EXERGY
ENERGY

The Executive's Guide to Sustainability and Backup Power

A simple solution to make you green,
save you money and cost you nothing.

Executive Summary:

Most executives are faced with having to make more decisions and investments outside their core business than at any time since the publication of Champy and Hammer's Re-Engineering the Corporation. It is not simply the sheer number of these decisions and investments, but the complexity and cost that strain managements' time, knowledge, and corporate financial resources.

One of the most challenging of these non-core decision domains is sustainability and climate change. Never before has business needed to deal with issues that are, frankly, existential not only for the corporation, but all of humanity.

This ebook will show you how you can address sustainability and resiliency challenges simply, cost effectively, and without committing scarce capital resources.

Let's start our journey to being Always On, Always Green, Always Save.

The Case for Sustainability

I don't want to dwell too long on an issue that has been well covered in many other documents and almost constantly in the daily press.

The most recent IPCC (Intergovernmental Panel on Climate Change) report is simply horrifying.

Time is running out. If we don't adopt serious and comprehensive changes to our economic system, the effects to the climate will cause immense disruption to the global economy that threaten the livelihood of every business.

This isn't a matter of more and more customers including sustainability in their purchase and brand decisions, but rather investing now to ensure that there will be future customers with the ability to purchase our products and services.

Corporate PPAs, RECs and Greenwashing

A lot of major technology companies tout that they use 100% renewable energy. It is correct in that they purchase the output from huge wind and solar farms. This is great and helps foster investment in renewables, and of course they also enjoy the benefits of the renewable energy investment tax credit. It is worth noting that most of these companies are technology companies with high gross margins able to utilize the tax benefits of renewable energy. Equally important, they have the funds and legal staff to craft and administer these highly complex and expensive agreements.

Unfortunately, many companies have neither the profit nor size to enjoy direct investments in large-scale renewables, yet have a mandate to become green. To address this challenge, many companies invest in rooftop solar, but quickly find that this is a dead end. Most facilities are simply not large enough for roof top solar to make a meaningful dent in their electricity consumption, and if they operate during non-daylight hours, they are still consuming fossil fuel generation from the grid. More-over, rooftop solar is considerably more expensive compared to in-front-of-meter, utility scale solar and risks roof damage and complicates lease agreements.

A somewhat dubious solution is the purchase of RECs (Renewable Energy Credits) offered by the utility. RECs are created whenever a renewable energy source creates electricity. RECs provide utilities with a way to achieve compliance with a state's RPS (Renewable Portfolio Standard).

If the utility fails to generate enough non-fossil fuel electricity as a percentage of total generation, they can offset this through the purchase of RECs. States established penalties for non-compliance, so the price of a REC reflects the price of the penalty.

In the early days of renewable development, RECs played an important role in the financial justification of renewable generation and therefore helped foster investment in renewables. RECs have become increasing less important in the renewable energy investment decision, and there are a plethora of zero-investment-value RECs available.

As was mentioned earlier, RECs are created whenever a renewable electron is generated. Some states either do not have RPS standards, have rolled them back or have already met their RPS requirements. RECs created in these circumstances do nothing to help foster the growth of renewables, but they can be purchased from the utility so you can say you are "green". I feel that is a bit disingenuous and you can read my white paper on this here:

https://exergyenergy.com/wp-content/uploads/2021/12/Green-Fraud-and-Green-Lies.docx.

You aren't purchasing renewable energy or supporting the development of renewable energy, rather simply improving the profits of the utility.

A great example of this happened with the state of Ohio. The state allowed RECs from any state to be used for RPS compliance. This caused cheap or valueless RECs to flood into the state.

Ohio then decided to roll back their RPS mandates and utilities then found themselves with excess inventory. RECs have a shelf life; if they are not used to offset fossil generation within a small number of years, they become worthless.

Utilities found themselves with lots of RECs that they couldn't use, so they sold them to customers saying it would make them green. It sounds great, but purchasing worthless RECs simply reduces your profit and does not support that goal of decarbonizing the grid.

Sustainability's Risk to Business Continuity: The spill over effects.

Many of us read the popular press and believe that the growth in and declining cost of renewables, such as solar and wind will save us. In the long run they probably will. Unfortunately, the path to that end is fraught with declining grid stability and rising energy infrastructure costs.

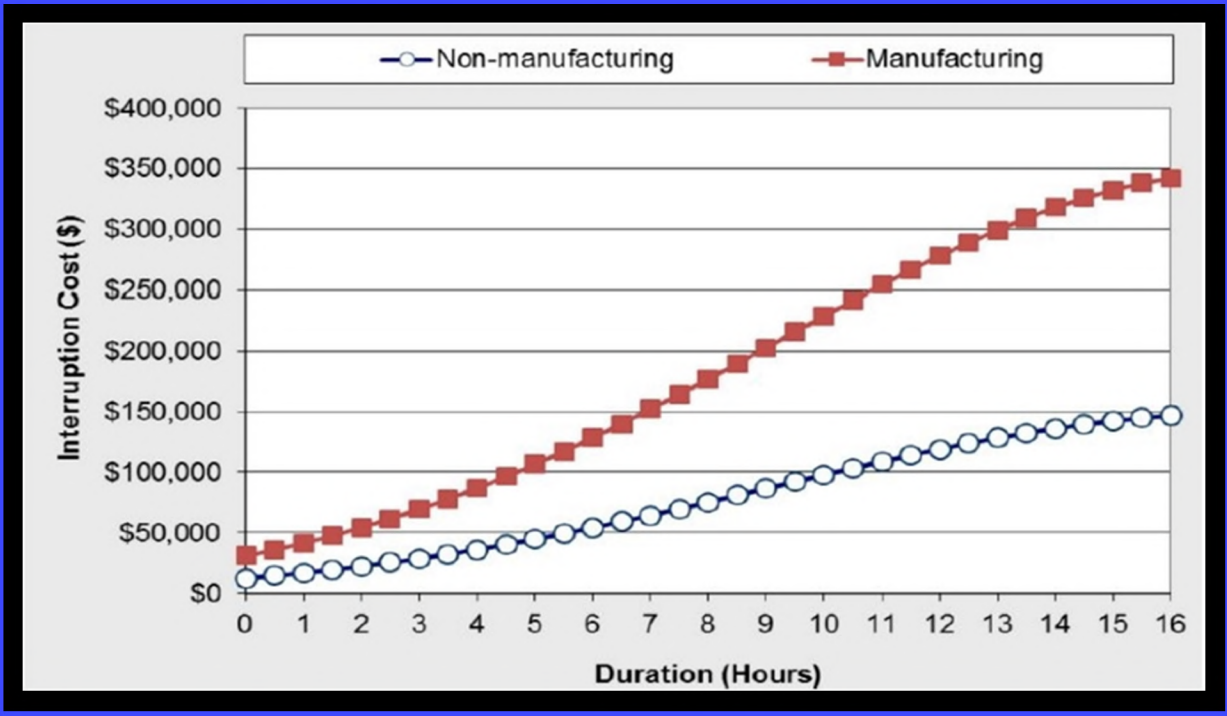
Our grid and generation systems were not designed for high levels of intermittent and distributed renewable generation. Couple this with an aging grid infrastructure and lack of investment in the grid and the outlook is very worrying. Even more concerning is the entire lack of a plan on how to decarbonize the grid. We are simply marching blindly on the assumption that market forces will make it work and when faced with factual evidence to the contrary, we simply throw up our hands and say with confidence that batteries or other technologies will come and save the day. This is both naïve and dangerous. The grid is the most complex machine man has ever created and is not controlled by the free market but a combination of regulated free market activities, political regulatory bodies, and lobbyists that together have been extraordinary effective in accomplishing little. If you review the IPCC report or the easier-to-read Bloomberg's New Energy Finance Report, we simply aren't going to get there in time.

What does this mean for business? I hate to say it but, we're basically on our own. We can't put our head in the sand and expect things will work out. They won't. We must take independent action now. The implications are already evident. Grid outages have doubled in the last 8 years and the duration of outages has also increased. Extreme weather is the primary culprit and that is forecasted to continue to increase at least for the next few decades. As a business, we can't rely on the grid to deliver reliable and consistent power the way that previous corporate generations have enjoyed.

The Need for Backup Generation and Resiliency

If the grid is becoming less reliable and there is neither a clear nor affordable government or state strategy to address it, our fiduciary responsibility requires us to act. We simply can't shut down our operation every time the grid fails. We need to be able to keep running and be self reliant. Backup generators have always been in the back of most executives' minds, but most do not pull the trigger because it represents an expensive insurance policy and the commitment of capital that could be more productively used to grow the business. In addition, and this is prevalent along all these non-core business challenges, the executive team simply lacks the domain knowledge to feel comfortable in making the correct decision.

Bringing in consultants or backup generator manufacturers can make the situation worse rather than better. These organizations want to sell you and convince you that you truly need their services. To accomplish this, they show you how complex and difficult the solution is, reinforcing your discomfort in making the decisions. Executives are committed to making informed decisions and look to third parties for advice not decisions. So, faced with more industry and technology buzz words and doom and gloom, executives procrastinate and rationalize this through budgetary concerns, or organizational bandwidth. In the past, this procrastination typically did not have serious consequences because the grid was very reliable. That simply isn't the case today and it will only get worse moving forward.



Don't Get Fooled by Utility Reliability Statistics

One of the reasons that companies hesitate to invest in backup generation is the published reliability of the grid. Utilities publish their reliability statistics in-order-to compete for industry accolades, not to provide useful information for businesses. It is not that the information is wrong or purposely misleading, it is simply designed for a different purpose.

First it is important to understand the cause of grid outages. Seventy eight percent (78%) of grid outages are due to weather-related downed wires. These situations are quite local and do not affect the majority of grid customers. On average, grid outages effect less than 5% of a grid's customers. Even very large weather events, such as superstorm Sandy, impacted fewer than 7% of grid customers. When the grid publishes its reliability statistics, it calculates outages and duration based on the total customer base, not those effected. If an outage only impacts 5% of the customer base, the duration, expressed as hours per total customer is completely meaningless for decision purposes. If you were one of the unlucky companies that were impacted by an outage, your duration would be 20 times the published average. If you are impacted, your outage probability at that point is 100% and the difference between 5% outage average probability and your 100% is a 20 multiplier.

The statistics for super storm Sandy are particularly telling. While the average, based to total customers, was only 4.2 hours, some customers were without power for 31 days. If you were this unlucky company, your business could suffer significant long-term harm.

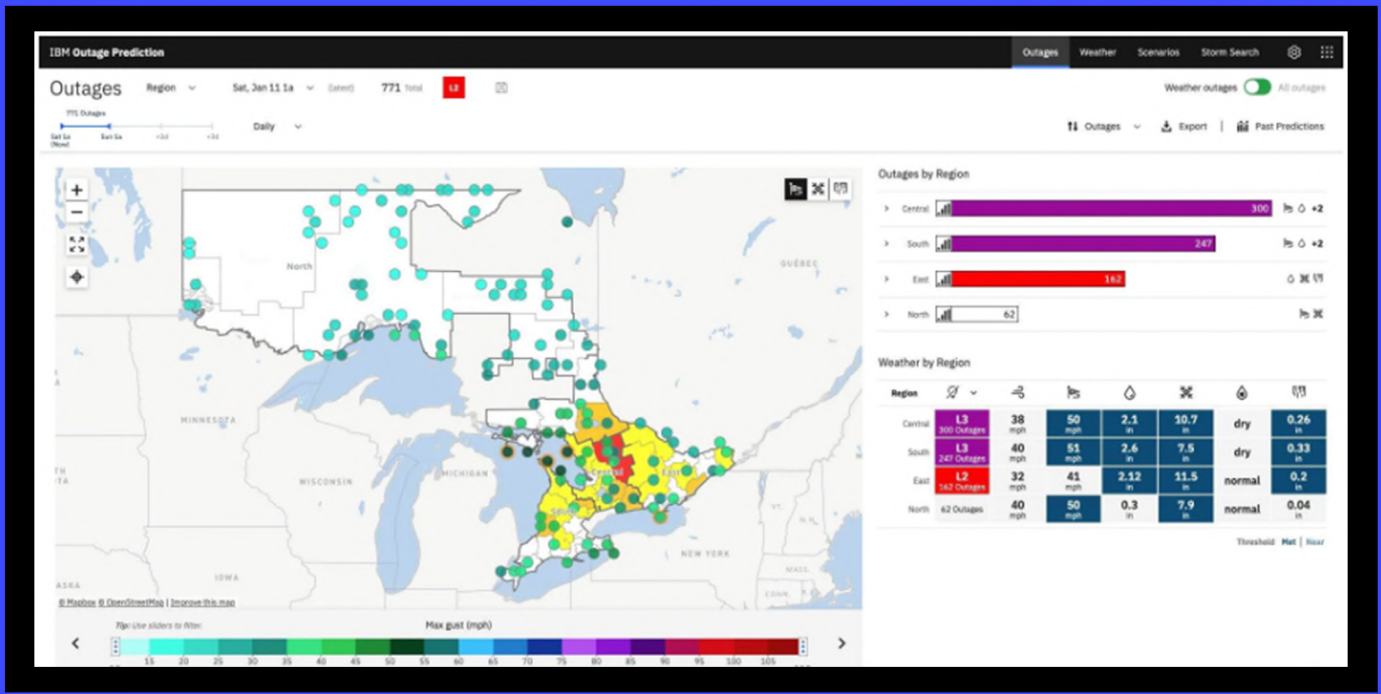
One of the benefits of weather induced localized outage is that it makes predicting outages possible. Exergy, as part of our concierge utility service, can predict when an outage is probable at your location from satellite images and weather predictions. If the probability is high, Exergy will proactively start the generator and disconnect your facility from the grid. So if the grid goes down, you keep running without any dark transition. To learn more about this prediction process, please visit IBM's Weather Company:

https://www.ibm.com/products/environmental-intelligence-suite/outage-prediction#:~:text=Outage%20Prediction%2C%20within%20the%20Environmental,their%20response%20to%20weather%20events%2C

Table 1: Restoration Times Reported by NYISO, ISO-NE, and PJM			
Member	**Restoration Start Date**	**Restoration End Date**	**Length of Restoration**
PJM	10/29/2012	11/28/2013	31 days
NYISO	10/29/2012	11/09/2012	12 days
ISO-NE	10/29/2012	11/04/2012	7 days

Financial analysis relies on the concept of expected value. Take the future cash flows and multiply it by the probability of occurrence. This effectively assumes that the cash flows are a continuous function and that you are going to receive the probability weighted cash flow. This is fine for the typical investments a business makes because the executives are experts in their markets and business domains and can make reasonably precise probability estimates. The problem is that this isn't how the world of grid outages works. This is about weather. I know very few executives willing to bet their companies on their ability to forecast detailed weather for every hour over the next several years. The possibility of an event is probabilistic, but the impact of the event is not. This is a binary situation. If the event happens the impact is 100%, if the event doesn't happen the impact is zero.

In our personal lives, we make this decision all the time when we purchase life insurance. The statistics do not justify the investment, but then again, its completely binary. We can't be 10% dead.



The Solution: You can be 100% Green, 100% Resilient, Save Money with No Investment

The key to solving the above challenges is to simply focus on your core business and do what you do best. This doesn't mean you give up and abandon the challenge, but rather "outsource" it to companies for whom these challenges are its core business. As we all know, focus is what drives innovation and new business models and companies like Exergy Energy, will provide sustainability and backup power as a service for less then you are currently spending.

By selecting Exergy Energy as your concierge utility, you will:

- Be 100% green. All your electricity will come from zero carbon sources.
- Be 100% resilient and keep operating when the grid goes down with on-site backup generation.
- Save Money. Spend no more, or probably less, on electricity than you are currently spending.
- Spend no money. No CAPEX is required.

Sounds too good to be true!

Every market leading company hears this refrain because those that lack the focus, knowledge and commitment cannot see beyond their limited experience. Companies that are committed create the future through outstanding customer value. The solution rests in deep knowledge of energy markets and their associated capital requirements.

Securing low-cost renewable electricity

Solar, wind and hydro are unique in that they have zero fuel cost. This is counterbalanced by their high capital intensity. To finance these projects requires long term Power Purchase Agreements ("PPA"). Until the past few years, traditional utilities were the primary source of PPAs, but this is no longer the case. The PPA market has shifted to corporations that now represent over 80% of new PPAs.

To make the financing work, a PPA has a minimum term of 10 years, with most extending to 20 years and beyond. The longer the term the lower the price for the renewable electricity. Few corporations, other than technology giants and some major brands, are willing and capable of using all of the power from these large utility scale projects. Small- and medium-sized companies have been left out of the market.

Purchasing small batches of shorter-term renewable energy can be quite expensive and has held back many small- and medium-sized organizations. Exergy Energy aggregates and consolidates the renewable energy needs of all its customers to contract for larger quantities and longer terms than an individual corporation. This allows Exergy to lock in low renewable energy prices, often at a discount to the average grid price.

The cost of delivering electricity

The typical utility electric bill is a frightening sight. There are tens of line items and charges that are indecipherable to anyone that is not an energy market expert. For most companies, almost half of the charges are unrelated to the actual electricity consumed and represent cost sharing of the grid's 50% infrastructure inefficiency.

The efficiency problem with electric generation is that the wires, transformers, and other components must be sized for the maximum amount of power that can be demanded during a few hours of the year. Most of the time the grid operates at less than 50% of its capacity, but all of us must pay for the full capacity of the infrastructure.

This cost sharing is accomplished through what is known as peak demand charges. The allocation mechanism is fair and just, in that it apportions the costs according to how much of the load on the grid any one company is consuming during these peak times. Unfortunately, this mechanism perpetuates the inefficiency. It would be better if companies could reduce their load during these times and thus less infrastructure and associated costs would be required.

The process of reducing load during these peak times is called Demand Response. During peak load times the grid will pay you to reduce your load. This sounds like a great deal, except there are tradeoffs. To reduce your load, you need to shut down some machinery and processes. Companies have become more efficient and adopted just-in-time manufacturing and many operate near full capacity. The cost and disruption to operations, customer delivery schedules, and labor reshuffling often is much more expensive than the value of the demand response. From the company's perspective, operating during peak load conditions represents an unsustainable increase in their cost of goods sold.

The Economic Value of Backup Power: Demand Response

Substantial savings can be realized by reducing load during peak demand periods. But as we discussed above, this is often impossible for highly efficient organizations. These are the same organizations that should have backup power. Through intelligent use of the backup generator, a company can reduce their load and participate in demand response without compromising their operations. The mechanism is simple and straightforward. Turn on the backup generator during these peak load times and reduce the amount of load you put on the grid. While the mechanism is simple, its implementation is anything but. Backup generators are efficient, but not nearly as efficient as the grid and have a higher kilowatt-per-hour cost, thus you only want to demand respond when it will be profitable. This requires dedicated systems to monitor and communicate with the grid and the knowledge and experience necessary to execute only when the economics are favorable.

As I have mentioned several times, successful companies are focused on their core business. You are unlikely to be either an energy company or utility, and thus would need to acquire and manage the people and systems necessary to use your backup generator effectively. Exergy Energy provides the systems and expertise as part of its concierge utility service. By outsourcing to the Exergy experts, you are assured of the highest return on your backup generator investment.

What is a Concierge Utility?

Exergy's Sustainability and Backup Concierge Service delivers 4 things that you can't do yourself:

Make you 100% Green. We contract for 100% of your load with low cost, in-front-of-the-meter utility-scale renewable generators and delivery that electricity to you.

Provide 100% Backup Power. Exergy will own, install, operate, manage and maintain a natural gas generator on your site, equal to your peak demand. If the grid goes down, you keep running without compromise.

Save You Money. Typically, we can make you 100% green and provide free backup power at a cost no more than you are currently spending. We accomplish this by providing long term PPA contracts to utility scale renewables, reducing your peak demand and participating in demand response and other grid services.

No Upfront Cost. Investors are looking to invest in decarbonization projects and provide Exergy with low-cost, long-term capital to make you green and cut your carbon footprint.

What's the catch? You select Exergy as your concierge utility and agree to purchase 100% of your facility's electricity from Exergy for some extended period-of-time. Terms range from 5 to 20 years.

What does a Sustainability and Backup Concierge Utility Service agreement look like?

Exergy Energy Sustainability and Backup Power Purchase Agreement (PPA)

Summary of Terms

Note: This following is not an exhaustive or complete list of terms, but a summary in plain English. Please review the PPA in its entirety with your legal counsel.

1. Term of agreement: Variable from 5 year to 20 years, depending on customer requirements.
2. Coverage: Customer will purchase 100% of their electricity from Exergy.
3. Installation, Management & Operation: Exergy will install, manage, and maintain a backup generator at customer's site at no cost to customer.
4. PPA Price: Fixed price per kWh with an annual inflation escalator.
5. Base Load: Both parties agree what the expected load of the facility will be.
6. Minimum purchase: Customer must purchase at least 85% of the Base Load from Exergy.
7. Maximum Fixed Price Power: Exergy will supply up to 120% of the base load at the contracted PPA rate. Consumption above 120% will be a pass through of market prices to customer.
   Fuel: Exergy pays for the natural gas to run the generator.
   Fuel Meter: Exergy will have a separate natural gas meter.
8. Termination: Customer may terminate the PPA at any time, however a termination fee applies.
9. Transfer of ownership: At the end of the term, ownership of the equipment is transferred to customer.
10. Billing: Billing is based on customer kWh's consumed, multiplied by the PPA rate, subject to the maximum and minimums described above. Billing occurs monthly.
11. No Liens: Customer will not place any liens on the System.
12. Exclusive Provider: Exergy will serve as customer's exclusive provider of electricity.
13. Service & Maintenance: Exergy is responsible for all service and maintenance of the generator.
14. Operation for the Benefit of the Customer: Exergy will operate the backup generator only in a manner that benefits the customer.
15. Change in Law or Regulation: Both parties agree to renegotiate the contract if a change in law or regulation makes the agreement financial unviable.

The new challenges caused by climate change can be best met by staying focused on your core business and outsourcing your sustainability and resiliency needs to companies that are focus on and specialized in the field. You need to be sustainable and resilient, but you don't need to invest capital, time, and resources to accomplish this. By choosing Exergy Energy as your concierge utility, we will provide sustainability and backup as a service at no additional cost.

If you would like to learn more please visit our website at:

www.exergyenergy.com

or email me: David March, CEO at march@exergyenergy.com.