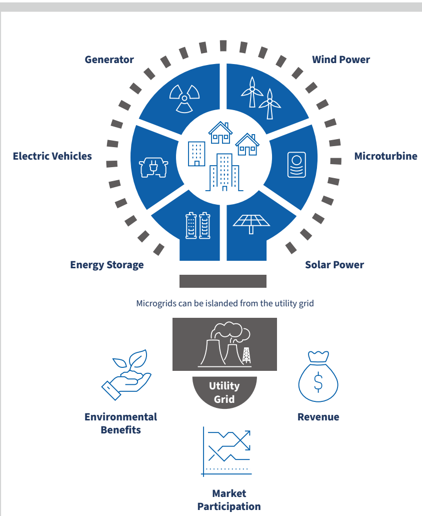
The Resilient Project Value Stack

Over the past couple of decades, electric utility investments were driven primarily in response to an aging infrastructure and increasing customer expectations for reliability. Recently, the increased frequency of storm-driven outages coupled with the need for operational uptime and work-from-home practices have only served to sharpen this focus, with regulators and utilities developing new approaches to meet this need. Traditional measures such as circuit hardening and vegetation management programs have served to reduce the frequency and duration of outages; however, it's becoming clear that the "electrification of everything" will only transform expectations toward zero outages, every day.[1]



Source: FTI Consulting

Coinciding with these trends emerging industry topics such as a move toward "platform as a service" (PaaS), which will transform the utility model so that each utility provides a reliable platform for both those who consume and those who produce distributed energy. Additionally, reliability won't simply be measured by the continuous flow of electrons, but also by the continuous flow of ones and zeros as the transfer of information between utility, generators and customers becomes necessary in a PaaS reality. Physical and cyber security coupled with traditional reliability measures will become key tenets for the industry and regulators alike, but will this be possible through adapting the traditional utility model or will a complete rethink be necessary?

In our recent article, Introduction to Resilient Energy Projects: Reliability and Carbon Reduction, we explored the approaches that help achieve strategic resilience by using a combination of resources such as microgrids, storage and other distributed energy resources. These distributed resources effectively limit the number of poles and wires between the generator and the consumer, reducing the outage exposure caused by weather, animal contact or intentional acts of damage, such as the recent attacks on two substations in North Carolina. But how do you justify these projects when traditional means don't consider the range of benefits provided by these approaches? Enter the value stack.

FTI Consulting's Power, Renewables & Energy Transition team has supported the financial and technical development, and the deployment of gigawatts of renewable and resilient power projects, including distributed energy and microgrid systems.

Where Is the Value in Resilient Power?

The specific need for power resilience will largely define any individual project's potential value stack. Firmed power in the form of renewable energy generation and battery storage, or natural gas-fired generation, may participate in a variety of market mechanisms. The most common commercial and industrial benefits for firm, behind-the-meter power systems include cost management, ancillary services and power reliability.

Cost Management

A common theme for pursuing onsite energy systems is to manage cost. While cost can be reduced through renewable energy systems such as rooftop solar, more substantial value is unlocked through firmed power systems that include storage assets. With resilient power systems, it is possible to time-shift energy use from high-cost peak times to lower-cost shoulder or off-peak hours. This can have a substantial impact on the payback period of a project.

Ancillary Services

Ancillary services are key to a resilient energy project's justification, including financial incentives offered by utility providers or system operators to projects that provide value to the grid. Examples include demand response, frequency regulation, supplementing spinning reserve, voltage support, and black start capabilities. Whether these programs are offered in a service territory depends on the specific need of each regional system.

Power Reliability

Power reliability can be the main operational benefit to pursuing a resilient energy project. Locations with unreliable electric supply services, and voltage and power quality issues affecting operations, should pursue these projects to resolve operational losses associated with downtime.

Infrastructure

Specific only to certain regions in the country and in cooperation with the local electric utility, projects can capture revenue by serving as a non-wire alternative (NWA) solution to transmission or distribution congestion. Dense urban areas or sites upstream from heavily congested service areas should seek to partner with local service providers to determine if additional value can be unlocked through specific system configurations or design features.

However, not all these benefits have value that is easily quantifiable. For example, reliability is best measured as a savings against operational losses, and it functions more like an insurance policy than a revenue stream. While it's possible to evaluate the financial loss associated with operational downtime if accurate records are kept, this information is often not readily available. Another difficult-to-quantify value is a project's green attributes, where the absence of a carbon tax makes it difficult to quantify the value of emission reduction demanded by policy makers and shareholders, and is often undervalued as a result.

A Deeper Look: Ancillary Services

Ancillary services are functions which help the grid operate more effectively or efficiently. Whether these programs are offered in a service territory depends on the needs of each specific regional system, and financial benefits are priced accordingly.

Understanding how all potential value is quantified and how projects are designed to balance design logistics with economics is a delicate matter. Resilient energy projects are expensive, and additional market revenue can be critical to nudging project returns over the line. For example, demand response programs typically have minimum size requirements for participation and are most lucrative when participation is mandatory — where participants must respond when called upon by the operator or potentially face a penalty. Operationally speaking, this means that if the project is battery-based, it must be charged when called upon.

Current Policies Impacting Deployment

Understanding how the policy and regulatory space impacts both project structure as well as revenue opportunities is important. At the federal level, the Inflation Reduction Act of 2022 extends renewable tax credits in the form of the Investment Tax Credit (ITC) and Production Tax Credits (PTC).[2]

CRITICAL FEDERAL POLICIES FOR DEPLOYING RESILIENT PROJECTS

Production Tax Credit

Phase-in of Clean Electricity PTC (Section 45Y) – Replaces the traditional Renewable Energy PTC. The policy is now technology-agnostic, offering a baseline of $0.015/kWh for electricity or storage in service after 2024, with potential bonuses for localized applications, domestic manufacturing and other criteria. Carbon capture may be used. **For the first time, resilient power systems, standalone batteries and systems using carbon capture qualify for the PTC — meaning now is the time to pursue decarbonization and resilience.**[3]

Advanced Manufacturing PTC (45X) — as requirements for U.S.-made infrastructure increase, 45X offers a tax credit for U.S. production of clean energy technology components. **Receiving incentives can be reliant on securing U.S.-sourced materials, so you should consider partnering with manufacturers to head off supply-chain risk.**[4]

Investment Tax Credit

The traditional renewable energy ITC is replaced with a new Clean Electricity ITC (48E) beginning in 2025, providing up to 30% tax credit by technology type. **An alternative to the per kWh PTC, the ITC favors projects with higher installation costs and lower capacity, which is more common in distributed generation projects, making this new technology-agnostic ITC a great tool in the toolbox.**[5]

Fleet Electrification

If your business includes small and/or large vehicles in your fleet, the Inflation Reduction Act's Clean Vehicle Credit (30D or 45W for commercial) was extended to supplement the cost of qualified clean vehicles. Maximum value can only be extracted if battery components are sourced in North America.[6]

Carbon Capture & Sequestration Tax Credit

A true resilient energy project requires baseload generation or a storage solution to get operations through when renewables are not producing. Unfortunately, in many industrial applications that still means natural gas. However, if your company operates at a scale large enough to support CCUS, there is a tax credit of $30 to $180 per ton, depending on the technology implemented.[7]

Qualifying Facilities

This long-standing policy under the Public Utility Regulatory Policies Act (PURPA) allows asset owners to operate systems greater than 1 MW as a qualifying small power production facility or a qualifying cogeneration facility. **In states that do not offer net metering policies, a generator can self-certify with FERC to generate power behind the meter.**[8]

FERC Orders 2222 and 841

These orders are important because they allow distributed energy resources (DERs) and storage to participate in capacity, energy and ancillary services markets. **Essentially, these orders open the value stack for resilient power projects.**[9]

These federal policies guarantee a right to operate, open the potential for new revenue streams, provide incentives and promote local business. State incentives, policies and regulation will shape the structure of a project and the potential value which can be recovered through market participation as savings against high utility prices or improvements in reliability/resiliency. Understanding local market factors is essential if you are determining where to site a business or how to achieve resilience at an existing facility. FTI Consulting has a team of experts shaping state and local energy policy and can help ensure you are making the best decisions for your business, by assisting with navigating complex policies to develop a strategy and implementation plan that balances your business' needs and maximizing outcomes.

Endnotes

[1] https://www.wsj.com/articles/electrification-of-everything-11620843173

[2] https://www.epa.gov/green-power-markets/inflation-reduction-act

[3] https://www.velaw.com/insights/renewable-reboot-the-inflation-reduction-act-of-2022-released-as-senator-joe-manchin-d-wv-changes-stance-on-climate-change-and-signals-support-for-renewable-energy/

[4] https://www.foley.com/en/insights/publications/2022/10/ira-tax-credits-renewable-energy-component

[5] https://www.mcguirewoods.com/client-resources/Alerts/2022/12/inflation-reduction-act-creates-new-tax-credit-opportunities-for-energy-storage-projects

[6] https://www.edisonenergy.com/blog/breaking-it-down-what-does-the-ira-mean-for-fleet-electrification/

[7] https://www.catf.us/resource/carbon-capture-provisions-in-the-inflation-reduction-act-of-2022/#:~:text=The%20Inflation%20Reduction%20Act%20of%202022%20(IRA)%20provides%20critical%20updates,vital%20role%20in%20efforts%20to

[8] https://www.ferc.gov/qf

[9] https://www.blueprintpower.com/blog/the-long-road-to-ferc-orders-8412222-implementation-and-the-not-so-curious-case-of-miso

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