Site Assessment for Microgrid Feasibility

Jennifer Hunt

Principal Applications Engineer

Unison Energy's site assessment process helps us understand our clients' goals and maximize the benefits of a customized microgrid.

The site assessment process is a straightforward one: Unison Energy's engineers and analysts perform in-depth analysis to determine how a customized microgrid can offer site resiliency, cost savings, and carbon reductions, while helping you meet your overall energy goals. As part of this process, we discuss your site's unique needs and objectives, perform a site visit, and analyze a range of site documentation. The end result is a proposal that outlines exactly how our energy plan could benefit your facility.

Client Goals

Every site assessment starts with a thorough understanding of our client's primary goals and energy needs, including a discussion around the following factors:

- Energy efficiency or sustainability goals
- Operations schedule
- Planned expansion or construction
- Electrical supply problems, like brownouts or outages
- Interest in solar, energy storage, or EV charging integration
- Condition of existing facility infrastructure and opportunities for upgrades
- Site-specific challenges such as space constraints

Site Visit

Performing a physical or virtual site visit allows Unison Energy to identify potential locations for the CHP system. Members of our engineering, procurement, and construction (EPC) team will conduct either an in-person or virtual site walk, depending on your needs. During this visit, it is helpful for us to meet with your facilities manager and members of your engineering team. An initial site visit typically requires two hours for a facility with a single building or central plant. More complicated facility campuses may take longer to explore.

Our engineers walk through the central utility plant to take inventory of boilers and chillers, view utility interconnections for natural gas and electricity to confirm pressure, flow capacity, voltage and current ratings of existing services, and understand the configuration of multiple utility services. A key goal is to better understand the site's overall energy needs, both for electricity and for thermal in the form of hot water, steam, or chilling.

Facility Documentation

The following is an overview of the site documentation typically requested from clients to optimize our proposal. Twelve months of site utility data is a good place to start, but providing us with any of the below additional information before the site walk will help our team best prepare and focus our visit time:

Electrical Single-Line Diagram	Underground Utility Site Drawings	Site Layout Drawings and Piping and Instrumentation Drawings (P&ID)
A single-line diagram helps us understand what the Microgrid generation will need to cover, especially for sites with multiple meters. This is important for integrating with the emergency backup system, supporting expansion plans or solar, solving brownout issues, and meeting other site objectives.	We need to know what is underneath the plant during the conceptual stage, so the foundation can be designed to avoid major utility lines. These drawings also help us ensure the Microgrid system will be sufficiently close to electrical, thermal, and natural gas lines.	Information about facility design and relevant piping helps us further optimize the Microgrid system location and configuration. This helps us minimize unnecessary construction and equipment costs and craft a stronger proposal overall.
Electrical Data	**Thermal Data**	**Additional Documentation**
15 minute or hourly interval data allows tariff analysis and detailed modeling of the microgrid power output. We also use contextual information, such as plans to scale up or add on electrical loads, in order to size the system appropriately.	If available, we need a year's worth of data for any steam, hot water, and chilled water usage. If you have a building management system that captures data at frequent intervals, this helps us design a system that maximizes efficiency. However, we have also used monthly gas bills successfully.	Air permits help us understand and meet your emission reduction targets. Local sound ordinances help us site and design the system for compliance.

Energy as a Service Proposal

With the above information in hand, Unison Energy's EPC and Data Analytics teams consider engineering factors and the implementation budget. Upon completion of this assessment, a final proposal (often with more than one solution) is presented to the client. Each will include core elements like proposed equipment location, financial feasibility, and energy resilience, as well as expected emission reductions, cost-saving levels, tariff analysis, and any thermal usage. Each alternative proposal may vary in terms of exact benefits as we strive to balance and optimize your facility's priorities.

To learn more about whether a Unison Energy microgrid could be a good fit for your facility, please contact our sales team at sales@unisonenergy.com or visit us at www.unisonenergy.com.