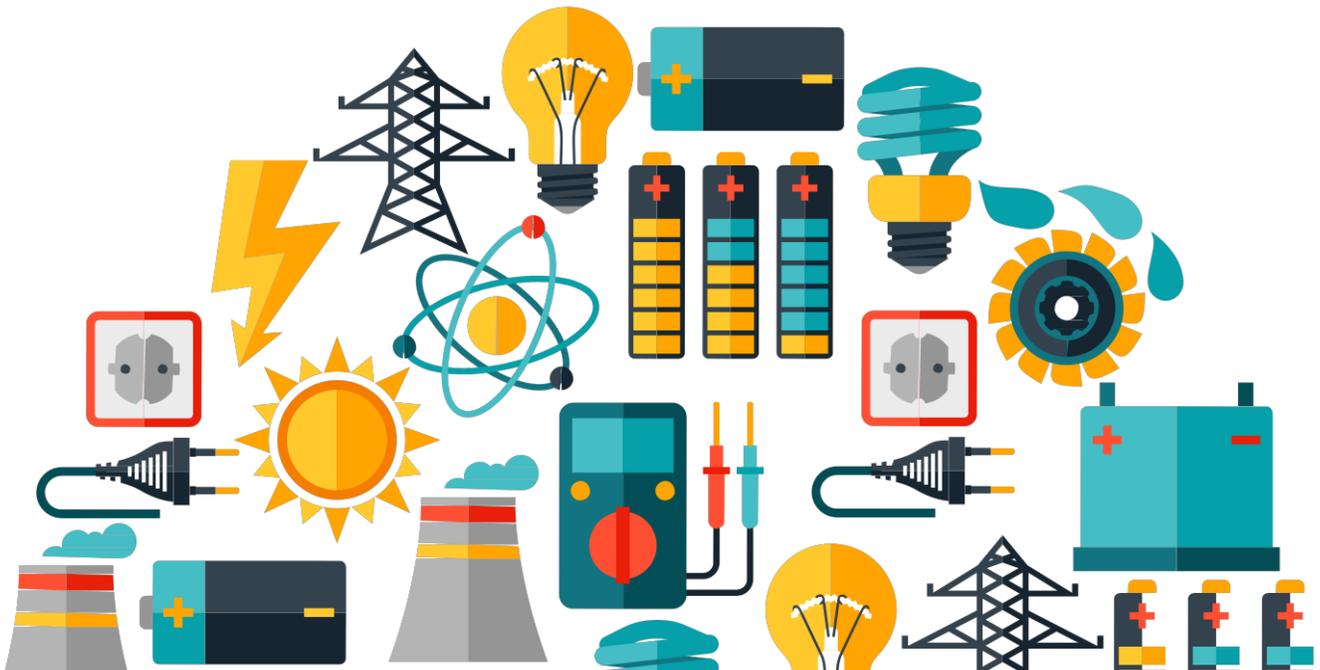




POWER ANALYTICS™

Feasibility Study

The need for a Feasibility Study





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Microgrid Basics: The Need for a Feasibility Study

You know that access to reliable, cost-effective power is critical to your business and you are considering a microgrid power system. You have the need, the financing, and the initial plan. But, are you confident the system will operate as anticipated? Will it interconnect seamlessly to the local utility grid? Will the system be built according to your unique circumstances and budget, or will it be left to the chance of a pre-defined vendor “solution set”?

Successful electrical power systems begin with a thoughtful design. The design requires rigorous power engineering and economic assessments, modeling, testing, iteration, and contemplation. At Power Analytics, we believe that success depends upon a thorough understanding of the power project’s objectives, options, nuances, potential pitfalls, situational context, and cost-benefit economics. We believe that no power project should be undertaken without an in-depth feasibility study.

By conducting a feasibility study prior to project commencement, you have more control over the project’s successful outcome. The feasibility study will reveal hidden technical aspects, unanticipated costs and benefits, and potential market opportunities. It will provide you with a vetted design and a framework for evaluating potential vendors. The study results will show you the potential of the system, your anticipated pay-back period, and ways to maximize return on investment.

Power Analytics has conducted feasibility studies for some of the nation’s most mission-critical facilities. Our software can create a virtual model of your microgrid from your “back-of-the-envelope” design. We can help you anticipate important safety issues and explore optimization opportunities. We can integrate and reconfigure alternative system components, run best-case and worst-case scenarios, and help you develop the optimal system per your design criteria. Whether you intend to operate your microgrid in stand-alone “islanded” mode or interconnect with the local utility, our modeling capability ensures



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that you will be fully aware of how your system will operate, prior to its construction.

Our team of professional engineers will develop a comprehensive plan for your proposed microgrid. We will consider your current and planned capacity and energy requirements and will configure an optimal system from a variety of generation options, such as photovoltaics, wind, natural gas and diesel turbines, combined heat and power systems, fuel cells, and/or storage. We will consider the communications capability necessary to give you real-time situational awareness through an easy-to-use command and control dashboard interface. And finally, we will consider your desired level of power quality, building automation, and physical and cyber security. Our assessment may also include:

- The ease of, and requirements for, interconnection with the local utility, for either stand-by purposes or sale of excess energy back to the grid;
- The appropriate blend of least-cost generation options to “right-size” your system for today’s need and for potential future expansion;
- The availability and adequacy of fuel sources, such as natural gas or diesel, if necessary;
- The anticipated performance of the system during emergency situations;
- The energy efficiency options that can reduce your overall load profile;
- The energy needs and generation resources of your adjacent neighbors to see if joint efforts could result in cost savings or revenue generation for either party;
- And, the business case costs and benefits and alignment with overall strategic objectives.

Once all of these parameters are assessed and defined, we will build your virtual base-case microgrid model. We will run a variety of simulation scenarios to select best-in-class options, identify and eliminate redundancies, and test system reliability and resiliency. We



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will also gain an understanding of the system's dispatch capability, power flow, power quality, voltage stability, arc flash, and circuitry safety under various ordinary and extreme scenarios. By putting this virtual microgrid model through its paces, you gain insights which could save millions in avoided development and construction mistakes.

In summary, conducting a feasibility study is a critical step when considering a microgrid project. The study provides a comprehensive understanding of the appropriate hardware, software, communications technology, and business case costs and benefits. Then, when you are ready to move forward, Power Analytics can help you conduct the necessary power flow and utility interconnection analysis. And, finally, when you are confident that the design has been perfected and you are ready to build your system, let us show you how the model created during the feasibility study can be used as a real-time reference tool to optimize operations.