


**APPENDIX A - SUBMISSION COVER SHEET
CITY OF DULUTH
RFQ 23-99655
RFQ for Site Assessment & Evaluation for Solar PV & Storage**

Bidder Information:	
Submitter Name	LHB, Inc.
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Contact Person	Alan Vorderbruggen
Contact Person's Phone Number	218.249.7115
Contact Person's E-Mail Address	alan.vorderbruggen@LHBcorp.com
Federal ID Number	410904334
Authorized Signature	
Name & Title of Authorized Signer	Alan Vorderbruggen, Engineering Principal - Civil & Structural
Email of Authorized Signer	alan.vorderbruggen@LHBcorp.com

Addendum 1, Posted October 3, 2023 

Addendum 2, Posted October 10, 2023 

Addendum 3, Posted October 20, 2023 



SITE ASSESSMENT & EVALUATION FOR SOLAR PV & STORAGE

RFP 23-99655

CITY OF DULUTH

November 13, 2023





November 13, 2023

RE: SITE ASSESSMENT & EVALUATION FOR SOLAR PV & STORAGE

City of Duluth
Attn: Purchasing Division
City Hall, Room 120
411 West 1st Street
Duluth, MN 55802

We are excited about the efforts the City of Duluth has done and is making to create resiliency for its residents! Given our northern climate, many still are skeptical about the ability to utilize solar power. Like you, we believe there is much untapped potential for solar power in Duluth. As a long champion of renewable energy, LHB shares the City's enthusiasm to make the Solar PV Storage project a success. This effort by the City will both prove the cost effectiveness and ability to utilize solar energy while creating resiliency in the power infrastructure of the City to prepare for future climate challenges.

LHB has the personnel with the qualifications necessary to complete the work in the contract program listed in the proposal. Along with our local, technical expertise, LHB has brought together a team of progressive pragmatic champions of solar power and battery storage: Monte Hilleman of Sustainable Investment Group (SIG) who was formerly St. Paul Port Authority's Vice President of Sustainability where he specialized in development and funding; Electrical Consultants Incorporated (ECI) who lead battery storage solutions; Great Plains Institute (GPI) who recently worked with the City of Duluth and Ecolibrium 3 to create the Duluth Shines! Solar Map and specializes in community solar solutions; Earth Science Associates (ESA), one of the leading wetland and environmental consultants in the region; and Braun Intertec, a long-standing partner of LHB and the City for geotechnical assessments and engineering. Our long-time relationships working together on community resiliency projects ensures a streamlined team who can address the many facets of the project. We bring the following advantages to your project and have also provided a link to additional information about our team members:

Strong Local Technical Expertise

Headquartered in Duluth, LHB has all the staff needed to determine design feasibility for solar PV and storage capacity. We are knowledgeable of the local terrain and have inspected and designed numerous structures throughout the City. LHB, Braun, and ESA's local staff have licensed environmental engineers and certified wetland delineators to address the subsurface and wetland conditions that are found throughout the City. LHB's structural engineers regularly provide structural load analysis for most of the parking structures in Duluth. In addition, Alan and Jennifer specialize in structural design for energy providers so they are familiar with the special conditions needed to support solar capability. LHB brings you the Minnesota-licensed electrical, structural, and civil staff and supplemental expertise in battery storage by ECI dependent on the project's direction and scope.

<https://eciusa.com/services/#EnergyStorage&CollectionEngineering>

Numerous Solar Developments

LHB began its practice of sustainable design 30 years ago. Within our firm, we had many challenging conversations but decided this was the right path for us and our clients. Not just content to feel we were doing the right thing; we strove to show our clients the value of sustainable design in lowering long term operating costs and creating self-sufficiency. We had the first LEED Certified project in Duluth with the renovation of the Whole Foods Co-Op Hillside building that had one of the City's earliest free-standing PV systems. Since then, we have assessed and designed solar installations for several public and private entities including Minnesota Power, Enbridge Energy, Minnesota Department of Natural Resources, University of Minnesota, Hennepin County, Minnesota Department of Transportation, St. Paul Port Authority, Minnesota Air National Guard, US Fish & Wildlife, Alliance Housing, and United Properties.

RE: SITE ASSESSMENT & EVALUATION FOR SOLAR PV & STORAGE, CONT.

Funding Know How

Monte Hilleman of SIG developed multiple sustainable solar powered projects with LHB while he was at the St. Paul Port Authority. Prior to SIG, Monte secured over \$70M of grants and loans for development projects during his 20 years working for local government. Monte brings a wealth of information regarding funding procurement and compliance/reporting.

<https://sigearth.com/climate-investment-solutions/>

LHB's commitment to sustainable design led us to create LHB's Climate Solutions Studio, led by Maureen Colburn who can assist Adam Besse with community engagement, and grant management reporting along with Monte Hilleman of SIG and Brian Ross at GPI.

<https://lhbcorp.com/market/climate-solutions-renewable-energy/>

Community Relationship Builder

The majority of this team live and work in Duluth. LHB has successfully collaborated with multiple stakeholder groups and has strong community ties with organizations, businesses, neighborhoods, and other governing authorities. Through our years working with the City of Duluth, you know our commitment to making City projects a success. LHB's staff are engaged in community boards and volunteer efforts. Along with SIG and GPI who have national expertise working with municipalities on community initiatives such as city-wide solar resource assessments and creating best practices for streamlining solar land uses, the City can be assured of a committed partner with our team.

<https://betterenergy.org/services/>

Experienced Leadership

This project is unlike a traditional design/bid/build project. To keep the team on task and coordinated, Bob Lisi will be the day-to-day contact for the City. Having managed complex projects at LHB and while embedded at Enbridge, Bob has the people skills to collaborate with multiple stakeholders while also conveying the technical needs to the project team. As Project Principal, Alan Vorderbruggen will ensure resources are available to make the project successful. With his prior experience working at Minnesota Power, Alan ensures quality assurance from both an owner and a designer's perspective.

We are excited to help the City of Duluth with your continuing efforts to make our City more resilient! We are ready to assist you and look forward to hearing when we can start.

LHB, Inc.



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Bob Lisi, PE
Project Manager
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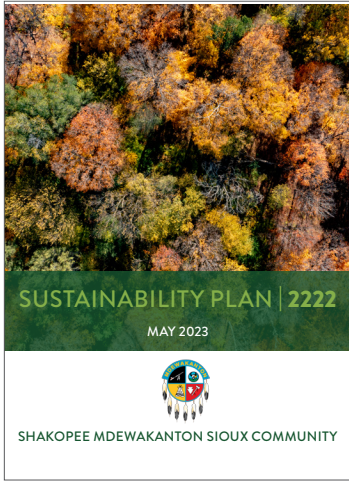
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SAM.gov Unique Entity ID# L6WWM671HB45

2. EXPERIENCE:



SUSTAINABILITY PLAN | 2022 **Shakopee Mdwakanton Sioux Community (SMSC)**

As part of its commitment to environmental stewardship, LHB and Local Climate Solutions worked with the Shakopee Mdwakanton Sioux Community (SMSC) to develop a comprehensive Sustainability Plan that aims to achieve carbon neutrality by 2035 and considers what it means

to be sustainable, meeting the needs of the Community seven generations into the future.

The Plan is grounded in traditional Dakota knowledge and values and informed by innovative practices and technologies. The development of this Plan is an important step in providing a framework to realize the SMSC mission and work toward ensuring long-term sustainability. To map a feasible pathway to net-zero emissions by 2035, LHB estimated the impacts of strategies such as energy efficiency, local renewables, vehicle travel reduction, electrification of buildings and vehicles, and carbon sequestration through land management. Engaging with SMSC staff and Community Members, LHB combined these strategies into a scenario for the future that also considers potential impacts on equity, health, resilience, and quality of life.

The Plan was recently completed and includes a solar feasibility assessment as one of the strategies, and has a target of installing at least 16.1MW of renewable energy within the SMSC by 2035. LHB is currently helping SMSC pursue their EPA Climate Pollution Reduction Grant for additional planning work, which will help set the stage for them to pursue implementation grants for future projects including installing solar.



L5 STRAITS ANCHOR MONITORING **Enbridge | Mackinaw, MI**

This operations center provides 24/7 monitoring of maritime activity crossing

over dual pipelines in the Straits of Mackinac. LHB provided design services for the high definition camera monitoring system installed at multiple locations surrounding the Straits. Each camera location required tailored site and utility infrastructure, such as mounting configurations (rooftop, water towers, free-standing towers), power supplies (renewables, generators, local grid), and visual masking to align with the environment. The Plan was recently completed and includes a solar feasibility assessment as one of the strategies, and has a target of installing at least 16.1MW of renewable energy within the SMSC by 2035. LHB is currently helping SMSC pursue their EPA Climate Pollution Reduction Grant for additional planning work, which will help set the stage for them to pursue implementation grants for future projects including installing solar.



SOLAR STUDY **MnDOT | Cambridge, Caledonia, Garrison, McGregor, Isle, and Perham, MN**

MnDOT selected LHB to study how to off-set the energy consumption of its truck stations with renewable energy produced on-site. The objective of the study determined the on-site solar energy production potential and

associated design and cost implications for a standard truck station. Over the study period, LHB analyzed the operational energy use of six existing truck stations, evaluated sources and uses of on-site renewable energy production, documented utility interconnection rules for several service territories, and created a pricing narrative with associated cost estimates for recommended options.

Recommendations provided the most feasible path to achieve the goal of operating with 100% renewable energy. Future design recommendations included ground-mounted solar photovoltaic (PV) arrays at each site for electric energy production. Where utility rules would permit, installing a 120 kW array would produce enough electricity annually to off-set typical site usage. To take advantage of the energy production potential, the standard truck station design and specifications for mechanical systems were recommended to be modified to electric heating and hot water systems. Optionally, each site could also add an electric vehicle charging station for employee use. The study concluded that MnDOT can design and build future truck stations to be net zero energy for approximately less than \$500,000 in additional first cost over a standard design by combining on-site renewable energy production and fuel switching strategies.



XCEL RDF GRANT SUPPORT **MnDNR | Lac qui Parle, MN**

The MnDNR hired LHB for a three-year long project to develop an assessment process and an analytical tool for the DNR to assess existing and future sites for the installation of photovoltaic (PV) systems. The analytical tool also determines whether photovoltaic installations should be free standing, or building-mounted. LHB worked with Xcel/NSP, the electricity provider, to create interconnection agreements and coordinate installation. LHB also provided design, construction documents, and construction administration for the solar array collection systems at six DNR sites which included state parks, and regional, and area offices. Working with the DNR and Xcel/NSP, LHB also participated in the DNR's remote monitoring and data collection effort. Additional site evaluation and design services were ongoing until a total of 100 kW solar photovoltaic installations were completed.

2. EXPERIENCE CONT.:



GREEN BUILDING POLICY AND CLIMATE ACTION PLAN City of St. Louis Park | St. Louis Park, MN

The City of St. Louis Park initially hired LHB to assist in implementation of their Green Building Policy, adopted in February 2010. For over 12 years, LHB has supported the City's sustainable development goals by creating tools for tracking policy compliance, leading meetings with project development/design teams to review policy requirements, and providing technical expertise on green building topics.

In May 2016, the City of St. Louis Park approved its climate inheritance resolution, formally marking the City's commitment to tackling climate change. St. Louis Park established a bold but achievable goal of becoming carbon neutral by 2040. Reaching this goal will require aggressive action on the part of the City, its residents, and its businesses. Knowing this, the City commissioned the Great Plains Institute, along with Orange Environmental and LHB, to assist in creating a climate action plan.

With several years of plan implementation now under their belt, the City hired LHB in 2021 to analyze progress toward their greenhouse gas emissions goals since the baseline year of 2015. We found that while the community's natural gas use remains very weather-dependent, emissions reductions have been achieved through electricity efficiency in local buildings, cleaner electricity from Xcel Energy, and lifestyle changes made during the pandemic. This analysis is now informing near-term community action, with similar "check-ins" planned in future years to ensure the city stays on track to meet its goals.



MAPLEWOOD MALL PARK AND RIDE PV Metro Transit | Maplewood, MN

LHB has worked with Metro Transit for projects across their entire portfolio, from small single

system upgrades to 100 million dollar bus maintenance and office facilities. With these relationship, Metro Transit worked with LHB to design a 40 kW photovoltaic (PV) array for a park and ride site in Maplewood, Minnesota. The original intent and scope of work by the Owner was to have an integrated PV system with the facade of the building, but based on full team design review it was not a feasible approach due to the planned structural design approach.

The design team then looked at a number of mounting options, including ground mounting, structural column post top mounts, or ballasted "roof" top installation. With information in hand, the Owner chose an under-utilized area of the top section of the parking facility to install ballasted low slope PV racking. This location allowed controlled access and maintainability with good solar access and was the best solution for this project.:



SUSTAINABILITY PLAN AND SOLAR FEASIBILITY ANALYSIS Southwest Transit | Eden Prairie, Chaska, and Chanhassen, MN

LHB assisted SouthWest Transit in creating a Sustainability Action Plan with a short-term work plan and long-term targets for reducing the greenhouse gas emissions of its operations. We supported the agency's energy efficiency goals by identifying available programs to increase the operational energy savings of their facilities. Our professionals reviewed existing climate action goals and policies in place for the communities of Eden Prairie, Chaska, and Chanhassen, and produced a summary of findings. LHB developed a list of proposed emissions reduction strategies to align with SouthWest Transit's goals and developed a final Sustainability Action Plan for implementation by the agency.

As part of the Sustainability Action Plan's short-term work plan, our team analyzed existing conditions including a carbon baseline assessment and a solar feasibility analysis for the agency's bus garage and parking ramps.

The Solar Feasibility Analysis considered the structural feasibility of adding rooftop solar to existing structures within the transit system. Four existing concrete parking structures and one existing building were reviewed for the potential addition of rooftop solar (PV). Existing building drawings, provided by SouthWest Transit, were used to determine structural systems and design loads, which were compared to current code loads.

LHB conducted a review of possible PV technologies and installation methods to determine the feasibility of adding rooftop solar to the existing structures. Existing building drawings, provided by SouthWest Transit, were used to determine possible installation arrangements at both a "maximum" size that maximizes rooftop coverage and a "partial" size required to generate 120% of the electricity used in the facilities, which is the cap for a net metered system in Minnesota.

The analysis determined that maximizing rooftop coverage would provide capacity for 4.8 MW of solar, producing approximately 5,700 MW/hr/yr. Constrained by structural limitations and to meet the requirements of net metering, these facilities have a total capacity of 1.1MW of solar, producing approximately 1,300 MW/hr/yr. "check-ins" planned in future years to ensure the city stays on track to meet its goals.

2. EXPERIENCE CONT.:



MN HYBRID RENEWABLES E2SG Management LP | Red Lake Falls, MN

E2SG/Hybrid Renewables LLC sought to develop several hybrid renewable energy

facilities throughout Minnesota. The projects were to be sized to meet the requirements for the Fast Track Interconnection Process with MISO. This would maintain a total MW AC capacity of less than 5.0 if the facilities were located within 2.5 miles of the nearest utility substation, or a total of 4.0 MW AC or less if located outside of 2.5 miles from the nearest utility substation. In either event, 250kW inverters would be utilized. Solar arrays were expected to be 2.25MW AC (9 inverters) for the Standard 5.0MW Hybrid project, or 1.25MW AC (5 Inverters) for the 4.0MW Solar-Lite projects. For either case a 2.8 MV GE wind turbine was planned to be utilized by turning down from 2.8MW to 2.75MW. Hybrid Renewables LLC selected LHB to provide engineering design services and assist with project permitting. LHB provided the following services in support of development and MISO Permitting of the Hybrid Renewable projects:

- Electrical Engineering (Typical design package modified by site as required)
 - Preliminary Substation design, including One-Lines and power modeling.
 - Solar Array Design.
 - Wiring Design (Panel to inverter stringing/wire sizing)
- MISO Permitting Support – Fast Track Process
 - Prepare applications and coordinate with MISO/Local Utility.



ROOFTOP PHOTOVOLTAIC ARRAY SYSTEM Hennepin County | Medina, MN

Hennepin County provides a leadership role in generating clean and affordable electricity from a variety of renewable energy sources, including solar energy. LHB is the designer and engineer of record for the newest photovoltaic array system, the second largest in the state, installed on the roof of the Medina Public Works Building.

LHB initially provided a feasibility study to determine Hennepin County's energy needs and to develop a method to install a solar electric energy system rated to 97 kW on the roof of the Public Works Facility. LHB worked with solar suppliers to determine which system concept would work best within the space restrictions of the roof. In addition to generating approximately 5% of the building's energy, the array benefits the environment by saving approximately 100 tons of carbon dioxide emissions on an annual basis and more than 2,500 tons of greenhouse gas over the life of the array system.



THE HEIGHTS St. Paul Port Authority, Trellis Development

The shuttered Hillcrest Golf Course, a 112-acre brownfield exposed to decades of pervasive mercury contamination, is being redeveloped into The Heights, a publicly-accessible, vibrant new community within Saint Paul's Greater East Side neighborhood. Led by the Saint Paul Port Authority in collaboration with the City, the project builds upon the Port's experience with brownfield remediation and aligns with the Port's mission to create jobs, expand the tax base, and advance sustainable development. The final goals of the project are to create a dynamic, mixed use neighborhood with 1,000 new housing units, 1,000 new jobs with low barriers to entry, 20 acres of active and passive greenspace, and extensive pedestrian-oriented trails and activity nodes.

The Heights is the first development in the world to submit for LEED for Communities Platinum-level Pre-Certification. LHB's work with the Port includes assisting with the process of obtaining certification under USGBC's new rating system as well as an even bigger challenge: creating a plan for the development to be carbon neutral. We are evaluating strategies for reducing greenhouse gas emissions from energy use in buildings, transportation, street lighting, water and wastewater, and waste management to determine a net-zero carbon scenario.

In addition to carbon planning, LHB is facilitating master planning efforts in coordination with the City, developing Design and Sustainability Covenants, collaborating on watershed approvals and infrastructure design, and creating concepts for prototype buildings. Our team is working closely with the Port to design a series of solutions that not only achieves their carbon goals but reduces economic disparities in Saint Paul, is feasible in the marketplace, and brings joy to the community. This project exemplifies LHB's strength in working across multiple Studios (Commercial, Research, and Landscape Architecture/Planning) to provide our clients with an integrative team approach to planning, design, research, and climate action.

2. EXPERIENCE CONT.:

SolarHERO



GREAT PLAINS
INSTITUTE

Better Energy
Better World.



The Great Plains Institute (GPI) is partnering with the National Renewable Energy Laboratory (NREL), utilities and communities in Minnesota and Colorado, and community technical assistance programs in multiple states on a project funded by the U.S. Department of Energy. The project aims to demonstrate how utilities can use local deployment of solar and battery storage to enhance reliability of the electric grid and improve restoration in the face of climate driven outage risks. The project has a particular focus on serving vulnerable communities and residents. GPI will lead community engagement throughout the project to link solar and storage deployment to community priorities on resilience and grid reliability.

What is the SolarHERO project?

Solar-assisted Stakeholder Engaged Restoration Orchestration (SolarHERO) is a project funded by the U.S. Department of Energy under the Renewables Advancing Community Energy Resilience (RACER) grant. The goal of the RACER grants is to connect community representatives with researchers and utilities to develop models and demonstrate the prioritization of critical community infrastructure power restoration during an outage event, using solar and storage assets on the local grid. Through SolarHERO, communities in Colorado and Minnesota will work in state-based community energy resilience cohorts, led by GPI, to add their perspective to their utilities' power restoration practices and learn about community energy resilience.

How can improved resilience serve a community in an outage event?

Community resilience is a community's capacity to prepare for, adapt to, and quickly recover from risks like natural hazards (e.g., wildfires, tornadoes, hurricanes) and power outages. Vulnerable residents, such as the elderly and those who rely on life-saving devices or

About the SolarHERO Project

The SolarHERO project is supported by a Department of Energy grant (DE-AC36-08GO28308) administered by the National Renewable Energy Laboratory.

medication, may be left exposed to extreme heat or cold or may be left without electricity to refrigerate their medications or power their medical devices. Critical facilities, such as supermarkets, hospitals, police stations, and gas stations cannot provide emergency services while power is out. By identifying priority facilities to which power can be restored instantaneously, local governments can improve community resilience.

How can renewables like solar and storage support community resilience?

Solar and other distributed renewable energy resources paired with battery storage help keep power generation local. When these resources are operated in a microgrid (a small and local portion of the distribution grid that is able to isolate or "island" from the main grid during outage events), they can provide clean, cost-effective electricity to community resilience centers and other critical facilities in the event of an outage.

What are the goals of this project?

This project aims to identify new protocols that would allow utilities to integrate local solar and storage assets into the restoration process and prioritize restoring power to critical facilities and vulnerable residents.

Client Contact

Fei Ding
Fei.Ding@nrel.gov
National Renewable Energy Laboratory

Please contact Brian Ross at (612) 767-7296 or bross@gipsd.net
GREAT PLAINS INSTITUTE | 2801 21st Avenue South Suite 220 | Minneapolis, MN 55407 | www.gipsd.net

2. EXPERIENCE CONT.:

SolSmart



**GREAT PLAINS
INSTITUTE**

Better Energy.
Better World.



The Great Plains Institute has served on the national SolSmart program for the last six years as an outreach lead and technical advisor to cities and counties on permitting, planning and zoning, project development, and financing. GPI liaison role includes developing trust relationship with communities, assessing local needs or priorities for solar readiness, developing communication and messaging strategies, and working to recruit communities to the program.

What is SolSmart?

SolSmart is a national designation and technical assistance program that helps local governments make it faster, easier, and more affordable for residents and businesses to go solar. SolSmart actions include solar permitting and zoning policy reviews, solar ordinance development, staff training about solar installations, and procurement of solar energy for municipal operations, among many other options.



SolSmart offers four levels of designation which recognizes communities that have taken key steps to address local barriers to solar energy and foster the growth of mature local solar markets. Achieving a designation demonstrates that a community is “open for solar business,” making it attractive to solar companies and other business development.

About the SolSmart Project

The SolSmart program is supported by the Department of Energy, Office of Energy Efficiency and Renewable Energy (EERE), under Award Number DE-EE0007155. Interstate Renewable Energy Council (IREC), which administers the program in coordination with the International City/County Management Association (ICMA).

GPI works with communities to understand the options available and to help them determine which best designation level fits their needs and goals. Upon completion of different actions, a community receives points, ultimately leading to one of four designations: bronze, silver, gold or platinum.

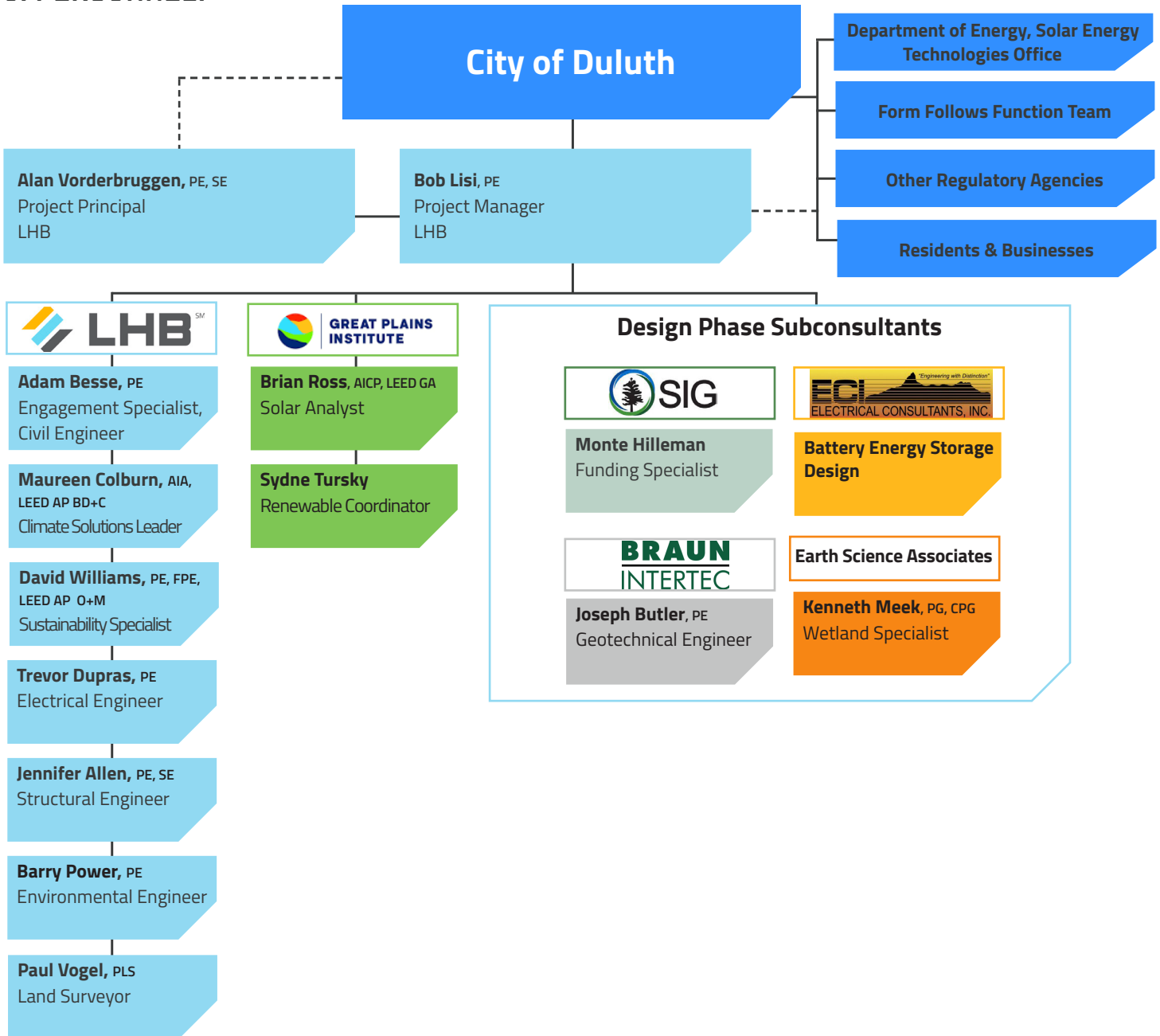


Client Contact

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Interstate Renewable Energy Council (IREC)
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3. PERSONNEL:



Key Staff

We have assembled a team of highly qualified professionals for each of the major project tasks who we feel will bring a great deal of value to the project. Each of our key team members has a set of unique and highly respected skills, making them a good fit with the respective project needs. As Project Principal, Alan Vorderbruggen brings almost 40 years of experience to the table. Alan has served as Project Principal for many energy distribution projects, and was formerly a Civil/Structural Principal Engineer at Minnesota Power. Alan will be an invaluable resource for any overarching project issues, structural design needs, and adherence to standards throughout the project. Bob Lisi will serve as Project Manager and will lead the design tasks. As the Civil Engineering Manager of LHB's Energy & Industry group, Bob has been practicing civil engineering for over 21 years and has extensive experience in managing teams and helping clients fulfill their strategic goals. Adam Besse, who is currently working with the City of Duluth on other engagement-intensive projects, will lead public involvement and bring together the multiple concerns from the various stakeholders within the technical and financial parameters.

The team also includes Maureen Colburn, LHB's Climate Solutions Studio Leader and David Williams, LHB's Sustainability Specialist and mechanical and fire protection engineer. The following LHB team members will assist with this project: Trevor Dupras will provide electrical design; Jennifer Allen will provide structural design; Barry Power will lead vapor assessments and environmental engineering; and Paul Vogel will lead Land Survey. Additionally, our long-standing St. Paul Port Authority client turned renewable funding resource consultant, Monte Hilleman of SIG can help identify funding resources; Electrical Consultants Inc. (ECI) will assist with battery storage design; Brian Ross and consultants at Great Plains Institute will bring their knowledge of solar possibilities from their experience creating the "Duluth Shines! Solar Potential Map;" while Kenneth Meek of Earth Science Associates will address wetland issues; and Braun Intertec will bring the geotechnical experience of Joe Butler.

LHB and our team members have designated the leading people in our firms with the understanding needed to hit the ground running, and to provide a quality project for the City.

3. PERSONNEL, CONT.:



ALAN VORDERBRUGGEN PE, SE
LHB

Project Principal

Alan leads the civil and structural design teams in LHB's Energy & Industry group, which serves clients focused on oil and gas pipelines, electrical power, mining, and pulp and paper. He has managed and contributed to the design of site work, buildings, foundations, transmission lines, and substations up to 500kV. Alan's resume includes four years at Minnesota Power, where he was responsible for structural and civil engineering on substation and high-voltage direct current (HVDC) capital and maintenance projects. Among other things, this experience enhanced his ability to assess projects from an owner's perspective.

As a longtime member of the American Society of Civil Engineers, Alan contributed to the development of the Substation Structure Design Guide 113 (2008), the industry's leading resource for information on designing electrical substation structures. He has also presented on the topic of structural engineering claim assessment at the request of insurance representatives.

Relevant Project Experience

ENBRIDGE (U.S.)
L5 Straits Anchor Monitoring;
Mackinac, MI

CITY OF MINNEAPOLIS
Roof Structural Analysis for Solar,
Groups 1 & 2

USF&W
Ottawa National Wildlife Refuge Photo
Voltaic Design and Review

QWEST
Battery Room Structure, VA
Parsons Electric Ford Battery Plant, TN
Melrose Battery Room

REGISTRATION

Licensed Professional Engineer in Arkansas, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, North Dakota, Ohio, Oklahoma, South Dakota, Tennessee, Texas, Vermont, Wisconsin, and Wyoming

Licensed Structural Engineer in Illinois, Louisiana, Minnesota, Nebraska, Oklahoma, South Dakota, Vermont, and Wyoming

ACCREDITATIONS
National Council of Examiners for Engineering and Surveying (NCEES)

NCEES Model Law Structural Engineer

EDUCATION
Bachelor of Science, Civil Engineering, North Dakota State University

CONTACT
Alan.Vorderbruggen@LHBcorp.com



BOB LISI PE
LHB

Project Manager

Bob asks the kind of questions that make clients focus on strategy. A thoughtful designer and careful listener, he excels at managing teams – both internally at LHB, where he oversees the civil engineering team in the firm's Energy & Industry group, and externally, for select clients. Embedded within the client's project team, Bob delivers value as an innovative engineer and an experienced manager, delving into details while never losing sight of the big picture and its impact.

For several years, he worked as an embedded staffer with Enbridge, project managing major pipeline and renewable energy projects. His current work is largely focused on renewable energy investments and growing LHB's capabilities in this arena. He is available for speaking engagements related to engineering topics.

Relevant Project Experience

ENBRIDGE (U.S.)
Solar Installations in WI and IL

L5 Straits Anchor Monitoring;
Mackinac, MI

Line 3 Replacement, MN

MINNESOTA POWER
Mesaba Junction Switching Station

SWLP Winter Street Substation

2020 As-Needed
Environmental Services

FOND DU LAC RESERVATION-TRIBAL
GOVERNMENT | BROOKSTON, MN
Biomass Hot Water District
Heating System

Biomass Building & Site

LAKE COUNTY
Stormwater Retrofit, Feasibility
study; Two Harbors, MN

CSAH 61, EA/EAW, roadway
extension to connect downtown Two
Harbors and waterfront recreation
area with the western portion of the
city; Two Harbors, MN

ST. LOUIS COUNTY
Kirkus Street project memorandum;
Proctor, MN

REGISTRATION

Licensed Professional Engineer in Arkansas, Colorado, Illinois, Indiana, Kansas, Kentucky, Michigan, Minnesota, Missouri, Montana, Nebraska, New Jersey, North Dakota, Ohio, Oklahoma, Pennsylvania, South Dakota, Tennessee, Texas, Wisconsin, and Wyoming

ACCREDITATIONS
Certified Manager of Quality/Organizational Excellence – ASQ (CMQ/OE)

Construction Specifications Institute – Certified Construction Contract Administrator (CCCA)

Construction Documents Technology - CSI (CDT)

U.S. Green Building Council Leadership in Energy and Environmental Design Accredited Professional (LEED AP)

AFFILIATION
American Society of Civil Engineers (ASCE)

EDUCATION
Master of Science and Bachelor of Science, Civil and Environmental Engineering, Master of Science, Landscape Architecture University of Wisconsin-Madison

CONTACT
Bob.Lisi@LHBcorp.com

3. PERSONNEL, CONT.:



ADAM BESSE PE

LHB

Engagement Specialist, Civil Engineer

Adam earns the trust of clients with proactive communication and quick responses. He is clear, direct, knowledgeable, and easy to work with. His experience on construction and engineering projects spans nearly two decades, and he has a broad understanding of site and municipal design, plus a background in energy-sector projects. Adam's design skills include site grading, sanitary sewer conveyance, water distribution systems, site drainage, roadway design, and stormwater control and treatment systems. As a senior project manager for LHB, Adam is responsible for civil engineering design, construction drawing development and review, technical specifications development and review, construction cost estimating, construction administration, and construction inspections. He offers project management abilities and design team leadership for complex projects.

Relevant Project Experience

CITY OF DULUTH | DULUTH, MN
Superior Street Reconstruction

4th Ave East Watermain

2nd Street Reconstruction

Raleigh Street Reconstruction

Lead Water Service Replacements

East 1st Street & Alley Reconstruction

ENBRIDGE (U.S.)

L5 Straits Anchor Monitoring;
Mackinac, MI

CITY OF GRAND MARAIS | GRAND
MARAIS, MN

Public Works Facility

Sewer Force Main Leak Repair

Sanitary Sewer Force Main Repair

REGISTRATION

Licensed Professional Engineer in Illinois, Kansas, Michigan, Minnesota, Missouri, and Wisconsin

AFFILIATIONS

Minnesota Surveyors and Engineers Society

American Public Works Association

EDUCATION

Bachelor of Science, Civil Engineering, North Dakota State University

RECOGNITION

ACEC/MN Grand Award and ACEC National Award for Superior Street Reconstruction

CPAM Merit Award for Superior Street Reconstruction

CONTACT

Adam.Besse@LHBcorp.com



MAUREEN COLBURN AIA,

LEED AP BD+C

LHB

Climate Solutions Leader

Maureen leads LHB's Climate Solutions Studio, whose work informs policies, guidelines, and programs to improve the built environment's impact on natural resources, greenhouse gas emissions, and climate equity. She also co-manages several programs, including Minnesota Buildings, Benchmarks, and Beyond (B3), a suite of tools for sustainable design, and the Regional Indicators Initiative, an effort to engage communities in actionable strategies for energy and greenhouse gas reduction.

Prior to establishing the Climate Solutions Studio, Maureen practiced as an architect, incorporating sustainability goals into multifamily residential projects for nonprofit developers and institutional clients. She continues to utilize her technical background to interface with LHB's design teams on efforts to create a portfolio of regenerative work grounded in applied research.

Relevant Project Experience

THE HEIGHTS (FORMERLY HILLCREST GOLF COURSE) REDEVELOPMENT NET ZERO CARBON PLANNING; ST. PAUL, MN

LHB THRIVE FRAMEWORK FOR REGENERATIVE COMMUNITIES

REGIONAL INDICATORS INITIATIVE

MINNESOTA DEPARTMENT OF ADMINISTRATION BUILDINGS, BENCHMARKS & BEYOND (B3)

CITY OF ST. LOUIS PARK, GREEN BUILDING POLICY; ST. LOUIS PARK, MN
MINNESOTA 2025 ENERGY ACTION PLAN

LOCAL GOVERNMENT PROJECT FOR ENERGY PLANNING (LOGOPEP)

MN CARD GRANT RESEARCH PROJECT, ASSESSMENTS OF PLUG-LOAD CONTROL DEVICES IN COMMERCIAL BUILDINGS

MN CARD GRANT RESEARCH PROJECT, COMMERCIAL ENERGY BASELINE STUDY

MN CARD GRANT RESEARCH PROJECT, TRIBAL COMMUNITIES ENERGY EFFICIENCY STUDY

MN CARD GRANT RESEARCH PROJECT, FIELD STUDY OF PHASE CHANGE MATERIAL USE FOR PASSIVE THERMAL REGULATION

MN CARD GRANT RESEARCH PROJECT, CODES AND STANDARDS PROGRAM: CONCEPT TO REALIZATION ROADMAP

MN CARD GRANT RESEARCH PROJECT, INTELLIGENT BUILDINGS MARKET ANALYSIS

REGISTRATION

Licensed Architect in Minnesota

ACCREDITATIONS

U.S. Green Building Council Leadership in Energy & Environmental Design Accredited Professional Building Design + Construction (LEED AP BD+C)

AFFILIATION

AIA
Minnesota, Member

AIA Minnesota, Women in Architecture, Member

EDUCATION

Master of Architecture, Iowa State University

Bachelor of Arts, Studio Art and Environmental Studies, Grinnell College

RECOGNITION

AIA Minnesota Leadership Forum Class of 2014

Recipient of 2011 AIA Minnesota Young Architects Award

Minneapolis Regional Chamber of Commerce Leadership Twin Cities, Class of 2009

AIA Minnesota Presidential Citation for AIA Minnesota Committee on the Environment Work, 2004

CONTACT

Maureen.Colburn@LHBcorp.com

3. PERSONNEL, CONT.:



DAVID WILLIAMS PE, FPE,
LEED AP O+M

LHB
Sustainability Specialist

David has over 41 years of mechanical design experience. His duties include overseeing design and specification of building MEP systems, forensic engineering services, sustainable project consultation, conference and client presentations, department staffing, and in-house training.

He has led many mechanical design projects, providing design and construction administration for multi-million dollar commercial, industrial, and institutional projects. David's specialties include solar energy systems, unique/special system design, and sustainability. As a fire protection engineer, David provides fire protection system designs and plans and evaluates compliance with fire codes and standards.

Relevant Project Experience

- ENBRIDGE (U.S.)**
Line 5 Straits Anchor Monitoring
- HENNEPIN COUNTY | MEDINA, MN**
Public Works Solar Installation
- ANDERSON CORPORATION | BAYPORT, MN**
Solar Feasibility Study
- MNDOT | THROUGHOUT MN**
Truck Station Solar Study
- METRO TRANSIT | MINNEAPOLIS, MN**
Police Department Solar System
- Solar PV Layout & Funding
- USF&W | OTTAWA, MI**
Photovoltaic Design
- SPPA/UNITED PROPERTIES | ST. PAUL, MN**
Saints Business Center, LEED CS-Silver Pre-Certified
- EVER-GREEN ENERGY | VARIOUS LOCATIONS**
Steam Distribution Piping Design, Burlington, VT
- 2nd Street Steam Drawings, St. Paul, MN
- Ever-Green Headquarters Jemne Building Renovation, St. Paul, MN
- DULUTH ENERGY SYSTEMS | DULUTH, MN**
Superior Street Reconstruction, Steam Main
- Vision Northland Connection
- Holiday Center Hot Water Conversion 2
- Sheraton Pool Heat

REGISTRATION

Licensed Professional Engineer in Michigan, Minnesota (Mechanical and Fire Protection Disciplines), North Dakota, Vermont (Mechanical and Fire Protection Disciplines), and Wisconsin

AFFILIATIONS

American Society of Heating, Refrigeration, Air-conditioning Engineers (ASHRAE)

American Society of Plumbing Engineers (ASPE)

National Fire Protection Association (NFPA)

Xcel Energy
Recommissioning Service Provider

EDUCATION

Bachelor of Science, Mechanical Engineering, Massachusetts Institute of Technology

RECOGNITION

Presentation to the Institute on the Environment, University of Minnesota Duluth, "Sustainability and Engineering in the Context of Global Challenges," Panel Member, April 7, 2021

CONTACT

David.Williams@LHBcorp.com



TREVOR DUPRAS PE

LHB
Electrical Engineer

Trevor has over 23 years of experience in engineering for pipeline and industrial construction. His electrical, instrumentation, and controls experience includes client relationship development, client scope/budget development, LHB project proposal/estimate development, client material requisition development, analysis, design, drafting, bid specification development, construction inspection, field startup & commissioning, as-built documentation, and project management. Trevor is well versed in large and small project delivery. He specializes in design of both new and modification of existing oil and gas pipeline facilities and power generation facilities.

Relevant Project Experience

- EVER-GREEN | BURLINGTON, VT**
Steam Distribution Piping Design
- FOND DU LAC RESERVATION-TRIBAL GOVERNMENT | SAWYER, MN**
Community Center Biomass Heating
- MINNESOTA POWER; VARIOUS LOCATIONS**
Communications Building, Pequot Lakes, MN
- Boswell Energy Center Unit 4 Gas Bulk Storage Building, Cohasset, MN
- ENBRIDGE (U.S.)**
Line 5 Straits Anchor Monitoring
- Area 1 Distribution Feeds Engineering - Superior, WI Terminal
- Complete Pump Station Additions (1 Station for L61 MLE Phase I, 4 Stations for L67 MLE Phase II, 8 Stations for L93 Line 3 Replacement)
- LAKE COUNTRY POWER; VARIOUS LOCATIONS**
69-12.47kV Substation, Goodland, MN
- 115kV Substation, Cotton, MN
- Substation Replacement, Gunn, MN

3. PERSONNEL, CONT.:



JENNIFER ALLEN PE, SE

LHB
Structural Engineer

Jennifer is fascinated by projects that present big challenges. With a background in both civil and structural engineering, she enjoys working with clients in mining, manufacturing, and related industries to solve complex problems with thoughtful solutions. Over a career spanning more than three decades, Jennifer has honed exceptional skills in project management, structural design, and forensic investigations.

Clear communication is a key element in Jennifer's approach, and her clients benefit significantly from her willingness to listen, reflect, and ask insightful questions. She has been involved in various projects that incorporate a range of structural materials. Her experience includes projects related to plant modifications, overhead cranes, lifting beam analysis, steel connections, snowmobile and pedestrian bridges, pump stations, maintenance facilities, schools, wellness and visitor centers, clinics, government facilities, and offices.

Relevant Project Experience

CITY OF DULUTH; DULUTH, MN
Hartley Nature Center Addition and Remodeling

Kitchi Gammi East Entrance Upgrades

AAMC / HISTORIC DULUTH ARMORY; DULUTH, MN
Armory Center Drill Hall Design and Restoration and Floor Collapse Rework

Phase 2 Architecture /
Engineering Services

Roof Design

ALLETE; DULUTH, MN
Headquarters

Clean Energy Interior Remodel and
Plaza Stair Addition

REGISTRATION

Licensed Professional Engineer in Minnesota, Montana, and Wisconsin

Licensed Structural Engineer in Minnesota

ACCREDITATIONS

Passed National Council of Examiners for Engineering and Surveying (NCEES):
8-Hour PE Exam
16-Hour SE Exam

Mine Safety & Health Administration (MSHA)

AFFILIATIONS

American Society of Civil Engineers (ASCE), Duluth Chapter

EDUCATION

Bachelor of Science, Architectural Engineering and Building Construction, Milwaukee School of Engineering

Associate in Business Management, Milwaukee School of Engineering

CONTACT

Jennifer.Allen@LHBcorp.com



BARRY POWER PE

LHB
Environmental Engineer

Barry's specialty is solving environmental challenges faced by modern petroleum transmission and large industry clients. He brings over 30 years of experience in civil, geotechnical and environmental engineering with expertise in soil vapor intrusion (SVI) Investigation and mitigation; hydraulic analysis of water systems; contaminant fate and transport modeling; remedial investigations/corrective action designs; environmental management of solid/liquid/gas waste streams; transmission pipeline integrity management; emergency response and readiness; mathematical modeling of physical and chemical processes; and expert testimony.

Relevant Project Experience

SOIL VAPOR INTRUSION (SVI) INVESTIGATION AND MITIGATION
Investigated and developed a plan for mitigating vapor intrusion at an auto dealership to meet new MPCA regulations and improve occupant health

INTEGRITY MANAGEMENT PLANS
Developed, implemented and successfully defended one of the initial Integrity Management Plans and HCA Pipeline Segment Identification Programs for crude oil, refined products and natural gas liquid transmission systems in the U.S.

CREATED EARLY WARNING GROUNDWATER DETECTION MONITORING PROGRAM

Completed historic leak investigation and closure program resulting in the closure of over 120 sites across a U.S. pipeline system

PERMITTING TO TREAT SOILS
Solid waste permitting/operations of landfarm in northwestern MN to treat crude oil impacted soils

CREATED SPILL PREVENTION, CONTROL AND COUNTERMEASURES
Plans for oil storage facilities, open-pit mines, and airports; developed Facility Response Plans for several terminal oil storage facilities

NPDES PERMITS

Developed/negotiated site specific National Pollutant Discharge Elimination System Permits for open pit mines, trench dewatering, discharge from solid waste facilities, hydrostatic test discharge from new and used pipe, and tank bottom waters

3. PERSONNEL, CONT.:



PAUL VOGEL PLS

LHB

Professional Land Surveyor

Paul has over 35 years of surveying experience and has provided services for various private and public clients. Paul's role is to complete and oversee a variety of professional assignments to facilitate the completion of roads, building sites, recreational areas, developments, and bridges. He performs ALTA/ACSM, boundary, cadastral, topographic, environmental site and route surveys, which involve section subdivision, right-of-way acquisition, and preparation of appropriate legal descriptions. Paul prepares design, concept plats, preliminary plats, final plats, site maps, and a variety of exhibits for land transfers, right-of-way acquisition, easements, and utility infrastructure. He also provides research, computations, layout, field work, drafting, and correspondence.

He performs surveys involving the location, alignment, and associated infrastructure for railroads and railroad bridges, pipelines, primary and secondary roads, sewer and water lines, curb and gutter, and buildings. As a surveyor, Paul performs corner searches, traversing, interpreting WPA, railroad right-of-way, MnDOT commissioner orders for right-of-way takings and turnbacks, and other relevant maps. Paul is knowledgeable in GPS surveying (Trimble and Leica survey grade receivers) and has researched horizontal and vertical control data from the NGS, USGS, DOT and many local coordinate systems. He has performed reconnaissance of existing control stations and the layout of photo control networks.

Relevant Project Experience

ST. LOUIS COUNTY SURVEYING SERVICES
PLSS | VARIOUS LOCATIONS

Paul is the Project Manager providing Professional Land Survey services for this effort to complete the remonumentation of remote lands into the PLSS for St. Louis County (SLC). The project will give the County and its citizens a better understanding of the natural, environmental, and recreational resources available in the County.

RAINY RIVER ENERGY | SUPERIOR, WI |
MINNESOTA POWER (SWL&P)

Paul was land surveyor and Project Manager for this boundary survey project that included research and subdivision of plats

REGISTRATION

Licensed Professional Land Surveyor in Minnesota, Alaska, and Wisconsin

ACCREDITATIONS

eRail Safe
(BNSF/CN/CP)

AFFILIATION

State of Minnesota Board of Architecture, Engineering, Land Surveying, Landscape Architecture, Geoscience, and Interior Design (AELSLAGID) Board Member and Past Chair

Minnesota Society of Professional Surveyors (MSPS), Member and Past President

National Society of Professional Surveyors Member (NSPS)

Wisconsin Society of Land Surveyors Member (WSLS)

Lake Superior College Technical Advisory Board

EDUCATION

BS Chemistry;
University of Minnesota Duluth, Duluth, MN

Land Surveyor Coursework,
Metropolitan State College of Denver

RECOGNITION

2016 Surveyor of the Year, MSPS

CONTACT

Paul.Vogel@
LHBcorp.com



MONTE HILLEMAN

SigEarth

Funding Specialist

Monte is the leader of the Climate Investment Solutions department at Sustainable Investment Group (SIG), where he oversees market-based strategies to finance decarbonization efforts. Within SIG, he directs a range of offerings, including Net Zero Proformas and Portfolio analysis, Green Financing tools, and transactions involving Renewable Energy Credits and Carbon Offsets. These initiatives are supported by his extensive knowledge of financial incentives such as the Inflation Reduction Act, Property Assessed Clean Energy Financing (PACE), and various other federal, state, and local green finance incentives.

Before SIG, Monte led the Saint Paul Port Authority's sustainable development mission working with LHB on a number of sustainable projects including The Heights and The Saints Business Center. He brings with him over 20 years of commercial real estate and green financing experience, across hundreds of projects, to help you find the financial solutions to achieve your climate and sustainability goals.

Monte managed multiple redevelopment sites concurrently, coordinating multiple consultant teams (design, engineering, legal, construction, etc.). The projects he oversaw encompassed over 200 acres of land and received over \$125 million in public sector investment and over \$1.5 billion in private investment. Notable achievements included the successful implementation of PACE financing for the largest rooftop solar PV array in MN, as well as the development of the first Net Zero Energy Plaza in the United States.

An influential figure in the U.S. Green Building Council Minnesota chapter, including past Chair and current Market Leader Advisory Board member, and a licensed Minnesota Real Estate Broker, Monte brings breadth and depth of green financing expertise to commercial real estate investment.

Relevant Project Experience

THE HEIGHTS (FORMERLY HILLCREST GOLF COURSE) REDEVELOPMENT NET ZERO CARBON PLANNING; ST. PAUL, MN
SAINTS BUSINESS CENTER (FORMERLY MIDWAY STADIUM) REDEVELOPMENT; ST. PAUL, MN

3. PERSONNEL, CONT.:



BRIAN ROSS AICP, LEED GA

Great Plains Institute (GPI)

Delivery & Storage Electrical Engineer

ACCREDITATIONS

American Institute for Certified Planners (AICP)

LEED Green Associate

AFFILIATION

AIA
Minnesota, Member

AIA Minnesota,
Women in
Architecture, Member

EDUCATION

University of Iowa,
M.A. Urban &
Regional Planning

Grinnell College, B.A.,
Anthropology

RECOGNITION

American Planning
Association
Sustainable
Communities
Division Executive
Committee, Climate
Champions Program

Planning Innovation of
the Year, 2017, Model
Solar Ordinance

Keynote Speaker,
International Erosion
Control Association
Conference, 2022

CONTACT

bross@gpisd.net

Vice President, Renewable Energy, Great Plains Institute. Brian Ross joined GPI in 2015. He leads the Great Plains Institute's (GPI) renewable energy programs including local, state, multi-state and national initiatives on renewable energy planning, siting, and zoning. Prior to joining GPI, he was a Principal at CR Planning, providing technical analysis and facilitating local decision-making and implementation for sustainable outcomes.

Relevant Project Experience

SOLSMART COMMUNITY ENGAGEMENT AND TECHNICAL ASSISTANCE:

Member of the national technical advisory team developing credits and standards for this national solar-ready certification program and served as technical lead for multiple successful Solar Advisor proposals in the Midwest (MN, IL, WI, IA), including the largest cohort of communities in the nation and the successful solar advisor project at the Metropolitan Council. Provides technical assistance to dozens of communities enrolled in the program. Trained local planners and agency staff on solar planning and zoning.

PHOTOVOLTAIC STORMWATER MANAGEMENT RESEARCH AND TESTING:

Developed and helped direct the first national study of water quality and large-scale solar development. This project provides the first science-based foundation for improving water quality outcomes of large-scale solar development. Identified best practices for permitting authorities and solar developers that create community and regional water quality and habitat co-benefits.

LOCAL GOVERNMENT PROJECT FOR ENERGY PLANNING.

Worked with multiple communities to create guidance for action, identified energy data sources, and created best practices to incorporate local energy resources and climate planning into comprehensive plans and other local policy for Minnesota communities. Directed technical assistance and energy resource assessment and quantification to implement best practices for over two dozen cities.



SYDNE TURSKY

Great Plains Institute (GPI)

Renewable Energy Program Coordinator

EDUCATION

Gonzaga University,
Certificate in Climate
Action Planning,
2023 – present

M.A.

Environmental Studies
2020 – 2022

B.A. Journalism –
Dual concentration
in Print/Editorial
and Advertising/
Public Relations with
History minor
2014 - 2018

CONTACT

stursky@gpisd.net

Sydne supports Renewable Energy team projects at the Great Plains Institute through project management, research, communications, and outreach. She manages and supports projects across the renewable energy spectrum, from solar siting to energy and sustainability planning.

Relevant Project Experience

SOLSMART:

Supports local and regional governments through the SolSmart designation program with program guidance and recruitment. This program removes unintentional regulatory barriers to solar development. This work involves engaging directly with local governments in the Midwest and across the nation.

MICHIGAN GREEN COMMUNITIES SUSTAINABILITY PLAN TEMPLATE:

Created a full suite of sustainability plan resources for local governments in Michigan. The resources included a draft sustainability plan template for communities looking to advance their climate and energy planning, plus a fully interactive spreadsheet for tracking MGC designation action items.

METROPOLITAN COUNCIL:

Manages an annual, recurring "subscription service" for the Metropolitan Council. Tasks include solar technical assistance, SolSmart recruitment, model ordinance and climate policy development, and electric vehicle program development.

MIDWESTERN SOLAR RESEARCH:

Conducted research about renewable energy goals and solar ordinances in Minnesota, Iowa, Michigan, Indiana, and Illinois. Compiled a database which was used for mapping to illustrate the state of solar in the Midwest.

MASTERS THESIS RESEARCH:

Completed a masters thesis exploring climate perspectives of evangelical Christians in Arkansas. Specifically, the project aimed to understand how Southern evangelical Christians conceptualize climate change and climate action, and how climate policy might be framed to appeal to them.

3. PERSONNEL, CONT.:



KENNETH MEEK PG, CPG

Earth Science Associates, Inc.
Wetland Specialist

REGISTRATION

Licensed Professional Geologist #30221, State of Minnesota

Licensed Monitoring Well Contractor, MDH

ACCREDITATIONS

Certified Wetland Delineator – US ACOE, MN BWSR

Certified Waste Disposal Facility Operator

40-Hour OSHA Health & Safety Certification

AFFILIATION

Wetland Professional Association

Minnesota Groundwater Association

American Institute of Professional Geologists

EDUCATION

Graduate Work in Hydrogeology, University of Minnesota, Minneapolis

Hydrologic Evaluation of Landfill Performance, University of Wisconsin, Milwaukee

Continuing Education – Wetlands, Groundwater

CONTACT

ese332@gmail.com

Kenneth has over 20 years experience performing and directing various environmental and engineering projects in the

United States, Asia, and Antarctica. Past tenures include Project Manager, Hydrogeologist, Field Engineer, Survey

Technician, and Hydrocarbon Well Fracturing Specialist. A list of selected projects performed or directed by Kenneth Meek follows.

Relevant Project Experience

WETLAND BANKING SITES, CHISAGO COUNTY, MINNESOTA

In order to provide wetland habitat necessary to offset unavoidable wetland impacts due to road and urban development, over 300 acres of farmland was assessed and restored into wetland and wildlife habitat.

WETLAND IMPACT AND RESTORATION FEASIBILITY STUDY, NORTHERN MN

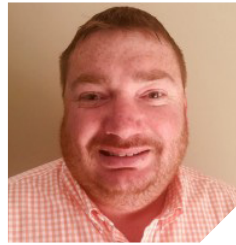
This study was implemented to document physical changes caused by channelization of a meandering river system, and to provide possible solutions for remedial action.

NEPA ENVIRONMENTAL ASSESSMENTS FOR PROPOSED HIGHWAY IMPROVEMENT PROJECTS, MINNESOTA

In order to meet federal requirements, various options were considered to minimize environmental impact to the project areas. Factors under consideration for each alternative included air pollution, surface water, groundwater, wetlands, wildlife, human social and economic effects, and possible cultural and historical impacts. Mitigation options were considered and recommendations provided on the basis of minimal impact and maximum benefit.

WETLAND IMPACT, GROUNDWATER INTERACTION AND RESTORATION FEASIBILITY STUDY, RED LAKE RESERVATION, MN

TECHNICAL REVIEW OF EAW FOR POTENTIAL IMPACT TO CLIENT'S LANDFILL FACILITY, ST. CLOUD, MN
1000+ WETLAND DELINEATIONS, WETLAND MITIGATION PLANS, AND ESTABLISHMENT OF WETLAND BANKING SITES, WORLDWIDE



JOSEPH BUTLER PE

Braun Intertec
Geotechnical Engineer

REGISTRATION

Licensed Professional Engineer in Minnesota

AFFILIATION

Minnesota Geotechnical Society
Duluth Engineers Club
Engineers Club of Minnesota

EDUCATION

B.S., Civil Engineering
North Dakota State University

CONTACT

JButler@braunintertec.com

Joseph serves as a lead project manager and engineer in our Duluth office, and is responsible for daily oversight of our Duluth field and laboratory personnel. Joe's project background is in geotechnical evaluations and managing construction testing services for a variety of government, commercial, industrial, retail and transportation projects. His work on geotechnical projects includes examining soil samples, design calculations, preparing recommendations for engineering reports, report compilation and monitoring project budgets. His work on construction testing projects includes oversight of field inspection and testing services, reviewing paperwork and tests for field services, monitoring budgets, communicating with clients and contractors, attending project meetings and troubleshooting issues.

Relevant Project Experience

ST. LOUIS COUNTY ROAD RECONSTRUCTION

County Highway 91 (Haines Road) Reconstruction; Duluth

County Road 957 Reconstruction; Fayal Township

County Highway 23 Reconstruction; Orr to Nett Lake

VARIOUS STREET AND UTILITY IMPROVEMENT PROJECTS

Prepared geotechnical evaluation reports for dozens of new and reconstruction projects including recommendations for earthwork, pavements and utilities. Joe also managed construction materials testing services for the subsequent street and utility reconstruction projects. His experience ranges across 25 Minnesota counties and has generally been on County State Aid Highways and County Roads, both rural and urban.

ROCK RIDGE ELEMENTARY SCHOOL

Joe directed the geotechnical evaluation for the construction of the new Rock Ridge Elementary School. Due to the presence of bedrock at the surface and very near the surface. The evaluation included a test pit program.

4. PERSONNEL AND MATERIALS FEE SCHEDULES

Please see separately sealed envelope.



Purchasing Division
Finance Department

Room 120
411 West First Street
Duluth, Minnesota 55802

218-730-5340

purchasing@duluthmn.gov

Addendum 1 **Solicitation 23-99655**

Request for Qualifications for Site Assessment & Evaluation for Solar PV & Storage

This addendum serves to notify all bidders of the following changes to the solicitation documents:

The following questions were received and the answers follow in *italics*:

1. The RFP indicates the city will be selecting sites, can you please clarify if the consultant will be helping to narrow down a larger number of sites to the 8-12 sites, or will the city select 8-12 sites for the consultant to evaluate? *The City will be selecting the 8-12 sites for the consultant to evaluate. Our goal will be to have the majority of these sites selected at the beginning of the contract period so that work can begin quickly. The selected consultant will **not** be part of the final 8-12 site selection.*
2. What is the energy output goal for this project? *Energy output will be site dependent. Each site will have unique constraints that will limit the amount of output available on site. Ideally, if a project has a load, we would like to try to attain 120% of that load on the site. If the site is vacant, we would want to achieve the largest energy output possible for the site while remaining within building/electrical and zoning codes.*
3. Of the 8-12 sites, what is the anticipated mix of roofs, greenfield, and parking structure roofs on these sites? If sites are known, can you provide a GIS map at this time? *We do not know the anticipated mix of sites at this time. We will be working with a pre-selected internal team and a few community partners to select the 8-12 sites from the current list. Until we have the sites selected, we will be unable to provide GIS maps. The selected vendor will be provided with GIS maps within one month of entering into the contract after sites have been identified.*
4. What is the design budget and what is the construction budget for this project? *The design/planning budget will vary for each site depending on the site's size, location, characteristics, etc. We anticipate some sites will require less evaluation/design than others as some information has already been gathered. Any relevant information on each site that has previously been gathered will be shared with the selected consultant. Information gathered during these initial site assessments will be used in determining future construction budgets.*
5. Please clarify the type and concern regarding ground water receptors that should be assessed. *Potential ground water receptors that may be assessed refer to water reservoirs*

ADDENDA, CONT.

and or pump stations owned and operated by the city. The majority of these reservoirs that may be considered consist of in-ground reservoirs or pumps that have concrete caps in place. If these sites are selected, main concerns would be the capability of the concrete cap to hold solar, how much, and where the solar could be placed and connected. While these would be main concerns, additional evaluations of the site may be necessary.

6. Is there a screening tool the city prefers to use as a starting point for site selection? Can the Duluth Shines tool be used for non-rooftop sites? *There is no preferred screening tool, and the Duluth Shines tool may be used while doing the initial screening of the site. We also have, and will continue to use alongside Duluth Shines, the PV Watts Calculator developed and used by NREL (<https://pvwatts.nrel.gov/index.php>). Both of these tools may be used for non-rooftop sites.*
7. What is the solar installation inter-connection intended to be with Minnesota Power? *This has not been determined at this time. This RFQ is intended for initial site assessment and possible PV & Storage planning. Interconnection with Minnesota Power would be determined on a per-site basis as each potential site may be developed in its own time and may require its own set of unique interconnection circumstances. Interconnection issues should be investigated and outlined site by site, during investigations.*
8. If we have more than 10 proposed team-members and partners, how would like us to present their experience? *While we understand that teams may include more than 10 members and/or partners, we request that you keep the resume pages limited to the maximum number as listed in the RFQ. Listing more than one team member or partner per page is allowed, but any resumes included after page 10 of team/partner resumes will not be included in the scoring of the RFQ.*
9. What milestones are anticipated for review documents? *Some of the work completed on these sites will be included as examples in the grant's research findings to other cold climate cities. While the RFQ has a deadline of 7/31/2025, we anticipate having most of the work with the selected consultant completed by 1/29/2025. Milestones will be determined in coordination with the project manager on a per-site basis as some sites will be larger than other and may require a longer timeline.*

Please acknowledge receipt of this Addendum by including a copy of it with your proposal. The pages included will not count toward any page limitation, if any, identified in the RFP.

Posted: **October 3, 2023**



Purchasing Division
Finance Department

Room 120
411 West First Street
Duluth, Minnesota 55802



218-730-5340



purchasing@duluthmn.gov

Addendum 2
Solicitation # 23-99655

Request for Qualifications for Site Assessment & Evaluation for Solar PV & Storage

This addendum serves to notify all bidders of the following changes to the solicitation documents:

- 1 Information and clarification of the City's Renewables Advancing Community Energy Resilience Grant is included in the attached "Statement of Project Objectives".
2. The following will clarify the Proposal Requirements and Format:
 4. Personnel and Materials Fee Schedule – Please submit in separate sealed envelope, one copy of the personnel and materials fee schedule, clearly marked on the outside as "Cost Proposal" along with the responder's official business name and address. Terms of the proposal as stated must be valid for the project length of time. Please **do not** include any cost information in the Proposal.

PROPOSAL SUBMITTAL

Submit an original copy of the proposal, plus a flash drive containing the proposal and cost proposal, in an envelope marked "Site Assessment & Evaluation for Solar PV & Storage to:

City of Duluth Purchasing Division
411 West 1st Street, Room 120
Duluth, MN 55802

Please acknowledge receipt of this Addendum by initialing and dating Addendum 2 below the bid form on the invitation for bids.

Posted: **10/10/23**



Form Follows Function (F3):

A framework for community-based energy resilience planning in the Midwest

DE-FOA-0002597 Renewables Advancing Community Energy Resilience (RACER)

Topic 1: Innovative Community-Based Energy Resilience Planning

Principal Investigators

Mindy Granley
City of Duluth Sustainability Officer
mgranley@duluthmn.gov
218-730-5334
411 W. 1st Street, Duluth, MN 55802
Local Government

Jodi Slick
Ecolibrium3 CEO
jodi@ecolibrum3.org
218-336-1038
2014 W. Third Street, Duluth, MN 55806
501(c)3

This two-year project seeks to build innovative community-based energy resilience planning methodologies and metrics to inform priority deployment of renewable energy and storage assets within a community.

Project Overview Format

Background

Form Follows Function (F3) is an innovative and replicable community-based energy resilience planning process that integrates new and existing resilience metrics, extends preparedness and response plans, and is developed concurrently using top-down and bottom-up processes through deep engagement with diverse community stakeholders. To meet the critical needs of a community during various periods of grid disruption, the project focuses on energy resilience by developing greater understanding of functional needs at different community-scales and deployment potentials of solar PV plus storage, along with distributed micro-resilience resources (DMRRs). The F3 Framework is applicable to communities across the nation, however the development process and test replications focus on cold climate communities subject to multiple hazards and builds off of past disasters experienced in northeastern Minnesota. This approach will develop novel community-based research that informs resilient energy improvements, de-risks projects for local partners, and is responsive to, and centered-on, traditionally marginalized communities at greatest risk of negative impacts associated with climate change, disasters, and grid outages.

The F3 Framework planning process is designed to address the complexity of community energy resilience planning by creation of a framework and tools that incorporates the needs of utilities and governmental entities to determine the form of the grid and grid assets, while allowing users to participate in defining the critical functions required against multiple outage scenarios at an individual and shared resource level. This process recognizes the need for, and develops, an accessible human-centered design process to inform community energy resilience plans AND effective implementation pathways.

Overall Objective

To expand existing energy resilience planning tools to improve accessibility to smaller communities that are most at risk of low-attention disasters through streamlined use of existing tools, development of new stakeholder engagement processes, analysis of assumptions against existing methodologies, development of metrics, and applied testing for replication.

Statement of Novelty

The project extends current resilience planning methodologies through novel social science research combined with traditional asset-based approaches to create a planning process accessible to communities that lack extensive planning capacity and firmly places solar and storage solutions within the greater context of system, shared, and distributed micro-resilience approaches.

Technical Work Plan

Budget Period 1 (12 months)

Task 1- Baseline Hazards Analysis and Disruption Scenario Development

Using existing multi-hazards mitigation plans, FEMA's Hazus program models, research of historical disasters in the target community, and stakeholder input, we will develop 8-12 grid disruption scenarios as a baseline for research and model development. Disruptions scenarios may include cascading failures with other critical systems as required to adequately mitigate negative impacts from disruptions.

Subtask 1.1- Complete Past Disaster and Hazus Analysis

Review Multi-hazard Mitigation Plan for past disaster experiences and projected vulnerabilities. Using Hazus, quantify potential exposures for target geography. Determine any expected variances in hazard vulnerability between target and regional geography.

Subtask 1.2- Develop Critical Systems & Disruption Scenarios

Through consultation with the Critical Infrastructure Team (inclusive of IOU/grid operator, municipally-owned water and gas utility, public works and utilities, waste water district, state, county, and city emergency management, and the Ready North Network determine 8-12 power disruption scenarios (e.g. grid outage during high heat event versus extreme rain) with functionally different potential negative impacts or mitigation solutions.

Milestone 1- Disruption Scenarios with Identified Modifiers for Midwest Communities

A minimum of 8 functionally different grid disruption scenarios have been identified for the target community with an indication of likelihood and severity. Modifiers have been identified for potential variances reflective of the larger midwest region to aid toolkit creation and workshop replication to communities reflected in Task 5.

Task 2- Bottom-Up Functional Resilience Analysis through Community-based Methodologies

Develop and test a methodology for creating community-based minimum resilience baselines in response to grid disruption scenarios and negative impacts experienced by community entities (i.e. households, businesses, institutions). Define potential/desired resilience solution sets to reach established community-based minimum resilience standards.

Subtask 2.1- Translation to Individual Experience & Negative Impacts

Conduct focus groups to develop priority negative impacts to be evaluated related to each grid disruption scenario. Focus groups to include community stakeholder groups experienced in disaster response, provision of critical social services, and representation from traditionally marginalized/vulnerable communities. An example translation of disruption scenario to negative impact could be 24-hour grid outage during heavy rain event resulting in 1) sump pump failure/flooded basement, 2) loss of refrigeration/food, etc.

Subtask 2.2- Distributional Analysis of Negative Impacts

Through multiple modes of delivery including online, mailed, and door-to-door canvass of the community (with oversampling in socially vulnerable areas) determine distribution against time, and cost where appropriate, historical/anticipated impact of negative impacts for each discrete grid disruption scenario.

Milestone 2- Completion of Community Resilience Distributions

A minimum of eight (8) statistically significant community resilience distributions have been completed representing a diversity of likely grid outage scenarios. Analysis includes developing understanding of the population characteristics, associated green and built environments, and existence of resilience solutions, as appropriate, to better understand the distribution and potential mitigation interventions.

Subtask 2.3- Development of Community-based Minimum Resilience Metrics

Conduct two workshoping sessions with community stakeholder group defined in Task 2.1 to 1) refine community resilience distributions, define and prioritize additional data needs, determine draft community-based minimum resilience standards, and provide initial solution sets, and 2) respond to cost-benefit analysis of solutions brainstormed during first session, and establish minimum resilience standards.

Milestone 3- Completion and Vetting of Community-based Minimum Resilience Standards

A minimum of eight (8) Community-based Minimum Resilience Standards have been created with an analysis of the population currently below that standard and potential solutions identified to advance all community members to the minimum standard. Solutions may reflect systems level solutions (concurrently being developed in Task 3), shared, and distributed micro-resilience resources).

Task 3- Top-Down Asset-based Energy Resilience Planning

Project partners will identify public, institutional, and critical infrastructure sites for viability as community energy resiliency sites. Technical evaluations will be conducted on priority sites for solar, solar + storage, and/or storage options identified.

Subtask 3.1- Establish Asset-based Resilient Power Siting Criteria

Applying Task 1 research including evaluation of grid outage data, past disaster damages, power resiliency for critical facilities, and social vulnerability indices, outline potential project siting and evaluation criteria.

Milestone 4- Completion of a Resilient Power Siting Criteria evaluation rubric.

Subtask 3.2- Mapping of Solar/Storage Sites & Determination of Data Needs

Identification and mapping of geospatial, structural, and field-collected data in alignment with Resilient Power Siting Criteria. Identification of 10-15 publicly-owned and available sites for potential renewable energy and storage development sites (to include open land, large buildings, water reservoir infrastructure, closed landfills, and brownfields). Determination of data needs to evaluate each site for suitability, costs, and benefits.

Milestone 5- Identification of 10-15 potential sites with technical/legal/financial evaluation plan established and consultant procurement complete.

Subtask 3.3- Site Investigations and Cost Analysis

Gather online data and conduct preliminary field work required for investigation for renewable energy siting, including soil borings, slope analysis, wetland identification, roof or reservoir cap structural integrity, property liens/liabilities, etc. Conduct technical, cost, and legal analysis to determine a prioritized list of resilient power sites/system solutions reflective of highest resiliency return on investment.

Milestone 6- A prioritized list of ten to fifteen community energy resiliency site assets is produced, laying out potential barriers that will need to be removed for future community resilience energy projects. The vetted and prioritized site list removes unknowns of future project partnerships, and decreases risk for all partners in resilient energy project development, establishes a phased pathway for implementation, and models an asset-based approach applicable to local governments.

Go/No Decision Point BP1- Multi-hazard disruption scenarios have been developed and inform creation of discrete negative impacts for community-based research to be conducted in BP2. Asset and hazards mapping have been completed to inform deeper technical analysis of community sites for solar/storage placement.

Budget Period 2 (12 months)**Task 4- Form Follows Function Model and Community Energy Resilience Plan Development**

The results from asset mapping and technical analysis will be combined with community-based minimum resilience data and strategies to identify pathways for

community energy resiliency projects (solar and/or storage, microgrid potential). Legal and economic analysis of project sites/programs will be expanded, resulting in an integrated approach that includes public development of solar/storage sites, shared solutions, and as appropriate distributed micro-resilience solutions. Shared values and benefits from proposed approaches will be identified.

Subtask 4.1- Combined Analysis & Prioritization of Deployable Resources Inclusive of Systems, Shared, and Distributed Micro-Resilience Resources

Combine models from Tasks 2 & 3 to identify community energy resilience project pathways that have significant overlap in technical feasibility and intended shared values and benefits. Analyze asset-mapping and community input models to identify specific energy resilience projects and pathways. Complete any additional legal/financial/technical analysis for combined solutions.

Subtask 4.2- Complete Community Energy Resilience Plan

Draft Community Energy Resilience Plan for review by Critical Infrastructure Team and Community Stakeholder Group. The plan should include projects (Task 3), programs identified to advance shared solutions and adoption of distributed micro-resilience resources, and enabling policies/partnerships. Conduct public review of plan to feedback on identified energy resiliency projects and pathways. Direct outreach for incorporation of plan elements into resilience/hazards planning by other governmental agencies and critical systems operators will be completed.

Milestone 7- Completed Duluth Energy Resilience Plan and plan template for incorporation into Task 5 Toolkit.

Task 5- Toolkit Development and Testing

This task will bring together the F3 model and approach into a replicable format through development of a Toolkit and workshopping of the methodology with two communities. The replications will focus on establishing community-informed plans with actionable projects and a planning process that minimizes the capacity needed to achieve a successful outcome. This task emphasizes optimization of approaches used in Tasks 1-4 to increase the applicability to smaller communities and/or those lacking resilient energy planning capabilities.

Subtask 5.1- Develop Community Energy Resilience Planning Toolkit

Development of Community Energy Resilience Planning Toolkit to include methodology for application of resilient power as a lens for expanding multi-hazard mitigation planning, creation of disruption scenarios, asset-based planning approach and essential geospatial layers, best practices for community engagement and establishment of Community-based Minimum Resilience Standards, Duluth case-study, and plan template.

Subtask 5.2- Workshop Toolkit through Community Energy Resilience Planning Community Panels

Using a panel approach, project partners will recruit and support two communities through implementation of the Community Energy Resilience Planning Toolkit. Pre-workshop data gathering and analysis, scope of work development, and scheduling will be conducted. A three-day panel will then be conducted within the community including stakeholder interviews, site visits, and public presentations. The Toolkit and plan template will be revised based upon feedback from replication communities.

Final Deliverable 1- Community Energy Resilience Planning Toolkit and Plan Template optimized for cold climate communities with populations under 250,000 including vetted methodology and metrics for establishing Community-based Minimum Resilience Standards and integrated resilient power solutions sets.

Task 6- Dissemination and Reporting

Project dissemination will be completed during the second budget period with dissemination including publication of papers in appropriate journals and presentations at professional conferences.

Subtask 6.1- Dissemination of Project Methodologies and Model

Due to the blended technical and community advancements toward community energy resilience planning anticipated during the project period, dissemination efforts will include climate, adaptation, emergency government, and energy professionals as well as potential community-based user groups like local governments, environmental justice organizations, and social service providers. Three articles/presentations will be developed regarding 1) Community-based Minimum Resilience, 2) Integration of Asset-based and Community-based planning methodologies for resilient power prioritization, 3) Community-based Energy Planning Toolkit application.

Subtask 6.2- Final Reporting

All required reports and deliverables are submitted to the DOE.

Final Deliverable 2- All required DOE RACER grant reports, whitepapers, presentations, templates, and toolkits are delivered to the DOE.



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Addendum 3
Solicitation # 23-99655
Request for Qualifications for Site Assessment & Evaluation for Solar PV & Storage

This addendum serves to notify all proposers of the following changes to the solicitation documents:

The following questions were received and answers follow in *italics*.

1. Can a certified master electrician in combination with a Licensed Civil Engineer serve as a viable alternative to a professional electrical engineer for this project? *As per the issued RFQ, under the skills and requirements section, subparagraph G, a Minnesota Professional Engineer (PE) is preferred as a skill requirement. While we welcome all proposals, this will be taken into consideration when evaluating and scoring the proposal responses.*
2. Could you please provide more details on the specific requirements and anticipated outcomes for the customized modeling scenarios? *By modeling we are referring to energy use and storage capabilities not specific capacities. We are looking to receive potential projects scenarios possible at each site and not an integrated energy model.*
3. Is it advantageous to have a solar energy company take the lead role in this project instead of an environmental consulting firm? *We welcome proposals submitted by both solar energy companies and environmental consultants. Firm partnerships are encouraged to submit a proposal whether they are a solar energy company or an environmental firm as long as the skill requirements are met and the site conditions can be properly evaluated.*
4. Addendum 2 posted on 10/10/23 says to submit one copy of the personnel and materials fee schedule. A fee schedule identified material cost and personnel hourly rates but does not provide a total project budget. Are you requesting a fee schedule only and/or a total estimated project budget? *We are requesting a personnel and fee schedule only. Do not include a total project budget in your proposal.*
5. Will the firm(s) chosen for this site evaluation project be precluded from developing/installing systems in the future? *No, this will be separate from all future RFP's for construction of solar PV & Storage on any of the sites*
6. For purely energy delivered, putting small arrays in limited and "residential" neighborhood space would be a lot more work for less energy output than larger installations. Will the sites be

ADDENDA, CONT.

best designed and utilized as fewer, larger installations outside of residential neighborhood space, for lower cost and more efficient effort? Hopefully near a substation? *Sites have not yet been identified, but aggregated larger sites are desired on city property and city owned assets. As part of site identification, interconnection criteria will be taken into account.*

7. Solar on its own is certainly proven to lessen demand on the utility. Batteries can buffer energy requirements from the grid, help solar supply in times of less sun and shave demand spikes. Since there will be huge energy requirements, how will the solar and battery units actually be expected to interact with the neighborhoods? If the power is out will the batteries be expected to take over to a limited extent? *The scale of battery storage would vary based on the site and unique public infrastructure that it would support. Batteries could serve a function of shedding demand loads and/or serving as backup power for public service infrastructure.*

Please acknowledge receipt of this Addendum by including a copy of it with your proposal. The pages included will not count toward any page limitation, if any, identified in the RFP.

Posted: **10/20/23**