

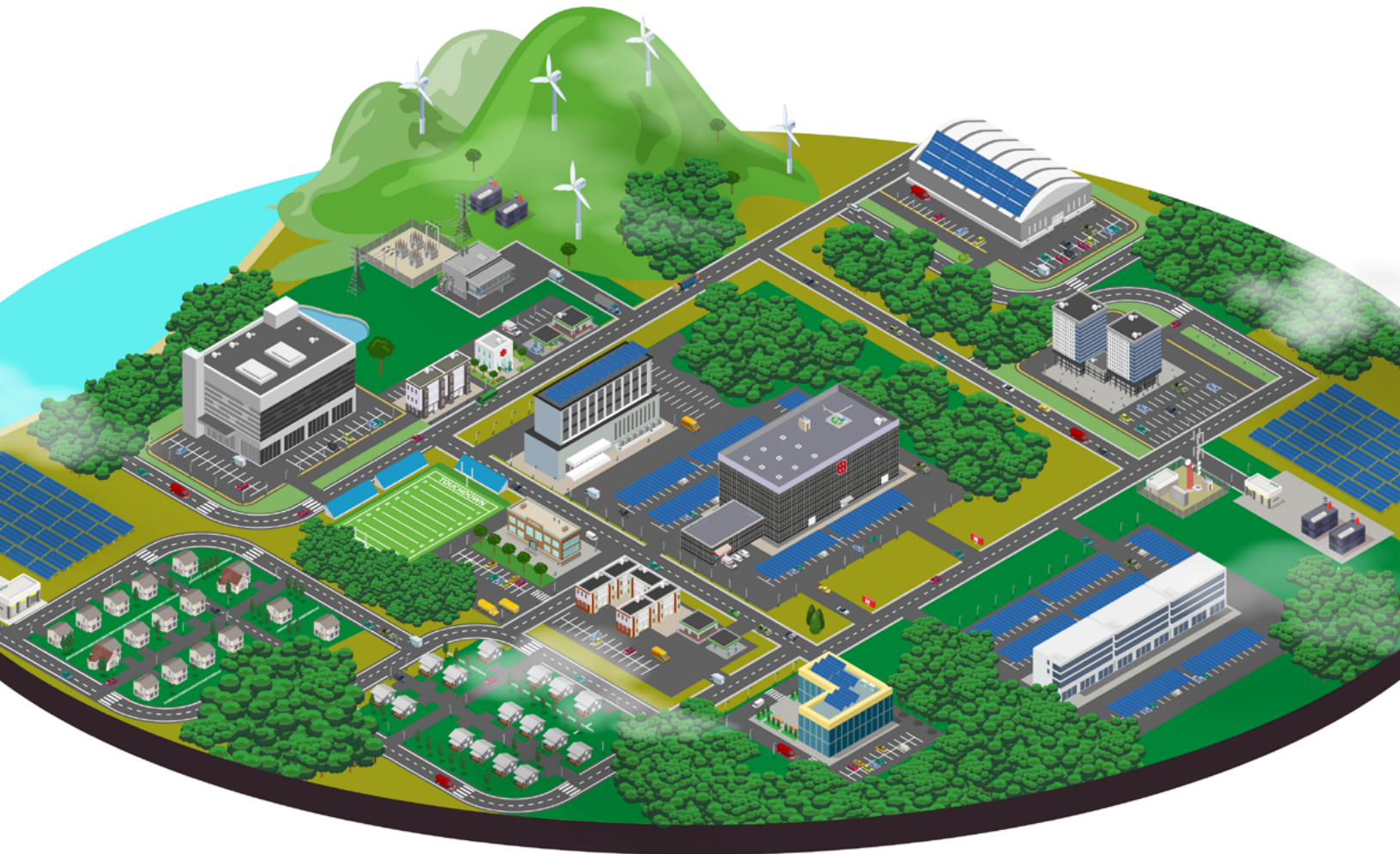
Is There a Microgrid in Your Facility's Future?

Part 1 of 4: Definition of a Microgrid

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Microgrids are becoming increasingly important to facility managers. Some facility managers are looking for greater power reliability and resilience. Others want to increase their organization's sustainability through the use of onsite renewable energy. Still others may view a microgrid as a way to reduce electricity costs, thereby improving the enterprise bottom line.

Whatever the reason, microgrids can play an important role in facilities. What's more, trends ranging from utility incentives to the falling cost of solar power to the move to electrify building loads suggest that interest in microgrids will grow. So it's important for facility managers to have a solid understanding of what microgrids are and of the developments that could make microgrids even more widely used in the future.



WHAT ARE MICROGRIDS?

Facility managers are generally familiar with the national grid, on which utilities move electricity from remote generation to the building site. But a recent ASCO/Building Operating Management survey indicates that many are not clear about microgrids.

Only six percent of respondents called themselves “very familiar” with the concept of microgrids, while 62 percent said they were “not very familiar.” (See Figure 1.)

Figure 1: *How familiar are you with the concept of microgrids? (R=847)*

Very familiar	6%
Somewhat familiar	32%
Not very familiar	62%

Those results are not surprising, as there is no universal definition of precisely what constitutes a microgrid.

One widely used definition comes from the U.S. Department of Energy’s (DOE) Energy Microgrid Exchange Group: “A microgrid is a group of interconnected loads and distributed energy resources within clearly defined electrical boundaries that acts as a single controllable entity with respect to the grid. A microgrid can connect and disconnect from the grid to enable it to operate in both grid-connected or island-mode.”

The ASCO/Building Operating Management survey asked facility managers to select the definition that best described a microgrid. Forty one percent of respondents selected the DOE definition, while another 41 percent said they weren’t sure. (See Figure 2.)

Figure 2: *Which of the following best defines a microgrid? (R=698)*

Any power distribution system within a building or across a campus of buildings	10%
Geographically limited electrical generation, transmission, and distribution system that uses only renewable energy	6%
Group of interconnected loads and distributed energy resources within clearly defined electrical boundaries that acts as a single controllable entity with respect to the grid.	41%
Territory served by a single electric utility that generates, transmits, and distributes power.	2%
Not sure	41%

In commercial and institutional facilities, microgrids may be used “to generate prime power with the utility kept on standby as a backup,” says Michael Fluegeman, Principal of PlanNet Consulting.

By the DOE definition, most facility backup power systems do not qualify as microgrids, says Fluegeman. “The vast majority of facility standby optional or code-required emergency backup generators never connect to the grid or connect only momentarily for smooth transfer,” he explains. “So they would not meet the microgrid definition.”

But it’s not surprising that facility managers are unclear about the meaning of the word “microgrid,” since the term is sometimes used to include traditional, islanded backup power systems.

One reason facility managers may be unfamiliar with the term “microgrid” is that 61 percent say that they have never considered creating a microgrid to serve their facilities. (See Figure 3.)

Figure 3: **How interested are you in having a microgrid that would serve only your facilities? (R=661)**

We are considering creating or already have a microgrid to serve our facilities	24%
We do not have a microgrid to serve our facilities and have never considered creating one	61%
We have decided against creating a microgrid to serve our facilities	15%

PRIME POWER VS BACK UP POWER

The ASCO/Building Operating Management survey revealed that many facility managers may not be clear about the distinction between prime power and backup power. Asked whether the main purpose of both prime and backup power was to provide power during utility outages, 37 percent said they weren’t sure. (See Figure 4.)

Figure 4: **True or false: The primary purpose of both backup power microgrids and prime power microgrids is to provide electricity to a facility during utility outages. (R=692)**

True	40%
False	23%
Not sure	37%

Michael Fluegeman, Principal of PlanNet Consulting, explains the difference between backup and prime power:

- Backup power is onsite power generation primarily designed to provide electricity to a facility during utility outages. The power generating equipment is normally off and in standby mode.
- Prime power is onsite power generation designed to provide electricity to a facility regardless of whether power is available from the grid or not. The power generating equipment is normally on.

Editor’s Note: This article is the first of a four-part series:

- Part 1: Definition of a Microgrid
- Part 2: Growth of Microgrids
- Part 3: Going Green
- Part 4: Economic Opportunity

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