide a Network Operations Model Change Request (NOMCR) report for reporting to ERCOT. The deliverable for this is to provide an Electrical One-Line and a description explaining the different phases of the construction. The Consultant is to coordinate with the ECP to complete this task.
- 8.2 Refer to the CDD to determine if Subsurface and Geotechnical Investigation is needed to complete the design of the Substation. Refer to Appendix F for technical guidelines.
- 8.3 The Consultant shall provide a project DDD as a Word document reflecting all detailed engineering, as well as provide detail design, drafting and checking.
- 8.4 The Consultant shall provide all calculations for PEC's file. Where applicable, these calculations shall include, but are not limited to, the following:
 - 8.4.1 Applicable codes used for designs
 - 8.4.2 Substation design clearances
 - 8.4.3 Equipment sizing
 - 8.4.4 Grading and drainage design
 - 8.4.5 Foundation designs
 - 8.4.6 Steel designs
 - 8.4.7 Grounding design
 - 8.4.8 Conductor ampacity design
 - 8.4.9 Equipment protection analysis
 - 8.4.10 AC/DC load calculations
 - 8.4.11 Battery bank sizing and charging calculations
 - 8.4.12 Control House sizing and wind loading.
 - 8.4.13 The Supervisory Control and Data Acquisition (SCADA) points list including analog inputs and digital inputs
 - 8.4.14 Conduit fill
- 8.5 The Consultant's design shall be in accordance with accepted national standards and safety codes, including but not limited to IEEE, NEMA, ANSI, NEC, NESC, NFPA, and with PEC's latest design standards noted below. Except for Relay and Control standards, no attempt is made here to establish absolute standards for design, as the design standards to be employed may vary with the nature and

location of the project, in the case of modification work, with the design standards which were used in the original station design.

8.6 Substation Design Clearances

Description Of Clearance	138 kV	69kV	35kV	25 kV
Min Centerline To Centerline Phase Spacing	8'-0"	5'-0"	3'0"	2'-6"
Min Phase To Electrical Ground, Rigid Conductors	4'-2"	2'-1"	1'-1"	1'-0"
Min Phase To Electrical Ground, Non-Rigid Conductors	6'-3"	3'-2"	1'-8"	1'-6"
Min Metal To Metal Phase Spacing, Rigid Conductors	5'-3"	2'-7"	1'-6"	1'-6"
Min Metal To Metal Phase Spacing, Non-Rigid Conductors	7'-11"	3'-11"	2'-3"	2'-3"
Min Phase To Station Top Of Concrete (Low Bus) In Pedestrian Areas	14'-0"	11'-0"	10'-0"	10'-0"
Minimum Phase To Grade In Driving Areas	25'-0"	23'-0"	22'-0"	22'-0"

8.7 Grounding

- PEC uses bolted bronze ground clamps for the connection of ground wires to structures and compression fittings for joining the ground conductor to the station ground grid in above ground application. Below ground connections shall be made using Cadweld exothermic weld connectors.
- All arresters to be loop grounded.

8.8 Bus and Conductor Fittings

- Aluminum bolted fittings shall be used for all aluminum and ACSR wire bus connections. Welded aluminum fittings shall be used on all aluminum rigid bus connections.
- Distribution bus and associated connections shall be:
 - All 3" bus shall be welded fittings
 - All 2 and 2 1/2" shall be field bent No Welded fittings.
 - 2-1/2" pipe at 1200 Amp
 - 3" pipe at 2000 Amp
 - Wire connections shall be 1033 ACSR at 1000 Amp
 - Wire connections shall be bundle (2) 795 ACSR at 1800 Amp
 - Wire connections shall be bundle (2) 1033 ACSR at 2000 Amp
 - Underground cabling shall be 1000MCM Alum bundle (2) at 1200 Amp
 - Underground cabling shall be 1000MCM Alum triple bundle (3) at 2000 Amp
 - Drawings to indicate where slip and fixed (welded) locations are needed.
- All hardware for aluminum to aluminum and aluminum to bronze terminations shall be stainless steel and follow PEC's standards
- PEC prefers wire bus connections to be made to all high voltage power circuit breakers and transformer bushing terminals unless clearance over a road is necessary. If tubular bus connections cannot be avoided, expansion connectors must be installed between the bushing terminals and the rigid bus.
- Bus damping is to be included in the design of the tubular bus, consistent with PEC's standards.
- Expansion fittings are to be installed on tubular bus connections between switches on one end only.
- Grounding studs shall be installed on tubular bus sections (specifically at each air switch) where it is not possible to access a wire connection for temporary safety grounding.
- Animal deterrent fence around transformer base and around distribution structures.

8.9 Shielding

- All substations shall be designed with overhead shield wire protection.
- Shielding over transformers shall be offset from center line. Shielding must be placed to allow the transformer be picked with a mobile crane and the mobile crane boom not interfere with the shield wire.

8.10 Relay and Control

- All relay and control work shall be done in accordance to the panel specifications and standards provided by PEC. Standards are not to be altered without prior written permission from the EPC. PEC to provide relay settings or have contracted with a third party for relay settings.
- Create or modify the following drawings:
 - Drawing Index
 - Relay One-Line
 - AC and DC One-Line
 - AC panels
 - DC panels
 - Cable Schedule
 - Cable & Conduit Layout including all equipment and yard light locations.
 - Conduit Installation details.
 - Equipment connection details for all external CT's, PT's; CCVT's; Yard Lights;
 - Create or Modify Control House layout and provide additional drawings as needed to show all wall elevations.
 - Insert vendor drawings in a PEC title block.
 - Battery Connection detail drawing.
 - Panels standards to have panels numbers and cable numbers added.

8.11 Additional Relay and Control Design Criteria

- Control House shall be designed utilizing Specifications found in Division 6 of the Construction Specification.
- Battery Room, the Station Battery Bank is normally located in the center of the battery room and towards the end of battery room away from the battery room entrance door. Battery room to have one DC light.
- Main room of the control house to have only two DC lights.
- Cable tray to be designed with square corners only no radius corners or sweeping 90's.
- Consulting Engineer to provide recommendation utilizing concrete cable tray vs. conduit only.
- Concrete cable vaults with double leaf galvanized doors will be utilized for all cables exiting the control house.
- Cooling and Heating of the control house shall be wall mounted Bard units.
- Refer to Division 8 of the Construction Specification for Control Cable design information and specification.
- Control cable installations between equipment in the substation yard and the control house are to be made using conduit or concrete cable troughs.
- Conduit for control cable shall be PVC Schedule 40.
- Conduit runs shall be the shortest route, with no more than five (5) 90 degree turns in one conduit run. Contact the EPC if a pull box will be needed.
- The Consultant will verify conduit fill, and notify PEC of any modifications.
- A 120 Volt Receptacle shall be located at the transformer sump pump location and for an animal deterrent fence around transformer base.
- A 120 V Receptacle shall be located at the distribution structure for the animal deterrent fence.
- All stations designed with two Station Services unless otherwise noted.
- All stations designed with a TWACS metering data collection system.
- All stations shall include LCRA and/or AEP coordination. LCRA is PEC's preferred meter reading entity. (Metering, SCADA, Control House, Grounding, Bus Differential, PT's)
-
- Only the gang operated switch located on the high side and/or low side of the transformer will have PEC SCADA indication devices.

8.12 Civil

PEC shall provide existing grading drawing if available. All substations shall be parallel and/or perpendicular to some given reference line (for example: property line, transmission line, etc.) The grading drawing shall include:

- Cut and fill quantities
- Description of fence and gates
- Number of culvert pipes
- Quantity of silt fence
- Minimum turning radius of road of 100 feet for transformer access
- Elevations
- Base material volume
- Insulating gravel volume
- Slope range between 0.5% to 1.0%

8.13 Steel Designs

The design of the steel structures will meet all strength requirements and will conform to the latest revision of the steel construction manual of the American Institute of Steel Construction. All steel material shall be purchased to conform to the chemical and physical properties as tested in accordance with the ASTM specifications. All standards are the latest revision.

Specifications and codes to be followed in the design, selection of materials and fabrication and referenced in the specification are listed below:

AWS D1.1	ASTM A283	ASTM A36
ASTM A307	ASTM A123	ASTM A370
ASTM A143	ASTM A384	ASTM A153
ASTM A153	ASTM A386	ASTM A394
EEE TDJ-1	EI TD-4	NEMA SG6-Part 36

Phase spacing, structure height, and takeoff points shall be as shown on the electrical design drawings. In no cases shall the clearances be less than the EEI, or IEEE Standards.

All structures shall comply with NEMA SG6-Part 36 with a **100** mph wind load applied.

The latest NESC Safety Factors shall be applied to maximum structure loadings in determining structure design.

Sufficient design strength shall be provided to support conductors and static wires at a minimum of 20,600 lbs tension per conductor at 0-15 degree takeoff angle unless otherwise noted herein.

Lightning masts shall be provided on all A-frame structures.

The steel detail design shall provide for all structures to be bid and furnished as a complete package lot, including the necessary bolts, washers, locknuts, anchor bolts, step bolts, base plates, and grounding attachment points as required for the complete structure requirement. The steel detail drawings to indicate that each piece of steel to be indexed or marked to facilitate the assembly and erection in the field.

The following design parameters are to be provided for the Supplier's use as applicable. The Consultant shall check and verify all applicable latest standards shall provide similar design parameters used for their detail design work. The Consultant shall provide structure base reactions for all structures in sufficient detail to allow the design of the foundations. Structures shall be designed for a NESC heavy loading zone. All structure designs shall be in accordance with requirements in NEMA SG6, Section 36, "Outdoor Substations (Structure, Pole Top, and Other Parameters)", except where design parameters stated in these specifications are more stringent.

Vertical loads shall include hardware and equipment weight.

Structure weight (dead load) times appropriate safety factor shall be considered in all loading cases.

Dimensions related to hardware and equipment attachments require verification by the Consultant prior to issuing for fabrication.

Wind pressures on surfaces shall be modified by the appropriate shape factor noted below:

Shape Factor	Amount
Round	1.0
Octagonal	1.3
Flat	1.6

Substation Takeoff Structure Loadings for Substation Structures (more severe of the following): NESC Heavy

Loading Case 1		Safety Factors
Wind Pressure:	4 psf	Transverse Wind:
	2.50	
Radial Ice:	0.50 in.	Transverse Tension:
	1.65	
Temperature:	0°F	Longitudinal:
	1.65	
		Vertical:
	1.50	

Loading Case 2 – Extreme Wind		Safety Factors
Wind Pressure:	25.6 psf	
Radial Ice:	None	All Safety Factors:
	1.30	
Temperature:	60°F	

138 kV Shield Wire for Transmission Line Entrances:

OPGW, 48 fiber, 0.417 lb/ft, OD=0.646 in
Rated Tensile Strength=18,053 lb

OHW, 3/8" EHS Steel, 0.273 lb/ft, OD=0.375 in
Rated Tensile Strength=15,400 lb

Shield Wire for Interior of Substation:

3/8" EHS Steel, 0.273 lb/ft, OD=0.375 in
Rated Tensile Strength=15,400 lb

138 kV Phase Conductors:

2-Conductor Bundled 795 kCM 26/7 ACSR
Drake for Transmission Lines leaving the Substation

Maximum Line Tensions for Loading Cases 1 and 2 (Without Safety Factors)

138 kV 2-795 kCM Per Phase	Case 1	Case 2
Phase Conductor	6,200#	4,200#
<u>OPGW – 48 Fiber</u>		
Shield Wires on Trans Lines	2,220#	1,370#
<u>OHW – 3/8" EHS</u>		
Shield Wires on Trans Lines	2,220#	1,370#
Shield Wires Inside of Station	1,500#	980#

Minimum phase conductor attachment heights as shown on the electrical drawings.

Shield wire attachment heights as shown on the electrical drawings.

Loadings for Structures and Bus Insulators other than Takeoff Structures (most severe of the following)

Loading Case 1 – Extreme Wind

Wind Pressure:	25.6 psf	100 mph for cylindrical surfaces
Radial Ice:	None	Stresses shall meet AISC allowable
Temperature:	60°F	NEMA SG6 Deflection Limits
Short Circuit Force:	None	

Loading Case 2 – NESC Heavy Loading

Wind Pressure:	4 psf	Stresses at yield no deflection limits
Radial Ice:	0.50	NEMA SG6 Deflection Limits
Temperature:	0°F	
Short Circuit Force:	20,000 Amps on 138 kV bus 5,000 Amps on 24.9 kV bus	

- All structures shall be designed in conformance with PEC standards. A copy of PEC standard foundation details and standard steel details will be provided for reference during the project kick-off meeting.
- Structural tubing shall be ASTM A-500 Grade B. All other structural shapes shall be either ASTM A-36 or ASTM A-572 Grade 50.
- Anchor bolts shall be A-307.
- Structural bolts shall be A-325 or A-394.
- Holes for structure assembly shall be 1/16" oversize. Holes for base plates shall be 1/8" to 1/4" oversize.
- Steel shall be galvanized per ASTM A-123.
- Concrete shall have a minimum compressive strength of 3,000psi @ 28 days.
- Reinforcing steel shall have a minimum tensile strength of 60ksi.

8.14 Surveying

- Should the project require Survey work the Consultant shall provide but not limited to the following:
- The Consultant to provide all Surveying and Mapping requirements to prepare field notes and plats necessary for PEC to purchase new or additional property. The Surveyor shall prepare a legal description in conjunction with the survey and prepare a plat of the property based on a survey that was completed on the ground. Corner Monuments (Provided by PEC) are to be described and will be set in place by the Surveyor. All bearings and coordinates are to be based upon the Texas Coordinate System, NAD83 (1986), south central zone. All distances shown are to be surface adjustment of 1.00017. All documents shall be verified and sealed by a "Registered Professional Texas Land Surveyor". The surveyor may also be asked provide surveying associated with new transmission and distribution easements. The project may require updates to existing transmission and distribution lines or transmission and distribution lines that are to be rerouted or relocated. The surveyor is to prepare the easement documents on PEC easement forms and provide a plat with metes and bounds description of the new easements. The scope of surveying may also include the need for construction staking for pole center hubs and offsets, and may include layout of the substation footings.
- See CDD for scoping details for this section.

9.0 TYPICAL DESIGN PROCEDURES

- 9.1 Review major equipment file, photographs, vendor drawings, and existing drawings.

- 9.2 Visit project site to verify field equipment, ratings and layouts. Specifically the AC and DC panels to verify available breakers and ratings.
- 9.3 All prints shall be brought up to date, which may entail completing an as-built process prior to the design of the current project. Bringing prints up to date may include converting some paper drawings to Auto-Cad.
- 9.4 Gather drawings, CDD and vendor drawings to make the document / drawing index.
 - 9.4.1 If the substation does not have existing drawings, contact the EPC to obtain the required information.
 - 9.4.2 The drawing index sheet shall be created, updated, and/or modified as needed throughout the project design to make sure the appropriate drawing numbers and revisions are used.
- 9.5 The Consultant shall review all files and documents to identify additional factors or scope additions that may need to be addressed, including necessary panels, communication equipment, and needs at remote end stations.
- 9.6 Upon verification of the scope, the detailed design shall begin. A DDD shall be made using Word. A form and sample of this document may be obtained from the EPC. During the design process, weekly updates required, monthly reviews of drawing progress if needed, as well as telephone updates, are encouraged to cut down on major last minute changes.
- 9.7 The initial drawing set, the "Initial Design Review" submittal as referenced in Appendix B, should be signed off as "Initial Design Review" and used for the first formal design review. The Consultant should document these meetings and highlight changes that need to be made to the DDD and detail design drawings and send a copy via e-mail to the EPC for the project file. A meeting review form to be sent to the EPC, but these notes can be more informal. Ideally the DDD is complete by this stage, but may need minor modifications. (See section 14.1)
- 9.8 A second "Full Package Design Review" shall be submitted as referenced in Appendix B. Again the DDD and the Construction Specification including all bid unit descriptions including the bid tabulation table will be submitted. The Consultant should send Meeting Notes of the review and changes by e-mail to the EPC. Design Review Meeting is not required.
- 9.9 After the Consultant has completed the design in the "For Bid Review" drawing set, a third formal design review shall be held. The finalized DDD, the Construction Specification including bid unit descriptions, the bid tabulation table will be submitted. The Consultant should send confirmation of the review and any changes by e-mail to the EPC. Any major drafting changes at this step will be considered an indication of poor project performance and communication.
 - 9.9.1 The Consultant shall revise the drawings as needed, returning all redlines to PEC, and may be asked to release a special set of "For Approval" drawings prior to send out to the Contractors for bid. Another design review covering PEC's comments may be held to incorporate any changes.
 - 9.9.2 Upon notification by the EPC, the Consultant shall release the "For Bid" drawing set to the Construction Contractors.

10.0 DETAIL DESIGN

- 10.1 General Drawing Information
 - 10.1.1 PEC will provide the drawings of the existing facilities as a scanned file or AutoCAD format.
 - 10.1.2 Standard drawings will be provided to the Consultant upon award of a project. In addition, the EPC may request specific drawings to be redrawn on AutoCAD.

- 10.1.3 PEC will provide reference and standard drawings to clarify PEC's design standards and for the Consultant's use as a reference for learning the format and detail expected in a substation drawing package.
- 10.1.4 All documents and drawings are the property of PEC and should not be reused without the express written consent of PEC.
- 10.1.5 Reference documents listing materials and equipment provided by PEC will be reviewed at the kick-off meeting.
- 10.2 The Consultant shall update or create all drawings that have changes or as needed to accurately depict each project using the most current PEC title block. Revisions should be clouded. Letters in the revision clouds are acceptable.
- 10.3 Drawing Modifications
 - 10.3.1 No Modifications to the Standard Drawings are allowed without the written consent of the EPC.
 - 10.3.2 If Modification to the Standard Drawings are approved the following apply:
 - 10.3.2.1 The change or modification shall be clouded and sent to the EPC in a submittal for approval.
- 10.4 Drawing Numbers
 - 10.4.1 Drawing number format for Structural, Electrical, Civil, Communication, SCADA and Vendor drawings is as follows, where 2- Sxxx is the substation number:
 - 2S-xxx-E-x (1,2,3,etc) for electrical drawings
 - 2S-xxx-S-x (1,2,3, etc) for structural drawings
 - 2S-xxx-C-x (1,2,3, etc) for civil drawings
 - 2S-xxx-E – 300's for Communication drawings
 - 2S-xxx-E – 700's for SCADA drawings
 - 2S-xxx-E – 900's for Vendor drawings
 - 2S-xxx-P- (3000, etc.) for Project Specific Cover Sheets
 - 10.4.2 Drawing number format for Relay and Control drawings is as follows, where 2- Sxxx is the substation number. Existing stations may vary from this format.
 - 2S-xxx-P- (5000, etc.) for Project Specific Cover Sheets
 - 2S-xxx-E-500's
 - 2S-xxx-E-500 (Relay One-Line) (-1, -2, -3 etc)
 - 2S-xxx-E-501 (Cable Layout) (-1, -2, -3 etc)
 - 2S-xxx-E-502 (Control House) (-1, -2, -3 etc)
 - 2S-xxx-E-503 (Cable Schedule) (-1, -2, -3 etc)
 - 2S-xxx-E-504 (Conduit Schedule) (-1, -2, -3 etc)
 - 2S-xxx-E-505 (Nameplate Schedule) (-1, -2, -3 etc)
 - 2S-xxx-E-506
 - 2S-xxx-E-507 (AC Panel) (-1, -2, -3 etc)
 - 2S-xxx-E-508 (DC Panel) (-1, -2, -3 etc)
 - 2S-xxx-E-509 (Yard Lights, SS, PT, connection Diagrams - etc)
 - 2S-xxx-E-510-1 (Panel 1 Panel Layout)
 - 2S-xxx-E-510-2 (Panel 1 Schematic)
 - 2S-xxx-E-510-3 (Panel 1 Schematic)
 - 2S-xxx-E-510-1 (Panel 1 Wiring Diagram)
 - 2S-xxx-E-511-1 (Panel 2 Panel Layout)
 - Etc.....
- 10.5 Vendor Drawing Procedures
 - 10.5.1 Vendor drawings should be placed on PEC title block and included in the drawing set for all equipment associated with the project especially the

items that have dimensional and connection implications, including at a minimum:

- High voltage auto transformers
- Power transformers
- Regulators
- Circuit breakers
- Reclosers
- Potential transformers
- Current transformers
- Wave traps
- Coupling capacitor voltage transformers
- Capacitors
- Circuit switchers
- Vertical air break switches
- Vee switches
- Interrupters
- Automatic Transfer Switches

10.5.2 The Consultant shall scan vendor drawings to show all details, adding vector lines, and text to replace any unreadable information.

10.5.3 Vendor drawings shall be included in all drawing packages with PEC's standard "for information only" stamp and do **NOT** need to be sealed by a licensed Texas Professional Engineer.

10.6 Symbols for Relay and Control drawings

10.6.1 Symbols used by the Consultant shall be similar to PEC's current symbols, as used reference and standard drawing package provided to the Consultant.

10.6.2 Symbols not shown in the drawing package shall be provided to the Consultant upon request.

10.6.3 Any new symbol shall be reviewed and approved by the EPC.

10.7 Checking of Drawings

10.7.1 The Consultant shall perform a thorough check of all preliminary and final drawings before any submittal to PEC.

10.7.2 The Consultant is expected to check all prints for accuracy as well as for meeting PEC standards and expectations mentioned in this document and in design review meetings.

10.7.3 At all times, any redlines and drawing markups provided to the Consultant shall be returned to PEC with the revised drawings and documents.

10.7.4 Design problems encountered during the construction and/or subsequent operational period that directly relate to the Consultant's errors or omissions shall be resolved by the Consultant.

10.7.5 Drafting / Design errors that cause additional meetings and/or additional drawings or drawing sets shall cause the Consultant to open a new Work Order to track all cost associated with the errors and PEC shall not be charged for this work.

10.8 Void drawings

10.8.1 All void drawings shall have the revision number increased and the revision shall be clearly marked "Drawing Voided".

10.9 Drawing revisions

10.9.1 Changes to drawings that have been released for construction shall be made and documented as a "delta" and released "Revised for Construction".

10.10 Removal drawings

10.10.1 Removal drawings shall be in the drawing list and shall be included with the appropriate submittals or at least by the Full Package Review.

11.0 DRAWING REVIEW AND PACKAGES

11.1 There will typically be a project kick off meeting followed by three design reviews of the Consultant's work of which the Consultant shall attend two of these reviews. Appendix D contains checklist of topics for these reviews

11.2 Initial Design Review, Full Package Design Review, For Bid Review, and For Construction (100%) drawing sets shall be submitted in accordance to Appendix B.

11.3 The Consultant is expected to provide one set hard copy of these drawings 24" X 36" as well as electronic files for review. All electronic drawings and documents sent to PEC shall be in PDF and DWG format. The PDF drawings shall all be in one document as individual pages.

11.4 Projects that include multiple stations may have different submittal schedules for each package.

12.0 CONSTRUCTION SPECIFICATIONS

12.1 PEC will provide to the Consultant a detailed construction specification including bid unit descriptions and the bid tabulation sheet. The bid unit descriptions may need to be updated depending on the nature of the project.

12.2 The Consultant shall maintain the PEC supplied Material Submittal Log (see Appendix E). The Consultant is expected to review and approve all Material Submittals provided by the Construction Contractor.

12.3 Upon PEC's request, the Consultant may be required to write a construction sequence recommendation. The content of this document shall be coordinated with the EPC.

12.4 Contractor's material submittals to be evaluated against construction specifications and drawings to insure compliance.

13.0 PROJECT CLOSEOUT

13.1 Project closeout is to be completed by PEC and the Consultant. About one week prior to the Construction Contractor completing the project the Consultant and PEC will have a walk-thru at the site. The Consultant to provide a punch list to PEC list for the Construction Contractor to complete before de-mobilizing.

13.2 PEC will document the latest print revision if any from the Consultant and include in the as-built mark ups by the contractor. PEC will then perform a complete as-built review documenting any field changes to the drawings and provide to the Consultant.

13.2.1 The Consultant shall complete the As-Builds within thirty (30) days. The Consultant shall provide to PEC the mark-ups and one paper copy to review. After the review is complete and no additional changes are required the project will be considered complete.

14.0 PROJECT CRITIQUE

14.1 PEC can provide a project critique to the consultant upon request.

15.0 DRAWING REVIEW SETS

15.1 INITIAL DESIGN REVIEW

The following is a list of drawings that PEC would normally expect for the Consultant to provide one week prior to the Initial Design Review Meeting. Not all drawings will apply. The Consultant is expected to provide a rough draft of the DDD, one set hard copy of these drawings 24" X 36" as well as electronic files for review. All electronic drawings and documents sent to PEC shall be in PDF and DWG. The PDF drawings shall all be in one document as individual pages. Please allow one week for PEC to review and schedule a review meeting with the Consultant and appropriate staff. PEC requires that the appropriate discipline engineer attend. This meeting is expected to be held in Johnson City. See CDD for specific drawings required.

15.1.1 INITIAL DESIGN REVIEW FOR STRUCTURAL & ELECTRICAL

15.1.1.1 Detail Design Document (MS Word)

15.1.1.2 Reference appendix B.

15.2 FULL PACKAGE DESIGN REVIEW

The following is a list of drawings that PEC would normally expect for the Consultant to provide for the Full Package Design Review Meeting. Not all drawings may apply. The Consultant is expected to provide one set, hard copy of these drawings 24" X 36" as well as electronic files for review. All electronic drawings and documents sent to PEC shall be in PDF and DWG. The PDF drawings shall all be in one document as individual pages. Please allow one week for PEC to review and provide comment by to the Consultant and appropriate staff. The Consultant is to provide to PEC all marked-up drawings from the Initial Design Review. PEC does not expect the Consultant to attend a meeting in Johnson City to review comments.

15.2.1 FULL PACKAGE DESIGN REVIEW

15.2.1.1 Includes all submittals and updates from Initial Design Review

15.2.1.2 Reference Appendix B

15.3 FOR BID REVIEW

PEC would normally expect all drawings, construction specifications and bid documents for the Professional Engineers Seal one week prior to the Review Meeting. All drawings and bid documents will apply. The Consultant is expected to provide one set, hard copy of these drawings 24" X 36" as well as electronic files for review. All electronic drawings and documents sent to PEC shall be in PDF and DWG. The PDF drawings shall all be in one document as individual pages. Please allow one week for PEC to review and schedule a review meeting with the Consultant and appropriate staff. PEC requires that the appropriate discipline engineer's attend. This meeting is expected to be held in Johnson City.

15.3.1 All drawing and For Bid Documents shall be complete and ready to be sealed by the Professional Engineer.

15.3.2 PEC to make final review of all drawings and For Bid documents prior to the consultant sealing drawings, preparing 'For Bid' drawings and issuing the letter to the contractors for invitation to Bid.

15.3.3 If Drawings and Bid Documents are not the PEC's expectations another submittal and meeting to review the revisions will be required.

15.3.4 Reference Appendix B

APPENDIX A - ENGINEERING TASK LIST AND RESPONSIBILITY

Responsibility	Development Task
PEC	Conceptual Design Document (CDD) Scoping of substation project
PEC	All standard and vendor drawings
PEC	All existing substation drawings
PEC	Obtain equipment numbers from LCRA SOCC where applicable
PEC	Provide station number for drawings (new station only)
Responsibility	Design Task
Consultant	Review CDD with PEC
Consultant	Provide subsurface investigation and geotechnical report (See Appendix F)
Consultant	Major equipment verification and inspection
Consultant	Review all standard and vendor drawings for completeness
Consultant	Complete initial one lines, layouts and sections
Consultant	Review all relay and control requirements
Consultant	Perform ground resistivity test; provide calculations for grid spacing
Consultant	Review phasing
Consultant	Review feeder exits
Consultant	Review Shielding
Consultant	Review equipment heights
Consultant	Complete Detailed Design Document (DDD)
Consultant	Field verify existing prints; complete as-built as necessary
Consultant	Finalize all drawings per the drawing checklist
Consultant	Review design for adequate clearance
Consultant	Review design for adequate ampacity ratings
Consultant	Perform detailed check of all drawings, including dimensions and materials
Consultant	Determine battery requirements and provide to PEC for ordering
Consultant	Review control house layout to meet initial and ultimate layout
Consultant	Review AC & DC panels to meet initial and ultimate breaker quantities
Consultant	Review all conduit locations "Control & Distribution" Voltage
Consultant	Approve all drawings for accuracy
Consultant	Create Network Operations Model Change Request (NOMCR) form for reporting to ERCOT. Coordinate with the ECP to complete this task.
Consultant	Prepare For Bid Documents (all electronic)
Consultant	Prepare Contract Notebook (3 Copies) (PEC to provide template)
Responsibility	Implementation Task
Consultant	Complete construction specification from an PEC provided template
Consultant	Coordinate scheduling pre-bid meeting, bid review & contractor recommendation with PEC
Consultant	Attend and hold pre-bid for construction at the substation site.
Consultant	Review bid for cost, schedule, and make recommendation to PEC
Consultant	Prepare for construction drawings (See Appendix E)
Consultant	Attend pre-construction meeting in Johnson City (bring construction drawings)
Consultant	Provide construction support, as needed
Consultant	Attend construction site once or twice during construction
Consultant	Attend final walk through at end of construction with PEC & contractor
Consultant	Attend meeting with PEC Inspector to review field mark ups for as-builds
Consultant	Deliver as-builds to PEC within 30 days of receipt of drawings
PEC	URD Material Summary to Penny

APPENDIX B - DRAWING SETS

Initial Design Review

Detail Design Document (MS Word)
Ultimate and Initial Station One Line
Ultimate and Initial Station Layout
Transmission Modifications Layout
138kV Line Terminal Bay
138kV Sections (not all sections required, just one long bus and one short bus)
Feeder Bay (Overhead)
Feeder Bay (Underground)
Total Bay (Overhead)
Total Bay (Underground)
Tie Bay
Grading Plan
Shielding Protection Plan
INITIAL DESIGN REVIEW FOR RELAY & CONTROL
Relay One Line
Side by Side Panel Front Line Up
Leader Panel
Follower Panel
Bus Tie Panel
Auto Protection Panel
Capacitor Panel
Transformer Panel
Feeder Panel
RTU Panel
Annunciator Panel with layout of points
Control House Layout
Station Service - A. C. One Line
D. C. One Line
Yard Layout – Conduit & Yard Light Location Plan

APPENDIX B - DRAWING SETS

Full Package Design Review

Detail Design Document (MS Word)

Includes all submittals and updates from Initial Design Review

All elevations and section views

All Civil drawings and details including sections

All Steel details section views

Conduit and cable layout

All Communication overview

All schematics

Conduit and cable layout

Draft cable schedule

Technical Specification Including Bid Unit Descriptions and Bid Tabulation Table

The Consultant is to provide a Network Operations Model Change Request (NOMCR) report for reporting to ERCOT. The Consultant is to coordinate with the ECP to complete this task.

For Bid Design Review

Detail Design Document (MS Word)

Includes all submittals and updates from Full Package Design Review

All drawings and For Bid Documents shall be complete and ready to be sealed by the Professional Engineer.

PEC to make final review of all drawings and For Bid documents prior to the consultant sealing drawings, preparing 'For Bid' drawings and issuing the letter to the contractors for invitation to Bid.

Appendix C - Guidelines for Drawings Sets

The Consulting Firm for each Project is responsible for providing the drawing sets and contract note books as listed below. All drawings should be stamped and dated per Texas Board of Professional Engineers. The drawings sets are to be labeled on the front page to indicate what type they are ("Issued for

Construction" or "As-Built") and marked with the set number as indicated below (e.g. contractor would get sets A1 & A2).

The control house set must be marked "**STATION SET – DO NOT REMOVE – RECORD SET**". As-Builts should also be dated.

A CD of all drawings in digital format for AutoCAD release 2007 or higher must also be provided to PEC Engineering Department.

ISSUED FOR CONSTRUCTION:

Civil & Structural/Electrical Drawings	Label Set As:	# of Large-Size D (24" x 36") Sets	# of Small-Size C (18" x 24") Sets
Construction Contractor	A	2	--
Substation Control House	B	2	--
PEC Engineering File	C	1 with CD	--
PEC Eng Field Personnel	D	--	3
TOTAL OF EACH SIZE:		5	3

Relay & Control Drawings	Label Set As:	# of Large-Size D (24" x 36") Sets	# of Small-Size C (18" x 24") Sets
Construction Contractor	A	2	--
Substation Control House	B	2	--
PEC Engineering File	C	1 with CD	--
PEC Eng Field Personnel	D	--	1
PEC Substation Maintenance	E	1	--
PEC SCADA Department	F	1	--
Relay Testing	G	1	--
Panel Supplier	H	1	1
TOTAL OF EACH SIZE:		9	2

Construction Spec Notebook	Number Required
Specification Notebook	3
TOTAL :	3

AS-BUILT DRAWINGS:

Civil & Structural/Electrical Drawings	Label Set As:	# of Large-Size D (24" x 36") Sets	# of Small-Size C (18" x 24") Sets
Substation Control House	B	1	--
PEC Engineering File	C	CD only	--
TOTAL OF EACH SIZE:		1	--

Relay & Control Drawings	Label Set As:	# of Large-Size D (24" x 36") Sets	# of Small-Size C (18" x 24") Sets
Substation Control House	B	1	--
PEC Engineering File	C	CD only	--
TOTAL OF EACH SIZE:		1	--

Appendix D – Milestone Check List

DESIGN REVIEW CHECKLIST	INITIAL REVIEW	FULL PACKAGE REVIEW	FOR BID REVIEW	COMMENTS
Environmental				
Grading Plan				
Footing Layout				
Initial Layout w/ Oil Volumes				
Other Issues				
Survey				
List of items to be shot in substation: Existing A-frames				
Scope of work: Survey existing substation and adjacent property				
Type of survey: Existing property and Topography				
Is boundary location needed? Yes / No				
Other Issues				
Civil (Grading)				
Substation survey and topography				
Initial and Ultimate substation layout				
Grading Plan				
Footing layout				
Information on any unusual situations surrounding the substation that might affect grading				
Wall Specifications				
Fence Specifications				

Appendix D – Milestone Checklist

DESIGN REVIEW CHECKLIST	INITIAL REVIEW	FULL PACKAGE REVIEW	FOR BID REVIEW	COMMENTS
Transmission Line Design				
State plane coordinates for substation termination structures (A-frames, Sub Boxes, etc.)				
Termination structure information including structure type, geometry, height, structural capacity, etc				
"Initial" and "Ultimate" substation drawings showing all equipment under the transmission line (buses, switches, transformers, etc.)				
"Grading Plan" or an approximation of the final grade				
"Phasing" requirements for the substation				
Switch information to determine whether insulator string extensions will be required at the substation termination structures.				
Fiber Connection				
Conductor Type				

Appendix D – Milestone Checklist

DESIGN REVIEW CHECKLIST	INITIAL REVIEW	FULL PACKAGE REVIEW	FOR BID REVIEW	COMMENTS
Electrical and Structural Substation Design				
Structural Load data for line terminating into any structures from TLD				
Plan and profile for structure locations from TLD				
Initial and Ultimate Layout				
Footing Layout				
Footing Details for riser structures, MTU's, Pad Mounted Transformers, verify conduit locations. Switchgear, Pad Mounted Transfer Switch, etc.				
Vendor drawings for equipment connections				
Structural Load data for line terminating into any structures from TLD				
Plan and profile for structure locations from TLD				
Bus Phasing correct				
Bushing numbered correctly				
Equipment numbering correct				
Distribution A-Frames				

Appendix D – Milestone Checklist

DESIGN REVIEW CHECKLIST	INITIAL REVIEW	FULL PACKAGE REVIEW	FOR BID REVIEW	COMMENTS
Relay and Control Design				
1, 3, 5 breaker bushing orientation and control cabinet location				
Bus naming convention for ring bus and breaker and a half				
Phasing of buses: Phasing is shown on the Plan & correctly shown on the schematics				
Transformer Phasing / Transformer Nameplates				
Substation One Line and R&C One Line Agree				
House layout complete				
AC & DC One Line complete				
CT / PT location				
Fuse and Surge Arrester sizes				
Control House issues: cable entry, AC pad, battery room layout				
Coordination of all underground routings on Electrical, Structural, R&C,				

Appendix D – Milestone Checklist

DESIGN REVIEW CHECKLIST	INITIAL REVIEW	FULL PACKAGE REVIEW	FOR BID REVIEW	COMMENTS
Telecommunications				
Communication Equipment, Rack Locations				
Pole or Tower Location, Foundation shown on footing layout				
Conduit Requirements				
Tower grounded to ground grid				
OPGW (Fiber) to be added				

Appendix F

SUBSURFACE INVESTIGATION AND GEOTECHNICAL REPORT TECHNICAL GUIDELINES

1.0 GENERAL

In support of Pedernales Electric Cooperative, Inc. (Owner) and Consultant or (Engineer) efforts for the design of the proposed substation project, the Contractor shall conduct a subsurface investigation and laboratory testing program to provide a Geotechnical Engineering Report. The Report shall be provided to the Consultant within an agreed schedule. The investigation shall be performed with standard engineering practices in the state of Texas. These services are described in detail in these guidelines, but shall include:

- A. Perform a subsurface exploration program and provide a qualified geotechnical engineer or geologist to log the borings.
- B. Perform a field resistivity survey at the site and report the results of the testing.
- C. Perform laboratory tests on samples obtained from the borings to evaluate pertinent engineering properties of materials encountered.
- D. Prepare a Geotechnical Engineering Report containing a description of the field and laboratory testing program, boring location plan, typed boring logs and laboratory test results. The Geotechnical Engineering Report shall also include recommendations and specific design criteria for foundations and earthwork at the proposed facility.

2.0 APPLICABLE STANDARDS

- a. Drilling and logging of soil and rock types shall be performed as per the latest revision or supplement to the following ASTM Standards:
 - (1) D420 - Investigating and Sampling Soil and Rock for Engineering Purposes
 - (2) D653 - Terminology Relating to Soil, Rock and Contained Fluids
 - (3) D1452 - Soil Investigation and Sampling by Auger Borings
 - (4) D2113 - Diamond Core Drilling for Site Investigation
 - (5) D2488 - Description and Identification of Soils (Visual-Manual Procedure)
- b. Sampling shall be performed for all proposed activities in accordance with the latest revision or supplement to the following ASTM Standards:
 - (1) D1586 - Penetration Test and Split Barrel Sampling of Soils (SPT)
 - (2) D1587 - Thin-Walled Tube Sampling of Soils (Shelby)
 - (3) D3350 - Practice for Ring-Lined Barrel Sampling of Soils
 - (4) D4220 - Preserving and Transporting Soil Samples
- c. Applicable laboratory tests for the project should be the latest revision or supplement to the following ASTM Standards:
 - (1) D421 - Dry Preparation of Soil Samples for Grain-Sized Analysis and Determination of Soil Constants
 - (2) D422 - Particle-Size Analysis of Soils
 - (3) D427 - Shrinkage Factors of Soils
 - (4) D698 - Test Method for Laboratory Compaction Characteristics of Soil Using

- Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³))
- (5) D854 - Specific Gravity of Soils
- (6) D1140 - Amount of Material in Soils Finer than the No. 200 (75- μ m) Sieve
- (7) D1557 - Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³))
- (8) D1883 - CBR (California Bearing Ratio) of Laboratory-Compacted Soils
- (9) D2166 - Unconfined Compressive Strength of Cohesive Soil
- (10) D2216 - Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil-Aggregate Mixtures
- (11) D2217 - Wet Preparation of Soil Samples for Particle-Size Analysis and Determination of Soil Constants
- (12) D2435 - One-Dimensional Consolidation Properties of Soil
- (13) D2487 - Classification of Soils for Engineering Purposes
- (14) D2850 - Unconsolidated, Undrained Compressive Strength of Cohesive Soils in Triaxial Compression
- (15) D2938 - Unconfined Compressive Strength of Intact Rock Core Specimens
- (16) D3080 - Direct Shear Test of Soils Under Consolidated Drained Conditions
- (17) D4253 - Maximum Index Density of Soils Using a Vibratory Table
- (18) D4254 - Maximum Index Density of Soils and Calculation of Relative Density
- (19) D4318 - Liquid Limit, Plastic Limit, and Plasticity Index of Soils
- (20) D4543 - Preparing Rock Core Specimens and Determining Dimensional and Shape Tolerances
- (21) D5084 - Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter
- (22) E1 - ASTM Thermometers
- (23) E4 - Load Verification Testing Machines
- (24) E100 - ASTM Hydrometers
- (25) G51 - pH of Soil for Use in Corrosion Testing
- (26) G57 - Field Measurement of Soil Resistivity Using the Wenner Four-Electrode Method

d. In addition, the following standards referenced from "Methods of Soil Analysis, Part 2, Chemical and Microbiological Properties," Number 9 in Agronomy Series:

- (1) Soluble Sulfates by the BaCl₂ Titration Method
- (2) Chloride Ion by Silver Nitrate Titration Method

3.0 BORINGS

As a minimum, drill the soil boring at the proposed location shown on the attached Site Plan. It should be assumed that the field investigation may be performed using a truck-mounted drill rig. The boring shall be advanced to a minimum penetration of 30 feet below the existing ground surface. If bedrock is encountered prior to the intended boring completion depth, then perform rock coring into competent bedrock with NX-size, double-tube rock coring techniques.

The need to perform additional borings at other locations, deepened borings, test pits, cone penetrometer soundings, or other investigation techniques may be recommended by the Geotechnical Consultant. These additional services, if deemed necessary for the Project in order to provide the information requested in the Geotechnical Engineering Report, shall require mutual agreement and approval in advance by the Consultant. Provide qualified personnel to drill the borings, and a qualified engineer or geologist to log the borings.

The Contractor will be responsible for field locating the boring based on the information provided on the attached Site Plan. The Consultant shall be responsible for coordinating with the Owner for

access to the boring locations, obtaining any required drilling permits, and contacting the appropriate agencies for determining locations of utilities in the vicinity of the actual boring location. The boring location may be adjusted in the field to avoid utilities, overhead lines, or permit easier access, provided the offset is noted on the log. Offsets shall not exceed 15 feet from the original location unless approved in advance by the Consultant.

4.0 BORING METHODS

Borings shall be advanced with drilling methods which minimize the potential for disturbance, sloughing, or mixing of materials within soil samples. When water is encountered within a hole in cohesionless or sand material, rotary wash drilling methods with bentonite or polymer slurry shall be used, in which positive head is maintained within the hole. Provide casing if required. Water levels encountered as well as the method used in advancing drilling should be indicated on the respective boring logs or within the Geotechnical Engineering Report. Where rock core samples are obtained at the site, the boring logs shall include detailed information regarding the rock types, rock formations, degree of hardness, extent of weathering, percentage of recovery, and Rock Quality Designation (RQD) values. Backfill all borings, after water level measurements, with cement-bentonite grout (or in general accordance with the specific requirements of applicable federal, state, and/or local agencies). The backfill material and technique shall be noted on the boring log.

5.0 SAMPLING

Samples should be obtained from the borings at regular intervals and at soil layer interfaces where material characteristics change. We recommend obtaining samples at 2.5-foot intervals down to ten feet and at 5-foot intervals beyond by the following methods:

- a. Split-Barrel Sampler (SPT) or Ring-Lined Barrel Sampler (California) in cohesionless soils (sands and gravels); ASTM D1586 or D3550.
- b. Thin-Walled Tube (Shelby) in cohesive soils (silty clays, sandy clays, and material with adhesive binder); ASTM D1587.
- c. Obtain continuous rock core samples and store in core boxes in accordance with ASTM D2113.
- d. Take color photographs (35mm or digital) of each complete core box for inclusion in the Geotechnical Engineering Report. Obtain calibrated hand-held pocket penetrometer and/or torvane readings on all cohesive samples in the field. Seal samples to prevent disturbance and moisture changes and transport to the laboratory for testing, including rock samples that may be sensitive to changes in moisture content.

6.0 FIELD RESISTIVITY SURVEY

A field resistivity survey shall be conducted at one location in the project area. The survey shall be conducted along two perpendicular lines (N-S and E-W) centered at a single location. For each line location, readings shall be taken with "a"-spacing of 5, 10, 20, 30, 40, and 50 feet. The values reported for each "a"-spacing shall include current, potential, and apparent resistivity (reported in Ohm-cm).

7.0 LABORATORY TESTING

Laboratory tests shall be assigned and performed by the Contractor to classify the soil and rock materials and to obtain geotechnical physical characteristics of the materials such as strength, compressibility, liquefaction potential, compaction characteristics and chemical characteristics such as corrosiveness. Perform laboratory testing consistent in quantity and quality with standard local geotechnical engineering practice to provide the design parameters and recommendations

required in the Geotechnical Engineering Report. The quantity of tests to be performed will depend upon the type of soil and/or rock encountered during drilling and sampling and upon the foundation types that may be required for the proposed structures. Where applicable, laboratory tests may include, but are not limited to, the tests listed below:

- a. Moisture Content
 - b. Dry Unit Weight
 - c. Sieve Analysis
 - d. Atterberg Limits
 - e. Unconfined Compression – Soil and Rock
 - f. Swell Potential
 - g. Consolidation
 - h. Compaction Characteristics (Moisture-Density Relationship)
 - i. Chemical Analysis
-
- (1) pH
 - (2) Soluble Sulfates
 - (3) Chloride Ion
 - (4) Electrical Resistivity
 - (5) Redox Potential
 - (6) Sulfides

8.0 GEOTECHNICAL ENGINEERING REPORT

The Contractor shall prepare a Geotechnical Engineering Report which shall contain final typed drilling logs, boring and field resistivity test location drawings, a description of the drilling and sampling program, descriptions of the geology and subsurface conditions encountered, groundwater conditions encountered. A discussion of faults, seismicity, and liquefaction potential, laboratory test results, and foundation and earthwork recommendations and design parameters. The Geotechnical Engineering Report shall be prepared under the direction of a Registered Professional Engineer registered in the State of Texas. The Report shall be signed and sealed in accordance with the applicable state regulations. A total of three (3) draft copies of the Report will be provided for review by the Owner and Consultant. Three (3) bound copies and one (1) unbound copy of the final Report shall be prepared and submitted. The following is a listing of major items which should appear in the Geotechnical Engineering Report:

a. Previous Construction Activity

A discussion of previous construction activity should address any existing buried fills or subsurface openings, if encountered. The Report shall outline the engineering properties of any existing fills in regard to foundation design.

b. Subsurface Conditions

Subsurface conditions encountered at the site shall be discussed, based upon stratigraphic sequence observed. Figure(s) shall be provided displaying soil borings and generalized cross section. Color photos of each complete core box shall also be provided. Specific engineering properties or parameters of the subsurface materials determined from the investigation and applied to design recommendations shall be provided. Prevailing groundwater elevations observed and those recommended for design shall be noted.

c. Grading Recommendations

Provide grading recommendations taking into consideration the conceptual grading plan for the site. If over-excavation of unsuitable materials and structural backfill appear warranted, provide vertical and horizontal extent of the over-excavation and structural backfill. Minimal grading in the vicinity of the project is anticipated.

d. Seismic Hazards

Perform a review of geologic information, and provide a discussion of site seismicity and its impact on the proposed development, including a description of mapped faults which impact the site, the potential for liquefaction at the site and recommendations for designing under seismic conditions. Provide applicable IBC (2003) seismic soil coefficient information for the site.

e. Foundation Design

The Geotechnical Engineering Report prepared by the Contractor will be used by Consultant to size and structurally design stable foundations for the proposed structures. To accomplish this task, the Report should provide recommendations in regard to the suitable foundation type for each type of structure as well as allowable loading capacities for vertical compression, uplift loading, and horizontal loading for each type of shallow and/or deep foundation under normal and seismic loading conditions. All factors of safety utilized in developing the allowable load capacities should be outlined in detail. At this time, major structures for the proposed project are anticipated to be founded on drilled shafts. Design parameters for deep foundations should include appropriate type of foundation, minimum embedment lengths, skin friction and end bearing values for compression and uplift for each soil or rock stratum encountered. Discuss the possibility of bellied drilled shafts in soil or using shear rings in rock to increase axial and uplift capacities. Provide lateral design parameters for use in computer programs such as LPILE or COM624, which use p-y curves based on research by Matlock and Reese. At a minimum, these parameters shall include unit weight, cohesion or friction angle, strain at 50 percent of failure stress, and sub-grade modulus for each soil or rock stratum encountered. Provide estimated settlement for deep foundations and note whether overstressing is allowed for transient loading conditions such as wind or seismic.

It is currently anticipated that lightly loaded structures and/or equipment pads may potentially be supported on shallow foundations. Design parameters for shallow foundations should include net allowable bearing pressure and resistance to sliding at the anticipated bearing depths. The possibility of allowing for overstressing to foundations under short sustained seismic or wind live loads shall be discussed. Provide recommendations for resistance to uplift and lateral loads, such as passive earth pressures or sliding friction. Provide recommended design groundwater level for determination of buoyancy and means to resist buoyant forces. Provide the modulus of sub-grade reaction for soils supporting mat foundations. Also, total and differential settlement estimates should be provided for each foundation type. If loose random fills or soft sub-grade soils are encountered, requirements for over excavation and replacement of these materials should be provided. Information provided for structures requiring over excavation and replacement of sub-grade materials should include distances or extent of limits and depths to which over excavation and structural backfill will extend. Figure(s) shall be provided for clarity of proposed dimensions.

f. Field Control Measures

The Geotechnical Engineering Report should address recommendations for field testing of soil during construction and recommended observations during foundation installation.

g. Dewatering

Conditions requiring groundwater control, dewatering, or surface drainage during excavation and construction shall be discussed. Anticipated type of dewatering shall be described along with extent or time of operation. Special consideration to exposed sub-soils within the bottom of excavations during construction shall be addressed.

h. Karst, Solutioning, Sinkholes

Evaluate geological reference literature and site borings to assess the likelihood of karst features at the site. Determine whether any specially engineered systems are required to provide assurance against foundation hazards anticipated or possible at the site.

i. Expansive, Dispersive, Liquefiable or Collapsing Conditions

An evaluation of the expansive (swelling), dispersive, liquefiable or collapsing nature of sub-grade materials shall be made and special design features required to resist or reduce these tendencies shall be discussed.

j. Corrosion Potential and Chemical Attack to Concrete or Steel

An evaluation of representative subsurface materials shall be performed to provide anticipated chemical constituents, specifically pH, chloride ion, soluble sulfates, redox potential, and sulfides as well as electrical resistivity. These parameters are required to evaluate the potential for corrosion to underground piping and grounding, and selection of cement type to resist potential sulfate attack. Alternately, the Geotechnical Consultant's local experience and expertise regarding general corrosion potential may be applied to evaluate the potential for corrosion at the Site. The Contractor shall provide recommendations on cement type for concrete in contact with soil to resist chemical attack.

9.0 SCHEDULE

The Contractor shall complete the work and submit copies of the draft Geotechnical Engineering Report no later than two weeks following the completion of the borings, and completed copies of the final Geotechnical Engineering Report no later than three weeks following the completion of the borings.

Appendix G

XXXXXX SUBSTATION PROJECT ENGINEERING DESIGN SERVICES

Project Progress Report Through January 15, 2011

1. Project Status

1.1. Describe overall project status.

2. Activities thru January 15, 2011

2.1. Activities completed this week

2.2.

2.3.

2.4.

3. Activities Planed Week of January 22, 2011

3.1. Activities planned for next week

3.2.

3.3.

3.4.

4. Items Needed from PEC

4.1. Need Vendor drawings for XXX

4.2.

4.3.

4.4.

Appendix H

Invitation to Substation Construction Bidders

All,

Pedernales Electric Cooperative (PEC) is requesting proposals for the construction of the XXX Substation XXX project. **Add additional project description.**

This project will need to be constructed in X phases to support the energization of the Xxxxx and existing feeders. PEC will provide and install a temporary power transformer **Additional Construction Information Here** to support the load during the first phase of construction.

The successful contractor will be required to develop a detailed construction schedule based on the following schedule constraints:

PEC will require approximately X week to seek Management and/or Board approval.

Transformer delivery is scheduled for XXX

Add any firm dates.

PEC will require approximately X weeks to perform protection and control checkout prior to energization. This shall be factored into the completion schedule.

Energization of substation by XXXX, X, 20XX.

The following Material Packagers are approved by PEC for this project. They have the same FTP site and will provide pricing. No other Material Packagers will be allowed.

- List Material Packagers Here
- X
- X
- X

Additional Construction Information Here If Needed. The remote ends of the transmission lines at XXXX and XXXX Substations will also be upgraded as part of this overall project but this construction will be awarded under a separate contract. The contractor will need to coordinate with these construction activities in order to meet the required energization dates.

A pre-bid meeting and site visit will be held at the XXX Substation site on XXXX, XXXXX, XX, 20XX at XX:00am. Directions to the substation site are attached to this invitation.

The drawings and associated construction technical specification associated with this project can be downloaded from the FTP site link below.

Bids are due, as stipulated in the construction technical specification, on XXXXX, XX, 20XX. Bid will be awarded XXXXX XX, 20XX.

Please contact me with any questions or if you have any trouble opening the attachment.

Thank you,
XXXXX

XXXXX, XXXXX, P.E.
Electrical Engineer
Firm , Inc.
Address

Appendix I

Invitation to Material Packagers Bidders

All,

Pedernales Electric Cooperative (PEC) Substation Contractors will be requesting proposals for the Material Package for the construction of the XXX Substation XXX project. **Add additional project description.**

This project will need to be constructed in X phases to support the energization of the Xxxxx and existing feeders. PEC will provide and install a temporary power transformer **Additional Construction Information Here** to support the load during the first phase of construction.

The successful contractor will be required to develop a detailed construction schedule for PEC based on the following schedule constraints:

PEC will require approximately X week to seek Management and/or Board approval of the Construction Contract.

Transformer delivery is scheduled for XXX

Add any firm dates.

These dates shall be factored into the completion schedule.

Energization of substation by XXXX, X, 20XX.

The following Substation Contractors are approved by PEC for this project. They have the same FTP site and will soliciting pricing from the Material Packagers. No other Substation Contractors will be allowed to bid on this PEC Project.

- List Approved Substation Contractors Here
- X
- X
- X

A pre-bid meeting and site visit will be held at the XXX Substation site on XXXX, XXXXX, XX, 20XX at XX:00am. Directions to the substation site are attached to this invitation. The Material Packagers are welcome to attend.

The drawings and associated construction technical specification associated with this project can be downloaded from the FTP site link below.

Bids are due, as stipulated in the construction technical specification, on XXXXX, XX, 20XX. Bid will be awarded XXXXX XX, 20XX.

Please contact me with any questions or if you have any trouble opening the attachment.

Thank you,
XXXXX

XXXXX, XXXXX, P.E.
Electrical Engineer
Firm , Inc.
Address

APPENDIX J

PEC SAFETY MANUAL – SECTION 622 SUBSTATIONS

1. Only those authorized to enter a substation shall be permitted to do so
2. New employees and those not familiar with the hazardous conditions inherent in a substation shall be given special instructions (job briefing) before they are permitted to enter.
3. Movement of vehicles, gin poles, cranes, and other hoisting or mechanized equipment shall be controlled by signalmen or flagmen.
4. Mobile equipment with booms or extensions above the cab level shall be equipped with a minimum 1/0 AWG extra flexible copper or equivalent ground lead. The equipment shall be bonded to the station ground mat when being operated in a stationary position.
5. No parking shall be allowed within the substation unless required for work purposes.
6. Before driving a car or truck into a substation, the driver shall check the overhead clearance of the vehicle (e.g., radio antenna, boom, basket) to prevent contact with low lines or other structures.
7. Except for fuse replacement or other necessary access by qualified persons, the guarding of energized parts within a compartment shall be maintained during operation and maintenance functions to prevent accidental contact with energized parts and to prevent tools or other equipment from being dropped on energized parts.
8. When drawout type circuit breakers are removed or inserted, the breaker shall be in the open position and the control circuit shall also be rendered inoperative, if the design of the equipment permits.
9. When substation fences are expanded or a section is removed, grounding continuity shall be maintained and bonding shall be used to prevent electrical discontinuity.
10. When guards are removed from energized equipment, barriers shall be installed around the work area to prevent employees, who are not working on the equipment but are in the area, from contacting the exposed live parts.
11. Extreme caution shall be exercised in the handling of bus or tower steel, or other materials of a length that could contact energized equipment. Such material shall not be carried on the shoulder.
12. No material or equipment shall be stored under an energized bus or line or near energized equipment.
13. When a substation fence must be extended or removed for construction purposes, a temporary fence affording comparable protection shall be erected. Such temporary fencing, when constructed of metal, shall be bonded to the existing fence. All substation gates shall be kept closed and locked except when work is in progress and access can be controlled.
14. Sufficient access and working space shall be provided and maintained around electric equipment to permit ready and safe operation and maintenance of such equipment.
15. For additional information concerning substations, refer to --OSHA Standard 29 CFR 1910.269.
16. For more specific information on guarding of rooms containing electrical supply equipment and guarding of energized parts, refer to OSHA Standard 29 CFR 1910.269 (u) (4) and (5).

APPENDIX K

ENGINEER'S PROPOSAL

The Engineer's proposal format should conform to the format prescribed below.

TAB A Rates and expenses: Proposals are to clearly identify hourly rates for engineers, technicians, drafters, reproduction facilities, miscellaneous expenses, etc. needed to complete this project and an estimate of the "not to exceed" amount for services including expenses.

TAB B Project timeline: A Gantt chart or similar method will be provided showing the estimated timeline, including milestones for the project completion and for the prescribed scope of engineering work as detailed.

TAB C Project design and Methodology: A thorough description of the technical approach that will be used to satisfactorily complete the project shall be submitted. This shall demonstrate that the respondent has a clear and complete understanding of the scope of the project and the necessary equipment and staff to complete the project in a reasonable timeframe. This should include at a minimum:

1. Guidelines used in analysis of work needed;
2. Anticipated field work used to gather data;
3. Other deliverables normally furnished;
4. Support needed from PEC to complete the project, including data and information needed from PEC;
5. Anticipated frequency of status meetings to be held at PEC.
6. Identification of Project Team. Project Team assigned to PEC project shall not be modified without PEC approval;

TAB D Project Issues: State any problems the Engineer foresees in the project.

Engineering proposals shall be submitted in electronic format only.

RFQ2 EXHIBIT 4

DISTRIBUTION SERVICES

Key Services Required

1. Electrical Distribution Services

- Design, stake, and engineer distribution projects
- Vertical grading, profiles
- Pole Loading, horizontal, vertical, ground-line-moment analysis
- Gallop analysis as needed
- Easement Research and Acquisition
- Attain highway, railroad, and various city/county permits
- Manage TXDOT Highway relocations including Buy America compliance and reimbursements
- Manage projects from engineering/staking to construction completion
- Field Staking, Data Collection, GPS Collection
- Drawing, Data-Entry into PEC Systems (Utility Center/NISC, AutoCAD, other Utility Design software)
- Manage projects
 - From engineering/staking to completed construction
 - Provide monthly status reports on projects
- Inspection of completed projects
- Coordination with PEC Employees and Contractors (tree-trimmers, ROW crews, construction crews)
- Adherence to PEC specifications and design guidelines, and NESC
- Underground Design (Typical: 1/0 UG, 1000 MCM UG)
 - Subdivision Design according to PEC UG Design Criteria
 - 200AMP and 600AMP Systems

2. Other Services that can be provided:

- Utility Inspection (overhead and/or underground)
 - If underground, could also be used for inspections of excavation, conduit, trenches, pads, concrete forms, etc. which are required for new installations
 - Adherence to NESC, PEC Standards
 - Work Order Inspection
- Staff Augmentation
 - Office Staff (Member Services Planner)
 - Communicate with internal and external customers regarding company policies and procedures while processing applications and taking payments for new service
 - Draw, edit, correct and monitor within GIS Systems to ensure accuracy and connectivity
 - Prepare construction work orders for release to include contracts, easements and cost estimates for construction projects
 - Assist and coordinate between departments and contractors and government entities through the entire engineering process
 - Create and issue service requests
 - Maintain working knowledge of overhead and underground distribution systems
 - Prepare various reports, invoices, cost estimates, quotations, etc.
 - GIS Technician Services
 - Field Staff Augmentation (Utility Designers for meeting with members, staking/designing new services, residential and commercial)
 - Similar to above requirements, but specifically for staking/designing new line extensions

- Coordinate closely with key stakeholders including members, developers and contractors to discuss the process and procedures for supplying electric power
 - Adherence to PEC Line Extension Policy and Standards
- System Analysis and Planning Studies
 - Feasibility and Economic Studies
 - Construction and Long Range Planning Studies
 - Distributed Energy Resource (DER) System Impact, Feasibility, and Facility Studies
 - Distribution Protection/Coordination/Relaying Studies
 - Arc Flash Studies
 - Distribution Planning Studies
 - Reliability/Contingency Analysis
 - Cost of Service Studies
 - Smart Grid Implementation
 - Data modeling and model cleanup
- NERC/TRE Compliance
- Pole Contacts
 - Joint Use Load Analysis
 - Inspection/Permitting
- Standards Analysis, Development, and Studies
- Event analysis and power quality studies
- EMF studies
- Training

3. Other Services that can be provided by Company or Sub-contracted:

- Professional Engineering Services
 - Required for Self-Supporting Pole Designs (Concrete or Steel)
 - Must have capability of creating detailed plan drawings/specifications for pole/structure manufacturer, and be able to determine the necessary embedment (hole) depths.

Specific work requirements will be identified in each individual project as they are deemed necessary and approved by PEC.

016 – RFQ2 ATTACHMENTS

PLEASE NOTE: RFQ2 ATTACHMENTS ARE PROVIDED ON A SEPARATE WORD FORMAT FOR YOUR RESPONSE

RFQ2 ATTACHMENT A, PART ONE

GENERAL INFORMATION FORM

Respondent Questionnaire: Provide the following information regarding the Respondent.
 (NOTE: If Respondent is proposing as a team or joint venture with each entity signing the Contract, if awarded, each should complete this information. Sub-contractors are not co-Respondents and should not be identified here.

Question	Response
Respondent Name: (NOTE: Give exact legal name as it will appear on the contract, if awarded.)	
Principal Address, City, State, and Zip Code	
Telephone No:	
Fax No:	
Website address:	
Year established:	
Provide the number of years in business under present name:	
Social Security Number or Federal Employer Identification Number	
DUNS NUMBER:	
Business Structure: Indicate the business structure of the Respondent: Individual or Sole Proprietorship (List Assumed Name, if any); Partnership; Limited Liability Company, For Profit Corporation; Nonprofit Corporation; Domestic; Foreign or Other (list business structure)	
Annual Revenue:	
Total Number of Employees:	
Total Number of Current Clients/Customers:	
Briefly describe other lines of business that the company is directly or indirectly affiliated with:	
Texas Comptroller's Taxpayer Number, if applicable NOTE: This 11-digit number is sometimes referred to as the Comptroller's TIN or TID.)	
Briefly describe other lines of business that the company is directly or indirectly affiliated with:	
List Related Companies:	
Printed Name of Contract Signatory and Title:	
Provide any other names under which Respondent has operated within the last 10 years and length of time under for each	
Provide address of office from which this project would be managed (Address, City, State, and Zip Code. Telephone No., and Fax No.)	
Contact Information: List the one person who PEC may contact concerning your proposal or setting dates for meetings. (Name, Title, Address, City, State, Zip Code, Telephone No., and E-mail Address)	
Does Respondent anticipate any mergers, transfer of organization ownership, management reorganization, or departure of key personnel within the next twelve (12) months?	
Is Respondent authorized and/or licensed to do business in Texas? (If "Yes", list authorizations/licenses)	

Where is the Respondent's corporate headquarters located?	
Question	Response
Local/County Operation: Does the Respondent have an office located in Texas (If yes, please indicate how long has the Respondent conducted business in its Texas office and state the number of full-time employees at the Texas office)	
Debarment/Suspension Information: Has the Respondent or any of its principals been debarred or suspended from contracting with any public entity? If "Yes", identify the public entity and the name and current phone number of a representative of the public entity familiar with the debarment or suspension, and state the reason for or circumstances surrounding the debarment or suspension, including but not limited to the period of time for such debarment or suspension.	
Surety Information: Has the Respondent ever had a bond or surety canceled or forfeited?	
Bankruptcy Information: Has the Respondent ever been declared bankrupt or filed for protection from creditors under state or federal proceedings? If "Yes", state the date, court, jurisdiction, cause number, amount of liabilities and amount of assets.	
Tax Lien Information.	Complete the Litigation Disclosure Form as Needed
Disciplinary Action: Has the Respondent ever received any disciplinary action, or any pending disciplinary action, from any regulatory bodies or professional organizations? If "Yes", state the name of the regulatory body or professional organization, date and reason for disciplinary or impending disciplinary action	
Litigation Information.	Complete the Litigation Disclosure Form as Needed
Previous Contracts: Has the Respondent ever failed to complete any contract awarded? If "Yes", state the name of the organization contracted with, services contracted, date, contract amount and reason for failing to complete the contract.	
Has any officer or partner proposed for this assignment ever been an officer or partner of some other organization that failed to complete a contract? If "Yes", state the name of the individual, organization contracted with, services contracted, date, contract amount and reason for failing to complete the contract.	
Has any officer or partner proposed for this assignment ever failed to complete a contract handled in his or her own name? If "Yes", state the name of the individual, organization contracted with, services contracted, date, contract amount and reason for failing to complete the contract.	

REFERENCES

Provide three (3) references, that Respondent has provided services to within the past three (3) years. The contact person named should be familiar with the day-to-day management of the contract and be willing to respond to questions regarding the type, level, and quality of service provided. PEC employees should not be included as a reference.

Reference No. 1:	
Firm/Company Name:	
Contact Name and Title:	
Address, City, State, Zip Code:	
Telephone No:	
Fax No:	
E-mail Address:	
Date and Type of Service(s) Provided:	

Reference No. 2:	
Firm/Company Name:	
Contact Name and Title:	
Address, City, State, Zip Code:	
Telephone No:	
Fax No:	
E-mail Address:	
Date and Type of Service(s) Provided:	

Reference No. 3:	
Firm/Company Name:	
Contact Name and Title:	
Address, City, State, Zip Code:	
Telephone No:	
Fax No:	
E-mail Address:	
Date and Type of Service(s) Provided:	

RFQ2 ATTACHMENT A, PART TWO

EXPERIENCE, BACKGROUND, QUALIFICATIONS

Prepare and submit narrative responses to address the following items. If Respondent is proposing as a team or joint venture, provide the same information for each member of the team or joint venture.

1. Describe Respondent's experience relevant to the Scope of Services requested by this RFQ2. List and describe relevant projects of similar size and scope performed over the past four years (i.e. 138kV, 69kV, 25kV)\
2. Describe Respondent's specific experience with utility clients, especially electric utilities. If Respondent has provided services for PEC in the past, identify the name of the project and the department for which Respondent provided those services.
3. List other resources, including total number of employees, number and location of offices, number and types of equipment available to support this scope of work.
4. If Respondent is proposing as a team or joint venture or has included sub-contractors, describe the rationale for selecting the team and the extent to which the team, joint venture and/or sub-contractors have worked together in the past.
5. Identify the number and professional qualifications (to include licenses, certifications, associations) of staff to be assigned to the project and relevant experience on projects of similar size and scope. Provide resumes of key personnel.
6. Provide Firm Registration.
7. Additional Information. Identify any additional skills, experiences, qualifications, and/or other relevant information about the Respondent's qualifications.

**RFQ2 ATTACHMENT A, PART THREE
APPROACH PLAN**

1. **Staffing Plan** – Respondent to provide resumes of key personnel with current and previous experience.
2. **Quality Assurance/Quality Control (QA/QC) Plan** – Describe Respondent's QA/QC Plan to include procedures and personnel utilized for quality control, problem resolution, self-assessment, interaction with PEC, and control of subcontractors' performance.
3. **Additional Information** – Provide any additional plans and/or relevant information about Respondent's approach to providing the required services.

RFQ2 ATTACHMENT B

PRICING SCHEDULE

(To be submitted by Respondent's with proposal)

NOT APPLICABLE

RFQ2 ATTACHMENT C

QUALIFICATIONS C2 DISTRIBUTION

Distribution Capabilities	In-house Capability/ competence (yes/no)	If no in-house capability, provide alternative plan	Summarize capability
Design & Stake OH Line			
Professional Engineering Services			
Vertical grading/ profiles			
Gallop analysis			
Pole loading			
TXDOT Highway relocates, Buy America			
Easement research			
Acquire Permits			
Drawing, Data-entry in GIS & AutoCAD			
Project Management			
Underground Design			
Overhead/ Underground Project Inspection			
GIS Technician Services			
Office Staff Services			
Field Staff Augmentation			

RFQ2 ATTACHMENT D

LITIGATION DISCLOSURE FORM

Respond to each of the questions below, failure to fully and truthfully disclose the information required by this Litigation Disclosure Form may result in the disqualification of your proposal from consideration or termination of the contract, once awarded.

If you have answered "Yes" to any of the questions, please indicate the name(s) of the person(s), the nature, and the status and/or outcome of the information, indictment, conviction, termination, claim or litigation, as applicable. Any such information should be provided on a separate page, attached to this form and submitted with your proposal.

Question	Response (Yes or No)
Have you or any member of your Firm or Team to be assigned to this engagement ever been indicted or convicted of a felony or misdemeanor greater than a Class C in the last five (5) years?	
Have you or any member of your Firm or Team to be assigned to this engagement been terminated (for cause or otherwise) from any work being performed for any Federal, State or Local Government, or private entity?	
Have you or any member of your Firm or Team to be assigned to this engagement been involved in any claim or litigation with any Federal, State or Local Government, or private entity during the last ten (10) years?	

RFQ2 ATTACHMENT E

SIGNATURE PAGE

By submitting a Proposal, Respondent represents that:

If awarded a contract in response to this RFQ2, Respondent will be able and willing to execute a contract in the form shown in Exhibit 1 in the RFQ2, with the understanding that the scope and compensation provisions will be negotiated and included in the final contract.

If Respondent is a corporation, Respondent will be required to provide a certified copy of the resolution evidencing authority to enter into the contract, if other than an officer will be signing the contract.

If awarded a contract in response to this RFQ2, Respondent will be able and willing to comply with the insurance and indemnification requirements set out in RFQ2 Exhibits 2 & 3.

If awarded a contract in response to this RFQ2, Respondent will be able and willing to comply with all representations made by Respondent in Respondent's Proposal and during the Proposal process.

Respondent has fully and truthfully submitted a Litigation Disclosure Form with the understanding that failure to disclose any required information may result in disqualification of this Proposal from consideration.

Respondent agrees to fully and truthfully submit the General Information Form and understands that failure to fully disclose requested information may result in disqualification of this Proposal from consideration or termination of Contract, once awarded.

To comply with PEC's Restriction on Communication that prohibits a person or entity seeking a PEC contract --or any other person acting on behalf of such a person or entity --from contacting PEC officials or their staff after the release date of this RFQ2 and prior to award.

(S) he is authorized to submit this proposal on behalf of the entity.

Complete the following and sign on the signature line below. Failure to properly sign and submit this Signature Page may result in rejection of your proposal.

Respondent Entity Name:

Signature: _____

Printed Name: _____

Title: _____

Date: _____

(NOTE: If proposal is submitted by Co-Respondents, an authorized signature from a representative of each Co-Respondent is required. Add additional signature blocks as required.)

Co-Respondent must also log in using Co-Respondent's log-on ID and password, and submit a letter indicating that Co-Respondent is a party to Respondent's proposal and agrees to these representations and those made in Respondent's proposal. While Co-Respondent does not have to submit a copy of Respondent's proposal, Co-Respondent should answer any questions or provide any information directed specifically to Co-Respondent.

Co-Respondent Entity Name

Signature: _____

Printed Name: _____

Title: _____

RFQ2 ATTACHMENT F

PROPOSAL CHECKLIST

Use this checklist to ensure that all required documents have been included in the proposal and appear in the correct order.

Document	Initial to Indicate Document is Attached to Proposal
Table of Contents	
Executive Summary	
General Information and References RFQ2 Attachment A, Part One	
Experience, Background & Qualifications RFQ2 Attachment A, Part Two	
Approach Plan RFQ2 Attachment A, Part Three	
Pricing Schedule – Not Applicable RFQ2 – Attachment B (To be submitted by Respondent)	
Qualifications C2 Distribution RFQ2 Attachment C	
Litigation Disclosure Form RFQ2 Attachment D	
Bid Bond	
Audited Financial Statements	
Vendor Information Form (if applicable)	
* Signature Page and Corporate Resolution, if applicable RFQ2 Attachment E	
Proposal Checklist RFQ2 Attachment F	

*Documents marked with an asterisk on this checklist require a signature. Be sure they are signed prior to submittal of proposal.