How to Get Your Microgrid Projects Financed
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Even as the microgrid market grows, developers are struggling to obtain financing. This paper, based on interviews with prominent developers, financiers and research reports, examines the evolution of microgrid financing and the obstacles to gaining financing. It also provides concrete advice for developers about how to get microgrid projects financed.

PART 1: Overcoming obstacles to obtaining financing

The Microgrid market is expected to reach $30.9 billion by 2027, according to Navigant Research.

North America is currently the top market and is expected to remain strong as the nation focuses on modernizing its grid and increasing electric reliability.

Microgrids incorporate numerous technologies and are deployed using many different models, including community, utility and remote options.

In spite of this growth, microgrid financing is still evolving, due in part to the complexity of microgrids: They incorporate numerous technologies and are deployed using many different models, including community, utility and remote options. What’s more, microgrids often add components over time.

The lack of standardization and developers’ inexperience working with the investment community are also obstacles. In addition, ever-changing regulations and technology make microgrids appear risky to investors.

This paper examines the evolution of financing in the microgrid industry, identifies challenges, and presents advice that will help developers better connect with the investment community, find financing and move the industry forward.

The evolution of financing

Initially, under more traditional financing models, developers secured a lease or a loan; a bank gave the developer a large sum upfront with an agreement to pay back that money over a defined period of time with a defined number of payments.

Also for early microgrids, power purchase agreements (PPA) and government funding such as Commercial Property Assessed Clean Energy (C-PACE) were options, as they were early on for solar projects. Under a PPA, a developer arranges for the design, permitting, financing and installation of a solar energy system on a customer’s property at little to no cost. The developer sells the power to the customer at a fixed rate, often lower than rates from the local utility.

PACE programs cover the up-front cost of the projects and the property owners pay the cost back over a set period, 10 to 20 years, through property assessments that are secured by the property, and paid as an addition to property taxes.
For example, in 2015, FuelCell Energy sold a university microgrid to NRG Energy via an all-cash deal structured under a 12-year PPA. In 2016, Becker and Becker used commercial PACE funding provided by Greenworks Lending to implement energy solutions at its Main Street property in Hartford, Conn.

Today, more and more energy-as-a-service (EaaS) agreements are being inked. Navigant Research found that globally, EaaS leads among financing models. In fact, they now make up about 25 percent of the financing for microgrids. EaaS contracts are flexible agreements that transfer risk from the customer onto the financiers or owners of the system. They are highly customized and designed to meet the host’s energy needs, goals, local regulatory issues and available energy resources.

Over the next 10 years, EaaS is expected to become the leading model. This format is wide ranging, including both PPAs and pay-as-you-go arrangements. Pay-as-you-go evolved as a solution for smaller, remote, off-grid systems in developing countries. The pay-as-you-go model is designed to bring solar electricity and other services to people who don’t have access to electricity. The model generally involves low-cost payment plans, low initial deposits, and daily or weekly repayments, generally through mobile money. After completing the payment plan, customers own their solar systems, which might include lights and a mobile charging facility.

The EaaS model works particularly well with grid-tied commercial and industrial projects because it transforms a capital expense into an operating cost.

And it’s possible the EaaS model can move the microgrid industry in the way the solar lease model sparked growth in the solar industry.

What stands in the way of financing

While EaaS and other models show promise, obstacles remain.

One problem: Microgrids are made up of various types of equipment, generally from different vendors. Projects tend to morph as they’re developed or as they mature. For example, a project might begin with a combined heat and power plant. Over time, the project developers might add renewable energy, storage or controllers.

As a result microgrids haven’t fit into a traditional financing model.

“Because microgrid projects are complicated, the industry needs to find ways to standardize them.” This will help attract financing, says Ryan Goodman, CEO and co-founder, Scale Microgrid Solutions. That’s his company’s mission.

Another obstacle to attracting financing: Developers often don’t understand how to pitch their projects to financiers.

Often, developers will focus too much on their dreams or what’s innovative about their projects when talking to financiers. Instead, they need to talk about how their projects avoid risks and make investors money. They also need to learn how to speak the investors’ language.

In short, they need to consider the financier’s perspective.

Part of the challenge is that banks don’t view microgrids in the same way they view single distributed energy resources, such as solar systems. That’s because microgrids aren’t as simple and often involve equipment from many vendors.

Benefits of microgrid standardization

Standardizing microgrids can help overcome some of these hurdles. When microgrids are standardized, the developer offers a uniform package that might include a natural gas generator, a battery system and renewable energy, all from well-respected companies. This compares to early microgrids that were largely customized to each host site, an approach that can drive up costs and cause delays in development. Customized microgrids also requires very specialized financing — specific to each piece of the overall equipment.

Standardizing the designs and contracts is the next step in microgrid financing.
“The financing community hasn’t seen enough transactions to have a point of view on what standardization would look like,” says Jigar Shah, who founded SunEdison and is now co-founder and president of Generate Capital. “It’s incumbent on the finance community to say, ‘If you meet these standards, then we can underwrite the deals.’ But it’s hard to set standards without commonalities,” he says.

Goodman points out that standardization can also help overcome regulatory obstacles, such as the complexity of interconnecting to utilities—often a big hurdle to both microgrid and solar developers.

When utilities know what to expect, because they’ve worked with a standard design in the past, they’re more likely to facilitate the interconnection process, rather than place obstacles in the way, notes Goodman.

The solar industry has fewer problems with regulations because the rules and regulations are more mature. Solar providers also know they must comply with certain structures to gain financing.

Another obstacle is microgrids’ tendency to add new components as technology matures. This creates the need for flexible financing solutions.

Microgrid developers can overcome these obstacles, however, by focusing on the financiers’ needs and being as flexible as possible.

PART 2: How to pitch microgrid projects to financiers

It’s critical for developers to take a number of steps to obtain financing.

Chief among them is speaking the financiers’ language and being clear about a project’s financial risks and rewards.

Developers should identify the value streams microgrids produce through their resiliency and ability to island from the grid and integrate numerous forms of distributed energy resources (DERs), notes a Navigant Research white paper. To maximize returns, developers should focus on markets with high electricity prices and low fuel prices, demand charges and time-of-use rates. They should also concentrate on markets that place a value on ancillary services.

With this knowledge about the potential returns, investors have a better feel for how to price their package for developers.

When identifying the risks associated with developing microgrids, developers should include the potential for problems gaining permits and interconnection agreements with utilities. Another risk might be laws or regulations subject to change by the federal or state government. States might eliminate or reduce solar incentives, for example. Changing regulations for common microgrid hosts, such as cannabis or healthcare industries, is another potential risk.

To maximize returns, developers should focus on markets with high electricity prices and low fuel prices, demand charges and time-of-use rates.

With such information available from developers, financiers can structure contracts to reduce risks. Contract provisions might include conditions that identify the scenarios under which parties can exit or alter contracts.

How to connect with financiers

Microgrid developers also need to communicate effectively with financiers—to speak their language. They tend to lack experience in this area.

The Microgrid Financing Connection, a program organized as part of the Microgrid Knowledge conference series, offers an opportunity for developers to meet one-on-one with financiers. Financiers and program leaders have made several recommendations on what developers can do to increase their likelihood of winning financing as a result of these sessions.

For example, when they approach financiers, developers need to have pro formas identifying costs, risks and insurance, as well as all of the inflows and outflows of the project. It’s important to show a rate of return that’s positive and believable.
Some industry members even suggest that developers tailor their designs around the needs of the financiers, instead of doing designs first.

Starting with the financing would ensure that developers’ designs would be a fit for the financier, and could bypass the hassle of having to redesign complex microgrid systems for the sake of conforming to financing terms later in the process.

“You can have all the designs in the world but if you can’t find the money to build it, it doesn’t matter,” says Jerome Garciano, an attorney who focuses on renewable energy transactions.

Know the language

It’s important that developers understand the financiers’ language, including:

Securitization: Specific assets are pledged as collateral for securities, creating asset-backed securities.

Internal rate of return (IRR): The rate that communicates the present value of the expected future cash inflows and outflows. The IRR measures the rate of return on a project, but assumes all cash flows can be reinvested at the IRR rate.

Cost of capital: The required return a company needs in order to make a project worthwhile; the rate used to discount a project’s cash flows. Also called the “hurdle rate.”

It’s also critical to ensure all parties involved in a project have proven track records.

“The top level of the criteria is the same for every sector for all project finance, whether it’s fuel cells or energy efficiency, or microgrids,” says Generate Capital’s Shah. “We only want to use equipment that’s proven and can be verified by an independent engineer. We want a contract that’s bankable. And lastly, we want a group we can trust doing the maintenance on the projects.”

Developers should also identify whether they plan to support the microgrid once it’s online. They should consider designs based on customers, or “anchors,” that can handle the most risk.

Focus on the financiers’ problems

Financiers want to know how they can safely invest their money and their expected rate of return. They expect developers to flex a little to meet their needs.

How to Approach Financiers

Below are ten tips for microgrid developers on how to approach project financiers.

1. Come prepared to speak the financiers’ language. Make sure you understand terms like securitization, internal rate of return and cost of capital.

2. Focus on how your project will earn the financiers money—not on your dreams, your project’s environmental impact or your innovative technology.

3. Be prepared to discuss project costs, risks and insurance, as well as all of the inflows and outflows of the project.

4. Show the financiers a rate of return that’s positive and believable.

5. Present a project that involves proven players and technologies.

6. Be ready to talk about the long-term stability of the off takers or buyers of the electricity from the project.

7. Be prepared to identify regulatory challenges and explain how you plan to address them.

8. Wear a business suit.

9. Communicate your willingness to be flexible and conform to the financiers’ requirements for project costs, technology providers and maintenance contractors, for example.

10. Be aware that selection requirements vary among financiers, so your project may be bankable, but not applicable to a particular investor’s portfolio. Plan to speak to several financiers to identify those seeking projects like yours.

To get connected with qualified financiers looking to back microgrids, submit your project to the Microgrid Financing Connection.
PART 3: Scale Microgrid Solutions: Standardizing microgrids to boost their bankability

Financing a microgrid is difficult if developers use a number of different vendors and technologies, as is common.

An integrated and standardized solution like Scale Microgrid Solutions’ (SMS) expedites the development cycles and cuts costs while simplifying microgrids, making them more appealing to financiers. The standard SMS system is a behind-the-meter modular microgrid system that utilizes solar photovoltaics, lithium ion battery storage and natural gas generation. These assets are operated by a microgrid control platform, co-developed with Schneider Electric, that allows customers to optimize the economic, operational and environmental benefits of distributed energy resources.

SMS’s goal is to provide one integrated product and process. By managing all of the parallel paths (technological, regulatory, financial), SMS reduces risk and inefficiencies.

An example of a project by SMS is the Bowery Microgrid. Bowery Farming, recently named one of Fast Company’s 50 most innovative companies, has constructed the world’s most technologically advanced vertical farm in New Jersey. Bowery Farming contracted with SMS to build a solar, energy storage and natural gas microgrid to help the facility reduce costs, increase resiliency and improve the sustainability of operations.

The microgrid system will operate both in parallel to the grid and in ‘island-mode’ during grid outages. It will be able to provide demand response and other ancillary services to the grid.

“The solution is very modular and the overall system uses the same building blocks that we use in every one of our installations, from the hardware to the software to the contracts,” says Goodman.

With this standard microgrid design, the company is able to reduce design and construction costs. SMS aims to build microgrids that are 30% cheaper than “piecemeal” or non-standardized solutions.

Standardization can also help overcome regulatory obstacles, such as those associated with interconnecting to utilities—often a big hurdle to developers.

“We have experience with a lot of these utilities; we can more accurately predict problems. More broadly, our whole philosophy is to manage all the parallel paths that you have to go down,” says SMS’s Goodman.

While financing has historically slowed microgrid development, standardizing microgrids simplifies the product and helps financiers know what to expect.
PART 4: Turning a microgrid concept into a financeable project

Microgrids often have many moving parts. This allows them to offer a range of benefits. But it also makes them complicated. So financing a microgrid can be challenging.

But fortunately, microgrid developers and financiers are tapping into lessons learned in other segments of the power industry.

For example, over several years financiers developed an approach for independent power plants (IPPs) that led to a boom in gas-fired generation. The financing model often involved a single asset with a clear objective, such as providing electric power at a competitive cost.

In time, that model evolved from relatively simple structures — such as project financing based on the revenue stream from a power purchase agreement (PPA) with a utility — to more complicated approaches involving derivatives and hedges that can finance power plants. Such plants now can be found operating without bilateral contracts in competitive wholesale power markets.

From a financing point of view, the single-minded objective of such a plant presents a relatively easy financing challenge. A microgrid, on the other hand, can involve multiple assets — gas turbines, diesel engines, solar panels, and battery storage devices — from a variety of vendors. And, more to the point, a microgrid is often designed with more than one purpose in mind.

Multi-tasking microgrids

Microgrids can meet any one of a variety of objectives and sometimes even multiple objectives.

Some are built for reliability, to provide backup for critical infrastructure, such as police and fire services. They operate during an emergency or a disaster by providing power when the surrounding electric grid experiences a catastrophic failure.

Other microgrids save money by using alternative forms of generation, such as solar or wind power, which may produce power less expensively than conventional options. Or microgrids may arbitrage their on-site energy against grid power as prices fluctuate. So when grid prices rise, the microgrids turn on their generators; when grid prices fall they instead take power from the grid.

Microgrids can also generate cost savings by providing heating or cooling services, often by making good use of energy that would otherwise be wasted in the process of generating electricity.

In addition to providing on-site services, microgrids may also sell services such as capacity or frequency regulation into a wholesale power market — if local rules allow.

And, finally, microgrids can be designed to meet environmental objectives, such as reducing greenhouse gases, perhaps by incorporating renewable energy backed by energy storage.

For the developer or sponsor the purpose of a microgrid is paramount, and it is often dictated by the customer or client. The developer’s challenge is translating that purpose into a viable financing plan.

Microgrids are a harder story to sell to financiers than are conventional power plants. Why? Key microgrid benefits, such as resilience or ‘value of lost load’— are difficult to quantify. While these benefits may be apparent to the customer, they may be less clear to a financier who is just becoming acquainted with the project or concept of a microgrid.

Finding the right partner

One solution is to find a partner well versed in a variety of financing techniques.

“Being able to quantify customer drivers is key to financing a microgrid,” says Shelley McCain, head of business development for the Americas at Connected Energy, a division of Shell New Energies.
Shell, a giant in the oil and gas industry, in 2016 made a strategic decision to create a new division to focus on the transition to a low carbon dioxide future. Shell New Energies is striving to achieve material scale and profitability as the energy transition unfolds by building a portfolio of biofuel, hydrogen, wind, solar, and customer-oriented solutions. The division plans to invest up to $2 billion a year in clean energy solutions, including microgrids. In May 2018, for instance, Shell New Energies bought a controlling interest in microgrid developer GI Energy.

When it comes to financing, Connected Energy aims to become one stop shop for customers across multiple business classes: commercial, industrial, institutional, and municipal. The unit works with strategic developers, as well as vendors, to build, own and operate and maintain microgrids. And with its broad history and deep balance sheet, Shell is positioned to offer a variety of financing solutions for microgrid developers and sponsors, from a traditional PPA financing structure to more innovative, zero-capital solutions, such as leasing or tolling agreements.

As a player in the competitive gas and power supply business, for instance, Shell can provide customers the gas or electric power they need to operate their microgrid. The customer has no upfront costs and only pays a “toll” for converting the gas or power into the services the microgrid sells.

Another zero-capital option that is gaining traction in microgrid financing is energy as a service (EaaS). The EaaS model is already estimated to account for about 25% of microgrid financing. Its popularity comes from the ability to transfer risk from the customer to the financiers or owners of the system.

The EaaS structure usually involves a low-cost payment plan, low initial deposits, and daily or weekly repayments. At the end of the payment term, the customer owns the system.

**Conclusion: Moving the market with better tools for seeking financing**

Microgrid developers have encountered challenges finding financing, in spite of the fact that new financing models are becoming available. The developers struggle conveying these complicated projects to financiers because they often lack experience working with financiers and don’t know the language financiers speak. In addition, lack of standardization makes financing difficult. However, by preparing information related to a project’s risks and rewards and focusing on the financier’s needs, microgrid developers will be better equipped to attract financing.