Schedule AW-1

****Public****

Engineering Manager adept in development and construction of high-voltage AC and DC power systems. Experienced in effective coordination between internal departments to execute projects. Non-engineering focused involvement related to high-voltage systems include regulatory affairs, local and federal government affairs, public relations, and environmental compliance. Extensive knowledge of regulations and processes for agencies such as USACE, EPA (NEPA), USFWS, DOT, USFS, BLM, BIA, as well as various state rules and regulations. Overall involvement on over 2,000 miles of greenfield transmission.

Education/Licensing

Fundamentals of Engineering Exam, Salt Lake City, UT	*Oct-11*
B.A. Civil Engineering, University of Utah, Salt Lake City, UT	*May-12*
Licensed Professional Engineer, Registered: UT	*Dec-16*

Professional Experience

Invenergy LLC ***April 2019 – Present***

• Senior Transmission Engineering Manager

Build and manage engineering team responsible for major transmission projects. Initiatives include establishing team specializing in long distance multi-state transmission and HVDC converter stations, developing and supporting future grid reliability through diversifying and extending the reach of generation resources, negotiate strategic relationships with major vendors and contractors, and nurture a team environment focused on leading industry growth, innovation, and success.

• Grain Belt Express, KS-MO-IL • ±600kV HVDC • 5000MW ***Commercial Operation 2026***

Grain Belt Express is a bipolar HVDC transmission line with a dedicated metallic return. Involvement with the project has been crucial to advance regulatory certainty, environmental permitting strategy, engineering, major material procurement, and construction execution. Most notable engineering achievement was resolving design constraints previously limiting capacity to 4GW. The line and converter station design is now on track to deliver 5GW. Design changes were performed without causing delay to major equipment procurement.

• Clean Path New York • ±400kV HVDC • 1300MW ***Commercial Operation 2027***

Manage civil and electrical engineering teams developing converter station sites and 175 miles of symmetric monopolar HVDC. Initiatives are focused around leveraging HVDC project portfolio to negotiate major vendor contracts.

• North Path, New Mexico • ±525kV HVDC • 2000MW ***Commercial Operation 2028***

Developing 400 miles of HVDC overhead transmission and converter stations. Route development involves supporting public outreach, biological/ecological/cultural field surveys, conceptual structural and electrical design, and NEPA strategy. Engaged in establishing relationship with the Renewable Energy Transmission Authority (RETA) and other stake holders to reduce risk and progress development.

Electrical Consultants Inc. ***May 2012 – April 2019***

• Electrical Consultants, Internal • Transmission Line Guidelines • Member of Project Support Platform

Responsible for providing input and for the creation of various ECI standards and design guidelines regarding the development, design, and construction of 12.4 kV through 500 kV power line systems. Provided training to multiple ECI offices for the implementation of standards and guidelines to promote deliverable consistency and efficiency.

- **Written Standards and Specifications**
  - Transmission Line Design Criteria
  - Transmission Line Construction Specification
  - Recommendations for Construction Means and Methods
  - Transmission Line Geotechnical Specification
  - Transmission Line Survey Specification
  - Transmission Line Material Specifications
  - Software Design Philosophy Guidelines
- **Design Tools and Templates:**
  - Conductor sizing for line rating and voltage gradient
  - EMF calculations for NESC code and state regulations
  - Preliminary ROW width Calculations
  - Templates for all Transmission Drawings
  - Procedures for exporting engineering design to drafting
  - Transmission Line Scope of Work Template
  - Project Cost Estimate and Scheduling Templates

• Invenergy • Sagamore Wind 345 kV • Consultant

Engineer of Record (Transmission Line) for the Sagamore 345 kV transmission line project. The project was developed by Invenergy to be substantially completed by the purchasing utility. The transmission line is located in New Mexico and was subject to approval by the New Mexico Public Regulation Commission (NM-PRC), specifically, the New Mexico Regulation Part 592 for Location of Large Capacity Plants and Transmission Lines. Specific services provided in supported the application process included: working directly with Invenergy's attorneys and development team to review all application requirements, preparation of the written engineering report which detailed the recommended Right-of-Way width for the transmission line with supporting calculations and exhibit drawings, provided written testimony and participated as an expert witness in the public hearing, open to cross examination by the NM-PRC and the public. The application was approved by the NM-PRC and financial close completed.

• Invenergy, LLC • El Salvador 230/115 kV • Project Manager

Project Manager directing preparation of the RFP package for all components of the 230/115 kV El Salvador project. Project work included (1) one 230 kV substation, (1) one 115 kV substation, (1) one 115/230 kV switchyard, 0.4 miles of double circuit underground 115 kV, and 28 miles of double circuit 230 kV lattice towers. Responsible for preparing all contract exhibits, material specifications, design specifications, preliminary design drawings and construction specifications.

• McKenzie Electric Coop. • System Expansion • Program Manager

Oversee and coordinate aspects of 115 kV system expansion including ROW, Survey, Permitting and Detailed Transmission Design for over 33 projects totaling 150 circuit miles. Successful in building and leading teams to effectively collaborate and execute projects. Effective in identifying and resolving areas of weakness within project proceedings by implementing preventive measures for future projects. Established detailed quality control procedures to ensure compliance to client's standards, continuity between projects, and accurate design. Maintain project scheduling and open communication with client engineer, operations, construction, and general management. Ultimately provided complete construction/design packages for all 115 kV transmission lines, including the development of project specifications, plan and profile drawings, staking sheets, structure detail drawings, material lists, structure point load drawings, phasing diagrams, stringing sag charts, and ROW documentation. Projects include:

- Keene – North Fork, 3 miles
- Banks – Tobacco Gardens, 8 miles
- Twin Valley T.O., 3 miles
- Cherry Creek – J9, 7 miles
- Schafer – J9, 14 miles
- Sather Dam Double Circuit, 2 miles
- Table Butte – Burg, 8 miles
- Lonesome Creek Double Circuit, 30 miles
- Timber Creek - Horse Creek, 22 miles
- F9 – G9 POI – Timber Creek, 3 miles
- Kummer Ridge – Galaxy, 6 miles
- Kummer Ridge – Veeder Double Circuit, 5 miles
- Kummer Ridge – DAPL – POI, 3 miles
- Kummer Ridge – Coyote Charlie POI, 1 mile
- Elm Tree – G12, 8 miles
- L11 – Big Gulch, 8 miles
- Burg Switchyard Reconfiguration, 7 structures
- DAPL Watford City South, 3 miles
- Crestwood 8 Tie-in, 2 structures
- Little Missouri Tie-in, 5 miles

Invenergy, LLC • Miami Wind 345 kV • Project Engineer

Performed detailed design work for 23 miles of 345 kV transmission line developing routing, PLS CADD modeling, structure configuration, structure point load calculations, swing calculations, EMF calculations, flashover calculations, insulation calculations, structure detail drawings, stringing charts, plan and profile drawings, staking sheets, phasing diagram, foundation calculations. Prepared specifications for OPGW, insulators and hardware, steel poles, and construction operations. Worked closely with client, contractor, and material suppliers regarding schedules and critical project items. Successfully maintained document control as well as complete and accurate engineering record keeping.

Other greenfield projects with Electrical Consultants include:

- Invenergy LLC • Santa Rita East Transmission Line 345 kV, 15 miles • Project Manager
- NextEra Energy • Sholes Transmission Line 69 kV, 5 miles • Project Manager
- Invenergy, LLC • Wind Catcher 345 kV, 50 miles • Transmission Project Manager
- NextEra Energy • Titan Solar Transmission Line 120 kV, 2 spans • Project Engineer
- Invenergy, LLC • Vinton Solar Transmission Line 138 kV, 1 mile • Project Manager
- Invenergy, LLC • Camilla Solar Transmission Line 230 kV, 1 mile • Project Manager
- Invenergy, LLC • Canisteo Transmission Line 115 kV, 14 miles • Project Manager
- Invenergy, LLC • Freeborn Transmission Line 161 kV, 7 miles • Project Engineer
- Motor City Electric • Apple Blossom Wind, 120 kV, 7 miles • Project Manager
- Invenergy, LLC • Luning Solar Transmission Line 120 kV, 3 miles • Project Engineer
- Invenergy, LLC • Santa Rita Wind Transmission Line 345 kV, 25 miles • Project Engineer
- Invenergy, LLC • Beach Ridge Transmission Line 138 kV, 1 switch pole • Project Engineer
- Invenergy, LLC • Upstream Transmission Line 115 kV, 1 mile • Project Engineer
- Invenergy, LLC • Prineville Transmission Line 115 kV, 1 mile • Project Engineer
- Panda Liberty • Liberty Transmission Line 230 kV, 2 miles • Project Engineer
- Grand Electric Coop. • FEMA Storm Damage/Mitigation, Distribution System • Field Engineer
- PacifiCorp • Sigurd – Red Butte 345 kV, 172 miles • Design Engineer
- Invenergy, LLC • Miami Wind Transmission Line 345 kV, 20 miles • Design Engineer
- Umatilla Electric Coop. • Beach Access 115 kV, 3 miles • Design Engineer
- NextEra • Mountain View 34.5 kV, 10 miles • Design Engineer
- PacifiCorp • Mona – Oquirrh 345 kV/ 500 kV As-Built, 92 miles • Design Engineer

United States Forest Service • Engineer Technician ***April 2010 – November 2011***

- Surveyed roads, bridges and culverts to produce surfaces that aided in design and reconstruction
- Managed construction contracts and performed construction inspections
- Performed basic road design tasks
- Involved in analyzing slump activity data used to develop soil improvements and design for Ward Canyon Rd.
- Performed culvert design calculations which aided in replacing several culverts damaged from excessive run-off

References are available upon request.