



Electric Service Business Continuity Options

The last few years have significantly challenged managing business continuity issues because of major weather events. On the East Coast Hurricane Sandy and Irene caused damage and high tidal waters that devastated coastal and non-coastal areas. In the Midwest / Ohio Valley severe weather changes, an earth quake in Virginia, tornadoes in Texas and the Great Plains accompanied by severe droughts contributing to forest fires, and early to late season snow storms in many areas have caused significant interruptions to business operations over the past two years alone.

When considering which option meets your business continuity strategy requires a careful analysis of capital, operating and utility costs along with a risk assessment and opportunity must be thoroughly reviewed with a side by side study.

When should I look into back up generation?

Now, and not after the next incident is the time to look at what impact on your operations might occur should you be affected by the next incident. Many offices and facilities have emergency power supplies, but the majority is designed for life support and safety equipment. Can the emergency power system sustain long duration outages like those caused by recent weather events? If you're not sure what options exist to protect your business from the ever more frequent long term outages then the following are some options along with their strengths and weaknesses you should consider.

Alternative utility feed

Most utility service companies allow a second electric service as a back-up to the primary electric service. A second utility service costs in excess of what is normally provided a customer and must be paid for by the customer. Alternative services come with additional cost in excess of the initial cost of installation. Utilities will likely assess an excess facility charge, reserve capacity charge and other fees associated with the backup service. Additional customer owned equipment will be necessary at the service switch gear to accommodate switching to the backup service imposing additional upfront and maintenance costs to the customer. This option is feasible for some critical operations that are concerned about "routine" outages. However, during weather related events of the magnitude of recent storms there is high probability the second service would also be out of service. For storm mitigation reasons this is not reliable alternative.

Emergency back-up generation

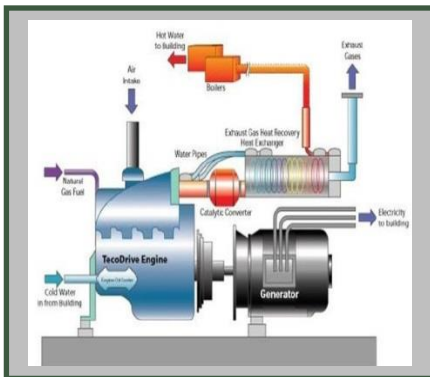
For most commercial operations this is the most feasible alternative for an alternate electric supply during a storm event. An owner needs to consider a sound strategy when researching installation of an emergency backup generator. Should the unit be sized for the entire building? Should the unit be sized to provide power for emergency operations for; life support, emergency and fire safety equipment, service for elevators, critical data systems, and emergency lighting and security? If the strategy is only for emergency supply the process is not that daunting. However, if the strategy is to power the entire building and run as if there was no interruption of the utility electric service, then a more complex system must be considered. These generators are more costly and have additional considerations, costs and risks associated with them. Issues include:

- Purchase and installation costs
- Multiple generators
- Space allocation for generators and associated equipment siting
- Local zoning and permitting issues
- Air quality permits
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Cogeneration

Cogeneration, often called “combined heat and power “(CHP) is defined as the simultaneous production of energy and useful heat. Locally produced energy along with the reuse of waste heat is more efficient than utility produced energy. In theory this is accurate, but, due to economies of scale, the utility has cost advantages which make the use of waste heat essential. Waste heat is used for both heating and cooling purposes and can have benefits for a customer capable of utilizing both.

Cogeneration applications are better suited for new construction or redevelopment projects as a result of the design and costs concerns. However, cogeneration can be retrofitted into an existing project but will present some installation and design challenges.

Cogeneration fuel choices are the same for all systems (see below) and must be considered. However, most cogeneration facilities use natural gas as their primary fuel source. Another issue for consideration is that the generation is typically sized to meet the thermal load of the facility and often does not meet the full operational electric load of the site. Therefore, electric service from the local utility must be installed to meet the electric load beyond what is supplied by the cogeneration plant. Cogeneration facilities also require maintenance related downtime and there’s always a chance of un-planned outages due to equipment failure; both create a situation requiring utility back-up to the cogeneration plant.

Cogeneration (with utility backup)

Businesses who select a cogeneration option require backup electric service from the local utility and it should be sized to meet all or defined partial amount of the electric load of the entire site. Similar to utility duplicate service discussed above, there are costs for this service type from the utility. The utility backup service to the cogeneration plant comes with additional requirements and costs:

- Excess facility charges
- Reserve capacity charges
- Demand charges and other fees associated with backup service
- Cost and space for utility electric service equipment
- Manual or automatic transfer switching and other safety equipment

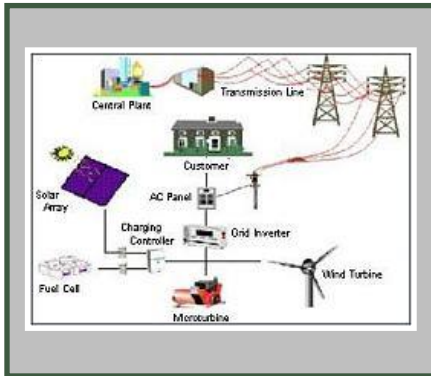
Cogeneration (no utility backup “off grid”)

Some recent projects are considering no utility electric service (off grid) by providing all the energy needs on site. With the advancement in equipment design, cost and reliability this option is gaining traction. However, it is not for every application. It requires significant capital cost, redundant design specifications and both a primary and a secondary fuel option, technical expertise to operate and significant on-going maintenance.

The off grid option is only recommended for new projects and is an unlikely option for existing facilities. Serious risk assessment associated with equipment outages, equipment replacement, service contracts, and redundant generation capabilities must be considered.

Contingency Strategies

- Alternative utility feed
- Emergency back-up generation
- Cogeneration aka CHP
- Cogeneration (with utility backup)
- Cogeneration (no utility backup “off grid”)



Our Energy Advisory group has thorough knowledge of utility issues, methods, technologies, infrastructure; cost structures and possess the experience in both utility economic development and customer service.

Distributive Generation

In some areas of the country state regulatory agencies, transmission grid operators and local utilities are considering distributive generation options to enhance local transmission and distribution system reliability in an effort to reduce outage durations. As these programs advance, they offer the opportunity to financially support one or more of the cogeneration options listed above. This option requires significant knowledge of utility rate design, utility policies and interconnection requirements of the utility and other regulatory agencies. In essence you are building a utility grade privately owned electric distribution system within the site perimeter and you're fully responsible for its operation and maintenance.

Fuel Choice Pros and Cons

Natural Gas

Advantage(s)

- No Fuel Storage
- Reduced Emissions
- No Fuel Deliveries Required

Disadvantages

- Potential For Interruptions in Low Lying Areas
- Utility Annual Minimum Fees

Fuel Oil

Advantage(s)

- Onsite supply

Disadvantages

- Air Quality
- Cost of Fuel Storage
- Storage Tanks
 - Permits
 - Space Constraints
 - Inspections Required
- Fuel Contracts
- Fuel Delivery Interruptions

In Summary

When considering which option meets your business continuity strategy requires a careful analysis of capital, operating and utility costs along with a risk assessment and opportunity must be thoroughly reviewed with a side by side study. Each site presents its own challenges and opportunities to help mitigate business continuity issues. A detailed review of each facility's susceptibility to natural and manmade disasters along with the availability of local utility infrastructure options is required to ensure a company meets its' business continuity strategy in the most cost effective and reliable manner.

Sugarloaf Associates, LLC provides comprehensive energy services and procurement strategies, including utility relocation, energy procurement, utility rate tariff and billing issues, green building requirements associated with economic development incentive awards, renewable energy installations, and electric and gas infrastructure assessments with a specialized capability in mission-critical facilities.

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About Sugarloaf Associates, LLC

For 40 years our Principals advised public and private sector clients and collectively have over 100 years' experience in the utility industry. We advise on issues pertaining to site location economics, incentive programs, data center site location, energy procurement, renewable energy systems, utility infrastructure assessments, installation and relocation of infrastructure. We work seamlessly with developers, brokers and specialized service providers advising clients to identify expansion plans and execute successful growth strategies. Our Principals draw from our in depth experience with the electric and gas utility industry professionals nationally in economic development to streamline processes, expedite installation of services, mitigate risks and identify opportunities.