

1145 East South Union Avenue
Midvale, Utah 84047
(801) 255-1111

March 25, 2024

Hyrum City Power & Light
Mr. Tom Cooper
60 West Main Street
Hyrum, UT 84319

Re: 46kV Transmission/12kV Distribution Line Design Project Proposal

Dear Mr. Cooper:

Intermountain Consumer Professional Engineers Inc. (ICPE) appreciates the opportunity to provide Hyrum City Power Department (HCP) with this engineering services proposal for the 46kV Transmission/12kV Distribution Line Design project.

A. PROJECT DESCRIPTION

Hyrum City is requesting engineering and design services for the following new 46 kV overhead transmission line with 12.47kV distribution under-build:

1. The new 46 kV Transmission Line, approximately 2.91 miles long, is to be installed along 4400 South and in the existing utility ROW along HWY 165 from 4400 South to 50 North, in Hyrum, UT. The route for the new line was determined and selected by Hyrum City and will be installed in public or private easements provided by Hyrum City.
2. The new 46kV transmission line includes a single three-phase circuit with static line and a four-wire single three-phase circuit 12.47 kV distribution under-build. The transmission conductor will be 795 Drake ACSR and the distribution will be 397 Ibis ACSR. The poles/structures intended for this project have been predetermined and purchased by Hyrum City.

B. SCOPE OF SERVICES

ICPE is proposing the following Scope of Services for the 46kV Transmission Line Design Project.

1. Perform **PLS CAD** modeling for the new overhead line and associated 12.47 kV distribution under-build.
2. Review the **Design Data** provided for the Custom Steel Poles Cast Iron Poles, furnished by Hyrum City, and determine the General Details required for the project.
3. Prepare AutoCAD format **Plan and Profile Drawings** that include:
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- a. Structure locations.
 - b. The structure type for the cast iron and custom steel poles and their heights and classes.
 - c. Reinforced concrete foundation drawing numbers for each custom steel structure.
 - d. The number, size and type of transmission and distribution phase and neutral conductors and OPGW cable, as applicable, to be installed between adjacent structures.
 - e. Drawing numbers for the 46 kV transmission and 12.47 kV distribution under-build facilities to be installed on each pole located along the line routes for the new lines.
4. Prepare AutoCAD format **Pole Top Assembly Detail Drawings** with Bills of Material, for the three phase 46 kV transmission and three phase 12.47 kV distribution under-build structures.
 5. Prepare AutoCAD format **Section & Detail Drawings** for the new line, as required.
 6. Prepare AutoCAD format augured pier steel reinforced **Concrete Foundation Installation Drawings**.
 7. Prepare and develop a **Project Material List** for the materials required to construct the new 46 kV Transmission Line. These lists will include, but not be limited to, the following materials:
 - a. 69 kV and 15 kV Polymer and Porcelain Pin and Post, and Dead-end Insulators.
 - b. ACSR Conductor
 8. Prepare **Conductor Stringing Information** for transmission phase conductors and shield wire, and the distribution phase and neutral conductors of the project line.
 9. Prepare **Bid Documents, Solicit Construction Bids, and evaluate the Bids**, as required. After bid evaluation, ICPE will recommend a bidder to Hyrum City for the construction of the concrete foundations associated with the custom steel poles.
 10. Provide **Construction Support** during the installation and commissioning phases of the project. ICPE will respond to contractor RFI requests and perform site investigation, as required.
 11. Prepare **For Record Drawings** from the as-built recording/red-lines provided by the installation contractor. The final Record drawing set will be provided at the completion of the project.

C. SCHEDULE

ICPE estimates that the engineering and design for the Project can be completed in (10-12) weeks assuming the project kick-off date of April 1, 2024. The target completion date for the design is *June 28th, 2024*. A detailed project schedule can be provided, as required, after a PO is received.

This is an estimated timeline only and should be considered tentative as there are several factors outside of ICPE’s control that may impact the project schedule and deliverables, including but not limited to delay in vendor or material data, issues with owner furnished material, project scope changes, and any unforeseen site conditions.

D. PROJECT BUDGET

TASK DESCRIPTION	MAN HOURS	TASK COST
PLS CAD Modeling	80	\$11,600.00
Design Data Evaluation & General Detail Development for Owner Furnished Material	36	\$5,220.00
Plan and Profile Drawings	60	\$8,700.00
Pole Top Assembly Drawings	88	\$12,760.00
Concrete Foundation Drawings and Backfill Details	60	\$8,700.00
Project Bill of Material & Stringing Chart	25	\$3,625.00
Concrete Foundation Bid Documents, Bid Evaluation and Bid Award Recommendation	25	\$3,625.00
Construction Support	20	\$2,900.00
For Record Drawings	16	\$2,320.00
Project Management & Meetings	60	\$8,700.00
Survey Service (<i>Subcontracted</i>)	-	\$9,900.00
Geotech Investigation (<i>Subcontracted</i>)	-	\$38,600.00
TOTAL	470	\$116,650.00

E. CLARIFICATIONS, EXCLUSIONS AND ASSUMPTIONS

The following items apply in the proposed Scope of Services.

1. Drawings and documents for the project will be reviewed and approved by Hyrum City prior to issuing the For Construction drawing set.
2. The Custom Steel Poles and Cast-Iron Poles already purchased by Hyrum City with intent to be used on this project, are assumed to be conducive to the design and can be utilized for the construction of the line. The proposal does not include any new custom steel pole design, only an evaluation of what was purchased. The proposal assumes that these poles will work for the design and construction of the project.
3. The proposal includes site survey services required for the design effort. ICPE intends to subcontract and manage the 3rd party, **Cook Surveying**, for this service. Subcontracted Survey cost includes the following:
 - a. LIDAR Drone mapping for the line route and survey of existing ground features and crossing.
 - b. Measure ties to public land and county survey monuments.

- c. Locate topography features within the proposed 46kV T-Line project area. This is to include but not limited to fences, driveways, access roads, trees, existing utility poles and power lines, and other pertinent features on either side of the 46kV T-Line centerline design limits.
4. The proposal includes geotechnical investigation services required for the design effort. ICPE intends to subcontract and manage the 3rd party, *AGEC*, for this service. Subcontractor Geotech cost is including the following:
 - a. The required permits and traffic control along UDOT road, 800 East.
 - b. (6) bore drilling locations to a 40ft depth.
 - c. Coring pavement, lean concrete backfill, and utility location for borings.
 - d. Laboratory testing.
 - e. Engineering analysis and report preparation.
5. The proposal does not include procurement, construction, testing, or commissioning. ICPE assumes this work will be by others.
6. The proposal does not include any permitting, right of way, easement, and/or land acquisition services.
7. ICPE will do its due diligence to provide a sound design in line with applicable codes, design practices, and industry standards and to meet the project submittals and deliverable dates. However, ICPE assumes no liability for any liquidated damages incurred during the project due to any schedule impacts or system downtime.
8. The project fee is based on *Lump Sum* budget.
9. This proposal is valid for (30) days from the date of issuance.

F. SUMMARY

ICPE proposes to perform services for this Project, as outlined above, for a total of ***\$116,650.00*** (*One Hundred Sixteen Thousand Six Hundred Fifty US dollars*). Thank you for the opportunity to provide you with this proposal. Should you have any questions, please give me a call at your convenience.

Sincerely,



Matt Levorsen, P.E.
Chief Electrical Engineer
ICPE, Inc.
Office: (801) 255-1111
Email: Matt.Levorsen@icpeinc.com



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March 25, 2024

Mr. Tom Cooper
Hyrum City Power & Light
60 West Main Street
Hyrum, UT 84319

Subject: 46kV Transmission/12kV Distribution Realignment

Dear Tom:

We are pleased to provide our proposal for 46kV Transmission/12kV Distribution Realignment Project in Hyrum, Utah. Please find below our proposal for the project scope. We have included resumes for the project manager and project engineer that will be assigned to this project and our standard rate sheet. POWER requests the damages outlined in Section 8, "Surpassing the completion date will result in a damages penalty of \$500 per day" be removed from the contract and have prepared our proposal based on that language being removed. Liquidated damages are generally beyond POWER's ability to control, since projects often involve the work of other contractors or entities, which in turn, affects POWER's ability to meet a deadline. POWER has included our previously negotiated contract that we propose using for this project.

PROJECT DESCRIPTION


POWER will provide the engineering design for the realignment of a 3-mile 46kV transmission line with distribution underbuild in the City of Hyrum, Utah. Hyrum City Power & Light has already procured the steel poles required for design as well as some of the longer lead material items such conductor and insulators We have partnered with two firms to assist in the data acquisition phase of this project, SAM Inc. for LiDAR and utility locates and Earthtec Engineering for geotechnical investigation.

» **Task 0, Project Management.**

- **Project Supervision:** Supervise and coordinate project participants to complete all tasks and activities in the approved scope of work.
- **Project Control:** Establish and maintain a project control system, including a Work Plan, Budget, Schedule and Deliverables status for POWER and our subcontractors.
- **Project Meetings:** Attend bi-weekly project meetings with the Hyrum team during design and as needed during construction via video conference call.


» **Task 1, Field Activities.**

- **Line Survey:** Provide engineering and management support and input to POWER's subcontracted aerial surveyor, SAM Inc. to facilitate the acquisition of the required survey data. Provide survey



feature code list to aerial surveyor, or utilize Hyrum's preferred feature code list, coordinate system, and datum. Define specification requirements for ortho-corrected digital aerial photography along with LiDAR point cloud density and required accuracy. Location of underground facilities via one-call will be included.

- **Structure Staking:** Provide engineering and management support and input to POWER's subcontracted aerial surveyor, SAM Inc. and surveyor to facilitate project staking. Provide XY coordinates to SAM Inc. in Hyrum's preferred survey coordinate datum, for construction.
 - **Geotechnical Evaluation:** Facilitate the acquisition of geotechnical soil borings with POWER's subcontracted Geotechnical Engineer, Earthtec Engineering, who has knowledge of, and demonstrated experience in, the project area and the geotechnical services required. POWER will select the preferred locations for soil borings throughout the project, consistent with Hyrum's practices and geotechnical specifications.
- » **Task 2, Engineering.** Use sentence case and begin each with a verb (e.g., provide, review, coordinate, design).
- **Design Criteria:** Establish and document basic line design parameters (line voltage, number of circuits, number of telecommunication attachments, structure and material types, maximum operating temperature, wire tension controls and common point, sag tension load cases, insulation levels, insulator mechanical loading, wire attachment hardware, lightning performance, galloping, structure naming and numbering, structure loading).
 - **PLS-CADD Line Modeling:** Use PLS-CADD to perform transmission line engineering. This task includes modeling new and existing structures, performing structural loading analysis, and checking design clearances.
 - **Structure Design:** Design structure framing geometries, considering client, code and industry standards. Select applicable structure framing hardware and incorporate into structure framing design for use in determination of electrical clearances and impact on structural loading. Verify loads are correctly applied to pre-engineered cast iron pole structures and engineered steel structures using PLS Pole analysis software. Determine the pre-engineered structures required pole class for meeting required loading conditions.
 - **Structure Fabrication Review:** Review and evaluate fabricator technical submittals and proposals to prepare recommendations for Hyrum's purchase of cast iron pole structures. Review and accept or reject fabricator drawing and data submittals. Verify fabricator compliance with the performance specifications, performance drawings, and technical submittals. Provide technical support during the manufacturing and installation phases.
 - **Foundation Design:** Perform design and analysis of proposed foundations for lateral and vertical capacity including concrete drilled pier and direct embed foundation types. Utilize the appropriate overload capacity factors (OCF's), maximum allowable deflection and maximum allowable rotation limits as defined in the Design Criteria.
 - **Design Documentation:** Compile all aspects of design related supporting documents, drawings, and calculation reports. Assemble and maintain POWER's "Green Book" for the project. Support the project deliverable efforts of all milestone submissions.
- » **Task 3, Material Procurement.**


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- **Material List:** Compile a list of material items required for construction of the project identified by description, manufacturer and catalog number. Estimate the quantity of each item required and apply appropriate multipliers to arrive at purchase quantities.
 - **Cast Iron Pole RFQ:** Provide a cast iron pole request for quotation that includes cast iron pole specifications, equipment mounting details, and cast iron outline drawings with heights and classes of poles listed.

» **Task 4, Construction Drawings.**

- **Plan and Profile Drawings:** Prepare final plan and profile drawings at an appropriate horizontal and vertical scale. Utilize readily available planimetric data for the plan portion of the drawings. As required, incorporate structure locations, structure numbers, line angle data, and conductor and shield wire information.
- **Structure and Assembly Drawings:** Prepare structure framing and assembly drawings required for construction. Show details necessary for clarity; material item number indicating material location; applicable notes; and a material list with item numbers, quantities and descriptions.
- **Foundation Drawings:** Prepare foundation drawings showing a foundation design summary, cross sections and plan view for foundation type(s), as well as the projection and position of the anchor bolts and/or stub angles, the arrangement of the rebar and the outside dimensions of the foundations.
- **Supplemental Drawings:** Prepare additional drawings required for construction, which may include drawing cover sheet, staking diagrams, phasing diagram, vicinity map, culvert, gate, fence, and erosion control details.
- **Permit Drawings:** Prepare permit crossing drawings for each crossing or parallelism required by the project. Prepare applicable portions of the permit application and submit to Hyrum City Power & Light for submittal to permitting agency.

» **Task 5, Quality Assurance.**

- **PLS-CADD Model and Design Review:** Assemble a set of the applicable preliminary design documents, reports, drawings and calculations. Perform a detailed independent review of the complete design. Address each of the reviewer's comments and incorporate changes into the design as appropriate.
- **Procurement Review:** Assemble a set of the applicable preliminary design documents, reports, drawings, material lists, material specifications, and calculations. Perform a detailed independent review of the procurement documents. Address each of the reviewer's comments and incorporate changes into the design as appropriate.
- **Structural Design Review:** Assemble a set of plan and profile drawings, structure drawings, foundation drawings and supporting data. Perform a detailed independent review of the structural designs and associated drawings. Address each of the reviewer's comments and incorporate changes into the designs and drawings as appropriate.
- **Construction Package Review:** Assemble a complete set of the documents making up the construction package. Perform a detailed independent review of the construction drawings looking for check print history of changes, records of incorporation of client requested changes, overall content quality and drafting standards. Perform a detailed independent review of the



complete construction package focusing on the detail of information needed to bid and construct project, as well as overall constructability issues. Address each of the reviewer's comments and incorporate changes into the documents as appropriate.

» **Task 6, Pre-Construction Activities.**

- **Pre-Construction Meeting:** Schedule, attend, and document pre-construction meeting in person, including pre-construction meeting minutes. Issue any applicable changes to the contract documents.

» **Task 7, Construction Activities.**


- **Issued For Construction Package:** Update the construction package documents with Hyrum's comments. Provide a digital copy of the construction package to Hyrum City Power & Light and their internal crews performing the work.
- **Engineering Support During Construction:** Provide engineering technical support during construction. Review material test reports and coordinate the resolution of problems. Respond to construction requests for information and construction problems resulting in changes to the final design. 20 hours of construction support.

» **Task 8, Post-Construction Activities.**

- **Record Drawings:** Incorporate the changes received during construction and furnish a complete set of drawings to reflect the "record drawing" condition when the project is completed. No final site visit or project walkdown is included in this proposal.
- **Project Closeout:** Incorporate the changes received during construction and furnish a complete set of drawings to reflect the "record drawing" condition when the project is completed.

DELIVERABLES

- » Monthly Engineering Progress Updates
- » Design Criteria
- » Geotechnical Investigation Report
- » Topographic Survey using LiDAR
- » CAD Generated Survey Drawing
- » XYZ Feature Coded Points File
- » Aerial Photography
- » Utility Survey
- » Preliminary Plan and Profile Drawings
- » Structure List
- » Sag and Tension Data
- » Stringing Sag Tables
- » Aeolian Vibration Analysis
- » Galloping Analysis

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- » Structure Selection for New Non-Engineered Structures
 - » Foundation Design Summary Table
 - » Material List
 - » Catalog cut sheets
 - » (1) Highway Crossing Permit Drawing
 - » Construction Specifications
 - » Construction Package for Review
 - » Issued For Construction Package
 - » Engineering Support During Construction
 - » Construction Drawings “Issued For Record”

CLARIFICATIONS

- » Hyrum City Power & Light to provide:
 - Steel pole shop drawings from Sabre.
 - Steel outline drawings submitted to Sabre for design.
 - List of standard materials and stock codes, if available.
- » Project Meetings include:
 - Bi-weekly half-hour conference calls during the design phase of the project. Additional meetings will be set on an as-needed basis.
 - One (1) 1-day on-site meeting for a pre-construction meeting with the construction crews to review the construction scope. Two (2) POWER employees will attend the meeting.
- » One (1) permit will be submitted for the highway crossing.
- » The railroad permit already acquired will not require additional permit drawings to be created.
- » Up to four (4) structure framing drawings will be prepared.
- » Up to two (2) assembly drawings will be prepared.
- » Steel poles purchased will be sufficiently-sized to support Hyrum's design tension for the specified 397 lbus distribution and 795 transmission wire types for a 250' ruling span.
- » Environmental permitting and survey will not be required or will be coordinated by Hyrum City Power & Light.
- » PLS-CADD generated plan-profile drawings will be acceptable to Hyrum City Power & Light, during the life of the project.
- » Planimetric and land line data shown in the plan view of the drawings will be limited to the detail delivered in the line survey or otherwise provided.
- » Tangent structures will be cast iron wood pole equivalent monopole structures except for the railroad crossing structures which will be engineered steel monopole structures. The 90-degree deadend structures will be engineered steel monopoles.

- » A set of red-lined drawings, depicting construction changes, will be submitted to POWER by Provo Power or their representative within 30 days of construction completion.
- » It will not be necessary for POWER to field review the construction changes.

PROJECT TEAM

Chris Mielke will serve as Project Manager. Jessica Tran will serve as the Project Engineer. Jessica will be supported by a team of engineers and drafters, including Tori Rose and Doug Sessler. Jessica and Chris are both licensed engineers in the state of Utah.

SCHEDULE

Use this space to discuss the project schedule, or include a bullet list or the table, as shown below.

- » Project Initiation/Notice to Proceed (NTP): 4/5/24
- » Preliminary PLS-CADD Structure Spotting: NTP + 4 weeks
- » Receipt of Geotech Report: NTP + 4 weeks
- » Receipt of Survey: NTP + 7 weeks
- » Material List: NTP + 8 weeks
- » Issued for Review Package: NTP + 10 weeks
- » Issued for Construction Package: NTP + 12 weeks

BUDGET

Hyrum City Power & Light will be invoiced monthly for the time and expenses accrued to complete the assigned work according to mutually agreeable terms. This proposal is valid for 90 days. POWER proposes to perform this work on a “time and expense” basis with a “not to exceed” ceiling of \$179,372.

Budget Summary by Task

	Task Description	Hours	Labor \$	Exp \$	Total \$
0	Project Management	64	\$10,672	\$0	\$10,672
1	Field Activities	50	\$9,342	\$0	\$9,342
1.1	Surveying Services by SAM Inc.*	0	\$0	\$62,865	\$62,865*
1.2	Geotechnical Investigation by Earthtec Engineering*	0	\$0	\$26,950	\$26,950*
2	Engineering	190	\$30,216	\$0	\$30,216



	Task Description	Hours	Labor \$	Exp \$	Total \$	
3	Material Procurement		26	\$4,120	\$0	\$4,120
4	Construction Drawings		66	\$10,296	\$0	\$10,296
5	Quality Assurance.		48	\$8,652	\$0	\$8,652
6	Pre-Construction Activities		36	\$5,884	\$2,075	\$7,959
7	Construction Activities.		32	\$5,376	\$0	\$5,376
8	Post-Construction Activities		18	\$2,924	\$0	\$2,924
	Project Total		530	\$87,482	\$91,890	\$179,372

*Line items 1.1 and 1.2 include a 10% POWER Engineers Markup.

Thank you again for the opportunity to propose our services. If you have any comments or questions, please contact us at the information provided below. We look forward to working with your team.

Sincerely,

Christopher W. Mielke

c: Jessica Tran (POWER)

Enclosures

Christopher Mielke Resume

Jessica Tran Resume