



statement of qualifications for
Renewable Services



Gary Zahalka, PE | gary.zahalka@ulteig.com
Gary Ness, PLS | gary.ness@ulteig.com
www.ulteig.com | 888-858-3441



renewable energy

Ulteig delivers services and innovation to support emerging renewable and sustainable energy solutions. We have the expertise and capabilities to design wind and solar power systems. Our Land Services group provides the right-of-way and surveying services for all phases of a project.

Ulteig provides complete wind farm design services and PV solar power plant design, from the development stage to a complete design package. With our seasoned veterans, Ulteig delivers the full range of land services for your renewable energy project.



We have established ourselves as a leading provider of engineering, surveying, and right-of-way services in the wind power industry. We have recently designed a 34 MW PV solar system and have provided design services for more than 4 GW of wind power projects in 10 states and Canada.

Our right-of-way and survey teams have worked side by side with our engineering team to make sure that the land rights and survey needs are met.



Studies

- Arc flash studies
- Cable ampacity studies
- Grounded system studies
- Harmonic and transient studies
- Insulation coordination studies
- Fault current studies
- Power flow studies
- System loss studies
- Transportation studies

Design Services

- Access road design
- Collection systems design
- Foundation and structure design
- Operation and maintenance facility design
- Overhead collection system design
- PV and solar thermal systems design
- Substation design
- Transmission line design
- Underground collection system design
- WTG foundation design
- Structural analysis
- SCADA system
- Preparing specifications for all equipment
- Preparing plans for the wind turbine grounding and conduit system
- Medium-voltage conduit and cable system
- Low-voltage conduit and cable system
- Siting and permitting support, including photo renderings

Land Surveying

- ALTA/ACSM Land Title surveys
- Cadastral surveying
- Construction layout
- Control surveys
- Easement surveys
- GPS surveying
- High-definition scanning
- Roadway system surveys
- Land descriptions
- GIS mapping
- Power line surveys

Right-of-Way

- Damage settlement
- Document preparation
- Easement negotiations
- GIS database management
- GIS parcel tracking
- Negotiations of leases
- Permitting
- Project management
- Public presentations
- Title research
- Site acquisition
- Site research and qualification





Ulteig helps a wide range of clients — from global energy producers to electric cooperatives — connect energy sources to end users. Some examples include:

- Acciona Wind Energy USA
- American Transmission Company
- AT&T
- Avant Energy
- Basin Electric Power Cooperative
- Blattner
- BP Alternative Energy NA
- Brookfield Renewable Power
- Cellnet
- Central Iowa Power Cooperative
- Custer Public Power District
- Dairyland Power Cooperative
- Delaney Group
- enXco
- Gamesa Energy
- Geronimo Wind Energy
- Great River Energy
- Great Southwestern Construction
- Green Mountain Power
- Henkels & McCoy
- Hooper Corporation
- Iberdrola Renewables
- ITC Midwest
- JF Edwards
- Just Wind
- Kanab Pipeline Company
- The K-Line Group of Companies
- Lincoln Renewable Energy
- L & L Substations
- M.A. Mortenson Company
- Magellan Pipeline
- Mesabi Nugget
- Midwest ISO
- Minnesota Power
- Minnesota Transmission Owners
- Minnkota Power Cooperative
- Missouri River Energy Services
- M.J. Electric
- Montana-Dakota Utilities Co.
- MP Nexlevel
- National Wind
- NECO Wind Energy
- NextEra Energy Resources
- Parsons Electric
- PSC Alliance
- RES Americas
- Rochester Public Utilities
- Rosendin Electric
- T-Mobile Central
- Vermont Electric Power Company
- We Energies
- Western Area Power Administration
- Xcel Energy Services



**Penascal II Wind Farm
Iberdrola Renewables, Inc.
Near Sarita, TX**

This expansion of the existing Penascal Wind Farm added 202 MW of generation capability made up of 84 2.4 MW Mitsubishi wind turbines connected by nearly 80 miles of underground collection circuit. Ulteig provided engineering services for the layout and design of the underground collection system, the addition of two feeders for the existing power transformers to fully utilize their capacity, and layout and design for the addition of a 100 MVA, 345 kV to 34.5 kV power transformer into the existing collector substation.

Ulteig's tasks for the substation portion of the project were the layout and design of the plan and profile of the substation; design of all relay, control, and SCADA equipment; development of specifications to purchase the breakers, steel, foundations, circuit breakers, and miscellaneous material; development of an O&M manual; and development of programs and settings for the protection and communication of the substation back to the connecting utility.

The tasks for the collection system portion of the project were to design the 34.5 kV underground collection system; prepare specifications for the low- and medium-voltage cable, grounding transformers, sectionalizing cabinets, dead break elbows, cable terminations, and trenching; perform a grounding step and touch potential study, a power factor study, a cable loss study, a cable ampacity study, and a load flow and system loss study; and assist in the procurement of the low- and medium-voltage cable, step-up transformers, sectionalizing cabinets, and other necessary equipment.

A harmonic analysis was completed to provide recommendations for mitigation of harmonic issues. A plan for mitigation of harmonic issues was provided, using all possible configurations of the existing equipment under the conditions of both normal operation and maintenance operation.



**Blue Creek
Iberdrola Renewables, Inc.
Convoy, OH**

Ulteig designed the underground collector system, collector substation, 115 kV transmission line, and interconnection substation for the 350 MW wind farm. Ulteig completed all the studies for the project that consisted of power factor, relay coordination and setting, insulation coordination, voltage flicker, and fault current.

The wind farm, collector substation, and interconnection substation project was made up of 175 2.0 MW Gamesa wind turbines. The collection substation has three 75 MVA, 115 kV to 34.5 kV power transformers with three feeders per transformer and the interconnection substation has three 210 MVA, 345 kV to 115 kV autotransformers.

Tasks for the collection portion of the project were to design the 34.5 kV underground collection system; prepare specifications for the medium-voltage cable, sectionalizing cabinets, dead-break elbows, cable terminations, grounding transformers, and trenching; complete a power factor study, a cable loss study, a cable ampacity study, a load flow, and system loss study; and assist in the procurement of the medium-voltage turbine switchgear.



**Laurel Wind Farm
JF Edwards Construction Company
Laurel, IA**

Ulteig designed an underground collection system for the 119.6 MW wind farm project made up of 52 2.3 MW Siemens wind turbines. Tasks for the collection portion of the project were to design the 34.5 kV underground collection system; prepare specifications for the low- and medium-voltage cable, step-up transformers, sectionalizing cabinets, dead-break elbows, grounding transformers, cable terminations, and trenching; perform a grounding step and touch potential study, a fault current study, a cable ampacity study, and a system loss study; and assist in the procurement of the low- and medium-voltage cable, step-up transformers, sectionalizing cabinets, and other necessary equipment. Ulteig is also completing a power factor study. A harmonic analysis was completed to determine the harmonic resonance conditions in and around the wind farm. A complete overview of the harmonic resonance conditions was determined, using all possible configurations of the existing equipment under the conditions of both normal operation and maintenance operation.

An arc flash hazard analysis was performed to calculate the arc flash incident energy and arc flash hazard boundary at various points of the collection system. The system is studied under different scenarios to ensure the worst case incident energy is calculated at each piece of equipment to ensure safety of maintenance personnel. The arc flash study provides recommendations, based on NFPA 70E-2009 for Personal Protective Equipment (PPE) for work on energized work at each piece of equipment.

Fowler Ridge II
M.A. Mortenson Company
Near Benton County, IN

Ulteig designed a collector substation for a wind farm project made up of 133 1.5 MW General Electric (GE) wind turbines. The substation has a 125 MVA, 345 kV to 34.5 kV power transformer with eight feeders and an O&M building.



Tasks for the collection portion of the project were to design the 34.5 kV underground collection system; prepare specifications for the low- and medium-voltage cable, step-up transformers, sectionalizing cabinets, dead break elbows, cable terminations, and trenching; perform a grounding step and touch potential study, a power factor study, a cable loss study, and a cable ampacity study, and a load flow and system loss study; and assist in the procurement of the low- and medium-voltage cable, step-up transformers, sectionalizing cabinets, and other necessary equipment.

Tasks for the substation portion of the project were the layout and design of the plan and profile of the substation; design of all relay, control, and SCADA equipment; development of specifications to purchase the breakers, steel, foundations, circuit breakers, and miscellaneous material; and development of programs and settings for the protection and communication of the substation back to the connecting utility.

Lakefield Wind Farm
M.A. Mortenson Company
Lakefield, MN

Ulteig designed an underground collection system for a 205.5 MW wind farm project made up of 137 1.5 MW General Electric (GE) wind turbines. Tasks for the collection portion of the project were to design the 34.5 kV underground collection system; prepare specifications for the low- and medium-voltage cable, step-up transformers, sectionalizing cabinets, dead-break elbows, cable terminations, and trenching; perform a grounding step and touch potential study, a fault current study, a cable ampacity study, and a system loss study; and assist in the procurement of the low- and medium-voltage cable, step-up transformers, sectionalizing cabinets, and other necessary equipment.

An arc flash study was performed to calculate the arc flash incident energy at various points of the collection system and to provide recommendations for Personal Protective Equipment (PPE). The system is studied under different scenarios to ensure the worst possible set of results is captured at each location.



Shady Oaks Wind Farm
Aldridge Electric, Inc.
Compton, IL

Ulteig designed the 34.5 kV underground collection system for the Shady Oaks Wind Farm. Ulteig also completed studies for the project that included arc flash, power factor, transient overvoltage, harmonic, fault current, insulation coordination, effectively grounded, ground grid, cable ampacity, and energy loss studies.

The project included 68 1.5 MW Goldwind G82/1500 and 3 2.5 MW Goldwind G100/2500 wind turbines for a total of 109.5 MW and 71 wind turbines. Ulteig designed a cost-effective layout for the 34.5 kV underground cable and prepared material specifications for the medium- and low-voltage cable, sectionalizing cabinets, dead-break elbows, cable lug terminations, and trenching. Ulteig coordinated with the substation engineer and contractor for a seamless integration into the collector substation.



Glacier Hills Wind Park
We Energies
Columbia County, WI

Ulteig completed studies for a 162 MW wind farm to assist in the design phase of the project. Studies completed to assist in sizing reactive compensation equipment included a power factor study to determine the capability of the wind farm to meet the requirements of the interconnection agreement and system impact study, a voltage flicker study to determine whether the wind turbines or equipment switching will cause flicker in excess of current standard or transmission owner limits, and a transient capacitor bank study to ensure the transient system response is within the specifications of the switching equipment manufacturer.

Studies completed to verify the safety and compliance with standards of the wind farm design included a substation grounding study, an IEEE effectively grounded system study, a short circuit fault study, an insulation coordination study, and a wind turbine generator ground grid study. Additionally, a harmonic analysis was completed to determine various system resonance points and potential harmonic issues within the collection system and at the point of interconnection (POI) and to provide recommendations based on the results.

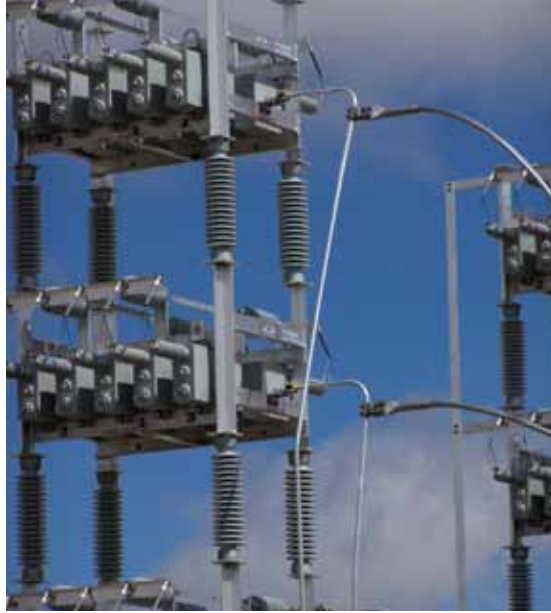
Studies completed to assist in selecting and sizing equipment included the cable ampacity study; the annual energy loss study; and the transient transformer energization study, which ensures current, voltages, and frequency requirements are met for energizing the substation transformer.



Cedar Point Wind Farm
Great Southwestern Construction
Limon, CO

Ulteig designed two substations and a 230 kV capacitor switching substation for a 250 MW wind farm. Each of the two 34.5 kV to 230 kV collector substations were outdoor open air-design substations with six feeder breakers and additional breakers for reactive compensation equipment.

Tasks included design of the two collector substations and capacitor switching substation; preparation of specifications and materials lists; developing relay settings for the substation protective relays; and developing a network communications diagram for all relays, the substation SCADA system, and the physical interface to the wind farm SCADA and HMI systems.



Studies were completed to verify that the planned reactive compensation equipment met the requirements of the interconnecting utility. The reactive compensation equipment included 34.5 kV capacitors at each collector substation, 34.5 kV reactors at each collector substation, a 230 kV capacitor at the capacitor switching substation, and a DSTATCOM at one of the collector substations. Engineering support was provided to coordinate all reactive compensation equipment through a comprehensive control scheme.

Barton Chapel Wind Farm
Iberdrola Renewables
Jack County, TX

A reactive power analysis was completed on the 120 MW wind farm consisting of 60 Gamesa wind turbine generators. The analysis utilized the dynamic reactive power capabilities of the wind turbine generators and the static substation reactive compensation equipment to determine the reactive power capabilities of the wind farm at the POI under various wind farm power output levels and system voltages. Recommendations for additional reactive power equipment were provided based on the power factor requirements of the interconnecting utility.



Bison Wind I — Phase I New Salem, ND

Ulteig has and continues to provide construction surveying services for the first phase of Minnesota Power's Bison Wind I project. The project will be comprised of 33 2.3 MW turbines, with the annual output of approximately 300,000 MW-hours of energy, enough to power about 33,000 homes annually. The estimated \$180 million project will be constructed in two phases. The first phase consists of erecting sixteen 2.3 MW turbines on 12 square miles of farmland near New Salem. Our services include providing layout stakes for access roads throughout the site, layout stakes for the turbine tower foundations and provide construction observation services for the construction of the foundations for a substation, met tower, and wind tower generators.

Bison Wind I — Phase II New Salem, ND

Ulteig is under contract to provide construction surveying services for the second phase of Minnesota Power's Bison Wind I project. This second phase consists of erecting the remaining 17 2.3 MW turbines. Our services will include providing layout stakes for access roads, underground collection systems, and turbine tower foundations.

Buffalo Ridge II Wind Farm Toronto, SD

This project included performing a title search on 44,560 acres, generating a landowner database and contact list, and a CADD/GIS drawing/section breakdown of the acquisition area. Leases were obtained for placement of wind turbines, access roads, transformers, splice cabinets, underground collection lines, substation, and an on-site O&M facility. Lease acquisition of 137 parcels of land — totaling approximately 36,340 acres — was completed in 14 weeks. The land acquired consisted of farmland and ranch land.

Logan County Wind Farm Logan County, ND

Airspace Analysis — Ulteig provided analysis and airspace submissions for a proposed 160 turbine wind farm. The farm is located within the vicinity of the Napoleon Airport and required in-depth analysis to make sure towers were planned outside of the terminal area airspace. Ulteig also provided all of the 7460-1 and 7460-2 submissions to the FAA.

ALTA Surveys — Ulteig was involved in the cadastral and control surveys for 62 sections of land in Starkey, Glendale, and Bryant Townships in North Dakota for the purposes of identifying property boundaries, resulting in ALTA/ACSM surveys of various sites for wind turbines. The project entailed the search, recovery, perpetuation, and certification of more than 300 PLS corners as part of the process to complete the boundary surveys. In addition to the cadastral and boundary work, we also provided vertical and horizontal work for aerial control networks to allow topographic of the project area. Crews were mobilized to the site to accomplish this task in a four-month time frame. Teamed with the latest technology in GPS measuring equipment, and our state-of-the-art software applications, Ulteig performed the work and met the client's expectations for service and delivery of the project. Ulteig collaborated with the owner as part of a project team, including legal consultants and an aerial photography consultant to provide service for the project.



capabilities

Solid History

Ulteig was founded with the vision of bringing electricity to the rural Midwest. Throughout the years, we have expanded to meet the needs of our clients throughout the country. As Ulteig has grown, our capacity to handle larger projects and tighter deadlines, provide additional project help, and offer more areas of expertise has increased. These improvements offer our clients a higher level of service than we have been able to provide in the past. Although we have grown in size, Ulteig continues to maintain a small-company feel, providing such advantages as a single point-of-contact for clients, personal responsibility emphasized on all projects, and flexibility to conform to clients' methods/standards.

We are customer service focused with each client's specific needs, goals, and objectives in mind. The energy industry has evolved and so have the needs of our clients. Ulteig has adapted to these changing needs, allowing us to provide better service.

Relationships for the Future

While we help build communities, the most important thing we build is relationships. Because we have invested in our clients, Ulteig's Energy Services sector has established itself as a leading provider of engineering services worldwide. Our staff helps power energy sources that will be utilized for generations to come. We have electrical, civil, and structural engineers with decades of experience in transmission and distribution, substation, renewable energy, planning and studies, and communications.

Custom Solutions

Ulteig's backbone and livelihood is built on customer service and providing innovative, custom solutions — rather than just a standard product — to our clients. It is not simply enough to satisfy a client; we must continually strive to exceed expectations by doing what we say we are going to do, being responsive, resolving issues, being helpful and knowledgeable, listening, providing training, and adding additional value to the bottom line. As a multidisciplinary firm, we bring diversified experience to the client-consultant relationship. Ulteig makes every effort to provide clients with what they want, not what we think they want.

Continuous Communication

We make considerable efforts up front to make sure that each project starts off right and stays on track. Ulteig is conscious of the fact that any rework, whether it is during the design process or during construction, can be costly to the project's budget and/or schedule. The key to meeting these objectives is communication.

However complex your challenges, we share information with you to help you make informed, cost-effective decisions and move forward to provide a successful project. Ulteig provides a clear perspective on the issues that matter to you — both today and tomorrow. This, in turn, helps you stay current on emerging issues impacting your project. We help you set realistic timelines, achieve stakeholder buy-in, and establish priority goals — saving you valuable time and resources.

Ulteig will help drive the power of energy for generations to come. We work with a wide variety of clients. Our electrical, civil, and structural engineers have decades of experience in the energy industry. We are recognized leaders, providing services and expertise on energy projects worldwide.



Transmission & Distribution

Ulteig has surveyed and engineered more than 18,000 miles of AC and DC transmission lines for public and private clients. From 34.5 kV subtransmission line to 500 kV EHV line, we have the experience to handle all aspects of the process, from routing and permitting to survey, right-of-way acquisition, detailed design, and construction management.

Ulteig has completed thousands of miles of medium-voltage distribution lines for a diverse range of clients throughout the region. Planning is an important part of our distribution system engineering services. Load growth predicated on historical data and weighted by localized commercial, industrial, and population growths is analyzed to provide a master plan approach to orderly system development.



Substation

Ulteig has engineered and designed more than 1,000 high-voltage substations, switchstations, and interconnect stations — from 34.5 kV to 500 kV — for public and private clients. We have the capability of providing all detailed design within a substation, including electrical design, detailed structural steel design, and civil grading plans. We provide design development of the operation, protection, and communication components for many types of utility, generation, and industrial facilities.

This includes the AC and DC control schematics for facility control and operations, the protection and reporting of how the facility is operating, and the communications network that carries the information.

Planning & Communications

Ulteig has the expertise and capabilities to perform all types of transmission, distribution, and generation system planning and related economic studies. We help our utility clients weigh the myriad of alternatives in the current energy market climate to make informed decisions. Ulteig works on an expanding variety of communications projects, including cellular, microwave, two-way radio, and fiber. Our expertise guides the latest technology to research and determine all site design data required for any project.

Our staff understands the challenges of the current market and knows how to deliver electricity, fossil fuel, and renewable energy resources as well as communications. Our full-service practice offers comprehensive planning, routing and permitting, engineering, surveying, and right-of-way acquisition services.

Land Surveying

Our survey team has more than 65 years of surveying experience and includes a group of seasoned surveyors with strong backgrounds and unbeatable dedication to their clients. We have a combination of capacity and experience to deliver a wide range of surveying services for your projects. Ulteig's highly trained survey teams use industry-leading hardware and software to gather and lay out field information for all types of land surveys and construction staking projects.

- Utilities
 - Property research
 - Control surveys
 - Cadastral surveys
 - Corridor (design) surveys
 - Route surveys
 - Construction staking
 - Easement surveys
 - Record surveys
- Construction
- Civil
- Property development

Surface Transportation & Infrastructure

Ulteig's role in developing transportation systems is far more than engineering streets, highways, and bridges. Our planning, design, and construction phase services must produce responsible solutions for connecting people to one another and their workplaces, connecting resources and goods to consumers, and connecting entire economies to one another.

- Planning
- Design
- Construction
- Specialized knowledge
 - Environmental studies and documentation
 - GIS integration
 - Land surveying
 - Traffic operations and analysis

Right-of-Way Acquisition

Ulteig's experienced right-of-way staff has acquired leases and easements on more than a quarter million acres of land throughout the Midwest and Southwest for wind and solar farms. All these projects have included the development of landowner databases and associated CADD/GIS aerial mapping. Our right-of-way experts have negotiated land purchases along with transmission line corridors within these footprints.

Combined with Ulteig's full range of resources, we provide acquisition services and coordination within the project route. We understand the special needs of wind and solar farm projects and are experienced in providing a wide variety of services.

Our right-of-way experts negotiate land purchases, leases, options, and easements to best meet our clients' project objectives and criteria. Our team also handles document preparation, permitting, land title searches, and public presentations.

- Permitting/routing
- Title research
- Acquisition

Geographic Information Systems (GIS)

Ulteig's GIS practice helps both our clients and our own professionals attain a wide range of goals, gaining a comprehensive understanding of their informational needs and opportunities. Ulteig provides GIS and IT services to federal and state agencies, municipalities, airports, energy, and other utilities and various organizations. We help our clients draw knowledge from data about their business processes — ultimately creating implementation plans, spatial GIS data, and applications.

- Planning
- Enterprise database design and development
- Applications
- Utility infrastructure inventory and management
- Data and system integration
- Aerial photography
- Spatial analysis



about ulteig

From urban infrastructure to building systems, airports, and highways to energy, land, and water, we help people build and sustain the systems that support vital communities.

Since our founding in 1944, Ulteig has grown to include hundreds of professionals who represent a wide range of disciplines. We are an employee-owned company that delivers comprehensive engineering, planning, and surveying services.

Building Services

Our Building Services sector consists of professionals representing a wide range of disciplines, working together to serve our clients with integrated building and site design solutions. We provide a diverse list of capabilities, only available from a full-service firm, to government, healthcare, education, corporate/industrial, and community/commercial development clients.

Energy Services

Our Energy Services sector works with clients ranging from global energy producers to local power cooperatives. We connect energy sources and power generation to end users. We are recognized leaders in this industry, providing services and expertise on projects worldwide.

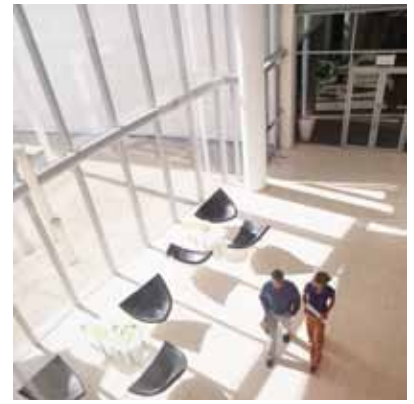
Land Services

Ulteig's Land Services sector combines the practices of land surveying with GIS and right-of-way acquisition services to deliver comprehensive capabilities. Ulteig is recognized for mobilizing projects of all types in all locations — from local lot surveys to electric transmission and pipeline corridors across the country.

Civil Services

Our Civil Services sector consists of core practices in surface transportation, aviation, water/wastewater, water resources, and municipal engineering. Engineers and technicians in these practices offer specialized engineering, environmental, and planning services to government agencies at all levels.

What truly distinguishes Ulteig is our ability to leverage resources from across all of our sectors. For example, we use the 3D laser scanning capabilities of our Land Services sector to create a 3D Revit model during a structural analysis project. We access the FAA expertise of the aviation staff in our Civil Services sector to guide a site master plan near a busy regional airport. We collaborate with the renewable power generation and electrical distribution experts of our Energy Services sector to help a building owner determine the best design for on-site wind and solar generation. Our ability to utilize the knowledge and experience of a wide variety of industry experts — within Ulteig — is unparalleled.



the ulteig advantage

A Solid History

Founded in 1944, Uteig has grown to a staff of more than 320 professionals, representing a full range of disciplines. You will have committed professionals and an array of resources available to see all your projects through to completion.

Locations

Uteig offers a wide range of services and expertise to give you easy and instant access to a wealth of knowledge, skill, and talent. Because we are a multidiscipline, full-service firm, we offer an array of services that few companies can match. Our company has grown to include offices in the following locations:

- Bismarck, ND
- Cedar Rapids, IA
- Denver, CO
- Detroit Lakes, MN
- Fargo, ND
- Minneapolis, MN
- Sioux Falls, SD
- Williston, ND

The Uteig Difference

Uteig is an employee-owned company (ESOP). As owners, we take pride in our work because we each have a personal stake in our company's success. Our commitment to continuous learning keeps our services relevant in an ever-changing world and provides the advantage you need to thrive in today's competitive marketplace.

Our Mission & Values

Our mission is to be the place where people want to work and be the company that people want to hire; our mission defines our purpose as a business. As an organization, we are grounded in our core values because they define us as individuals and as a company. Our values include integrity, transparency, adaptability, sustainability, excellence, and people-driven; they offer specific characteristics we aim to embody and symbolize the level of professionalism we strive to attain.

Industry Leader

With an expansive list of capabilities that includes engineering, planning, energy, transportation, water/wastewater, municipal, surveying, right-of-way, and building services, our experts stay at the top of the industry. Recognized as a leader for many years, Uteig will put your ideas into action.

Forward-thinking, searching for answers, and providing options are challenges that inspire our professionals to go beyond boundaries and explore all possibilities. We will help you address the issues of today and anticipate those of tomorrow, so you can be confident that your project will succeed.

We are ranked among the Top 500 Engineering Design Firms in the nation by Engineering News Record and among the top 10 firms in electrical transmission and distribution services.