

Is There a Microgrid in Your Facility's Future?

Part 4 of 4: Economic Opportunity

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Economic Opportunity

Editor’s Note: This article is Part 4 of a four-part series. Click these titles to view the prior articles:

- [Part 1: Definition of a Microgrid](#)
- [Part 2: Growth of Microgrids](#)
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While the advantages of a microgrid may be clear, facility managers still have to weigh costs against benefits. And many facility managers believe that the benefits can justify significant investment: In the ASCO/Building Operating Management survey, 55 percent of respondents agreed that the cost of an onsite prime power microgrid may be justified. (See Figure 8.)

Figure 8: *Which of the following best describes the cost of onsite prime power microgrid? (R=469)*

An onsite prime power microgrid is a significant investment for a facility, but the cost may be justified	55%
An onsite prime power microgrid is not a significant investment for a facility.	10%
An onsite prime power microgrid is very expensive for a facility and the cost is rarely justified.	25%
The utility pays for creating a microgrid, so the cost is not of concern for a facility	10%

Although the return on investment may be lengthy compared to other energy-saving options, prime power microgrids also have a cost-savings potential, says Michael Fluegeman, Principal of PlanNet Consulting.

FINANCIAL INCENTIVES

A range of financial incentives could make it easier for facility managers to take steps — like installing solar panels or electrifying loads — that could make a microgrid an appealing option. Survey respondents reported that many utilities offer incentives for electrification of loads and solar-power installations. (See Figure 9.)

Figure 9: *Do any of the electric utilities that serve your buildings offer the following? (R=583)*

Incentives for electrification of loads in commercial and institutional buildings	59%
Incentives for solar-power installations in commercial and institutional buildings	56%
Net metering for solar-power installations in commercial and institutional buildings	35%

There are also federal tax credits for solar power. DOE’s “Guide to the Federal Investment Tax Credit for Commercial Solar Photovoltaics” indicates a 26 percent tax credit can be claimed on federal corporate income taxes for photovoltaic (PV) systems beginning construction in 2020, dropping to 22 percent in 2021, and to 10 percent for systems beginning construction in 2022 or thereafter.

Though state and local programs vary widely, many also offer incentives for renewable energy programs. “Some add tax credits, while others offer grant programs and/or rebates,” explains Christopher Burgess, Project Director for the Islands Energy Program at Rocky Mountain Institute.



BUDGET-NEUTRAL OPTIONS

Power purchase agreements (PPAs) and capital equipment leases can provide debt-neutral, budget-neutral solutions for facility managers.

“With a PPA, the building owner allows construction of the microgrid onsite,” explains Burgess. “For instance, an owner may allow photovoltaics to be installed on the roof, as long as there is a 10-foot clearance in each side of the building’s air handling unit. The building owner agrees to purchase the power its facilities need at a rate that is cheaper than from the utility. Operations and maintenance are the microgrid owner’s responsibility.

For states that do not allow PPAs, the microgrid agreement may be structured as a capital equipment lease. “Both options are budget-neutral for the facility owner,” says Burgess.

Third-party agreements for battery-power storage also are available.

Sometimes utilities also may invest in onsite microgrid power-generation systems, as in the Pittsburgh airport example [Described given in [Part 1](#) of this series - Ed.], where Peoples Natural Gas has a long-term contract.

According to Dan Chisholm, Sr., President of MGI Consulting, such energy-as-a-service programs between a trusted utility and the facility’s owner can ensure that a high-quality system is beneficial to both parties. “A utility understands how to manage and control these assets,” explains Chisholm. As long-term assets, microgrids benefit from a full life-cycle managerial approach that includes maintenance “to ensure that the maximum value is achieved for these systems.”

Energy-as-a-service agreements are starting to make headway among facility executives. Among respondents to the survey, 11 percent reported having energy-as-a-service arrangements, another 11 percent indicated that they are currently researching the idea, and 38 percent want to learn more about the option. (See Figure 10.)

Figure 10: *Under an arrangement known Energy-as-a-Service, some utilities are willing to design, purchase, install, and commission power generating equipment while managing routine repairs and maintenance; the facility pays a fixed fee to the utility for reliable power, rather than making capital investments in backup power equipment. Which of the following best describes your interest in such an arrangement? (R=503)*

I am not interested in an Energy-as-a-Service arrangement	40%
I want to learn more about an Energy-as-a-Service arrangement	38%
We are currently researching an Energy-as-a-Service arrangement	11%
We currently have an Energy-as-a-Service arrangement with a utility	11%

REVENUE STREAM

Selling power back to the utility grid, of course, requires smooth integration of the building microgrid to the grid. Ron Bernstein, CEO of RBCG Consulting, refers to this coordination of electric power flow as “transactive energy.”

Bernstein says transactive energy is becoming more challenging when microgrids go on or off the national grid. Whether the utility meter is running forward or backward at any given time, electricity needs to be distributed appropriately to avoid even a momentary imbalance on the grid. In addition to regulatory policy issues, “utilities are challenged with how to manage the microgrid model,” says Bernstein.

But DOE and others are fully committed to tapping the potential of microgrids.

“Because they are able to operate while the main grid is down, microgrids can strengthen grid resilience and help mitigate grid disturbances as a grid resource for faster system response and recovery,” according to the DOE in “The Role of Microgrids in Helping to Advance the Nation’s Energy System.”

“Microgrids support a flexible and efficient electric grid by enabling the integration of growing deployments of distributed energy resources such as renewables like solar,” the DOE document says. “In addition, the use of local sources of energy to serve local loads helps reduce energy losses in transmission and distribution, further increasing efficiency of the electric delivery system.”

A microgrid is a long-term investment, so it’s important to be aware of the range of issues that microgrids can address. Whether the facility manager’s goal is to improve power reliability, reduce costs, cut greenhouse gas emissions, make the facility more resilient, or prepare for changes coming down the road, now is a good time to understand what a microgrid can offer.



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