



# SMART

## Making solar smarter

How microgrids deliver resilience, energy cost optimization, and sustainability

#WhatsYourBoldIdea

[schneider-electric.com/microgrids](https://schneider-electric.com/microgrids)

Life Is On

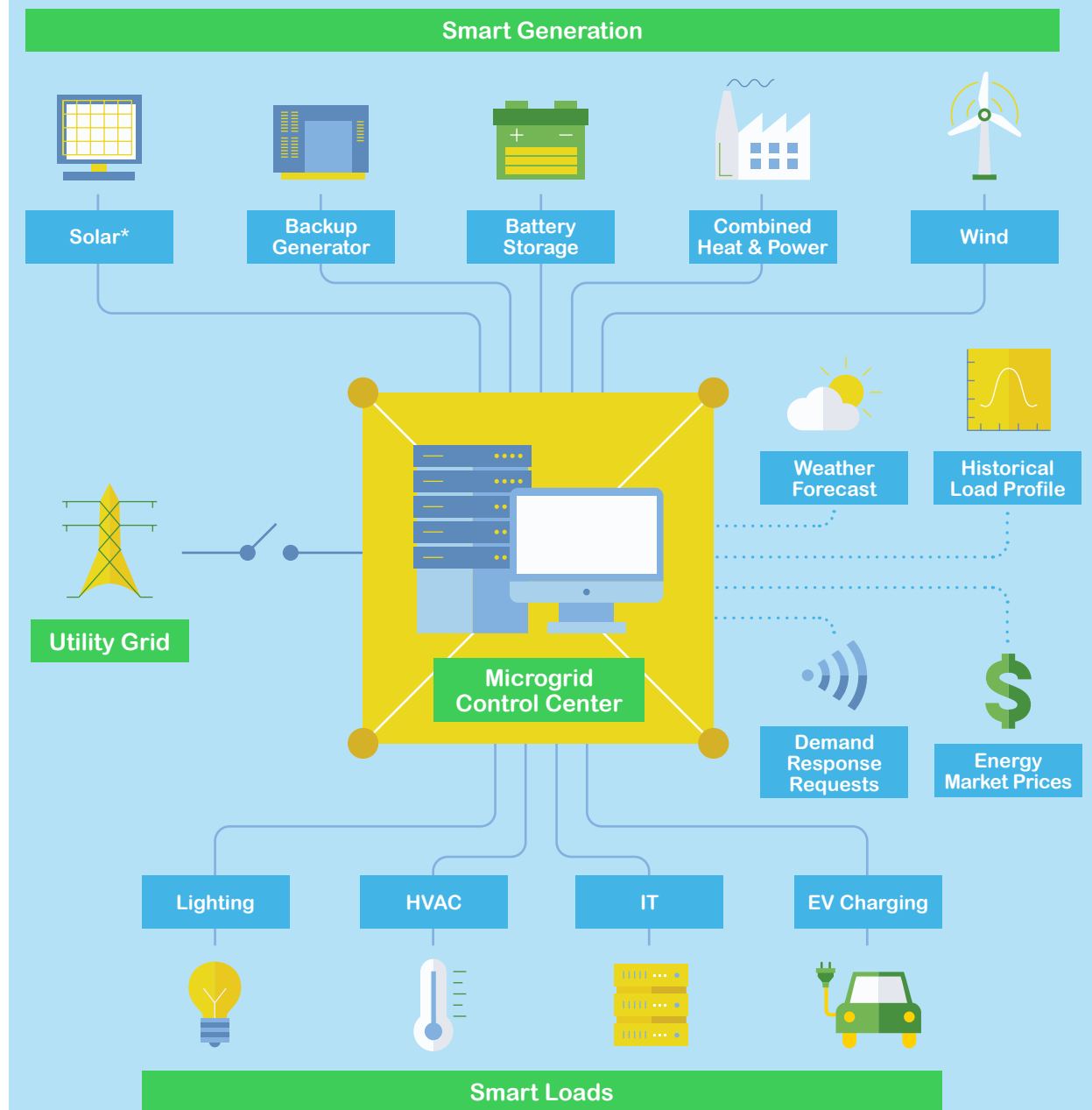
**Schneider**  
Electric

# What is a microgrid?

A microgrid is a collection of local, on-site distributed energy resources (DER) that work together as a single system, enabling facilities to function as their own separate versions of the grid.

A microgrid leverages control technology to intelligently manage and optimize on-site generation and storage resources, enabling businesses to automatically make choices that provide economic and energy resilience benefits.

Microgrids can be grid-tied, grid-independent, or capable of both. Some microgrids can be islanded, allowing them to function on a limited basis when the grid goes down.



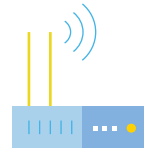
*\*For commercial and industrial customers, solar is one of the most common DER.*

# Solar is bright...but rarely optimized



## Economical

- Annual energy offset ranges from 5% to 100%
- Tax incentives reduce system cost



## No self-consumption

- Facilities lack technology and infrastructure to use all of the solar energy they produce



## Clean

- Reduces carbon dioxide in the atmosphere compared to traditional fossil fuel generation
- Helps meet corporate sustainability goals and government mandates for renewable energy



## Grid-tied

- Solar must be connected to an "anchor", such as the grid, that can convert solar power into electrical energy
- If the grid goes down, solar goes down too



## Strategic

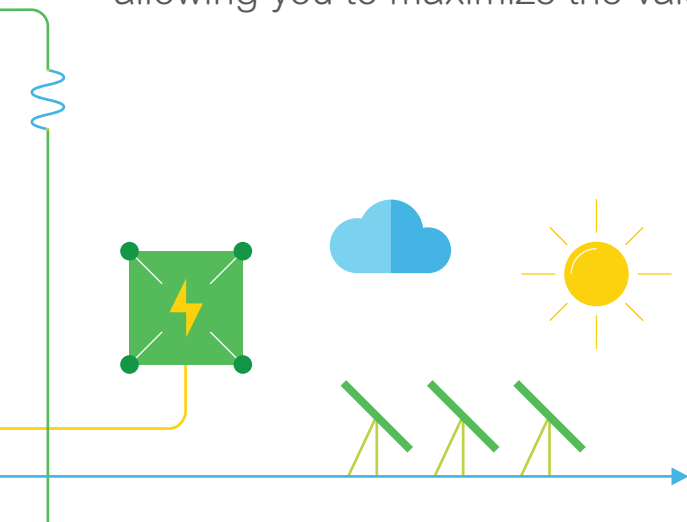
- Demonstrates environmental stewardship and corporate social responsibility
- Appreciated by customers, patrons, and investors



# Microgrids provide “brain power” to unleash the full value of solar

Adding microgrid technology to your energy system empowers you to control and use solar and other DER in sophisticated ways that benefit you most, such as sustaining a grid outage, using your own power during peak periods when energy rates are high, or selling your power to the grid when it's most advantageous.

In other words, a microgrid unlocks the full power of your DER, allowing you to maximize the value of your resources.



## Gain resilience

- Use DER with or without the grid
- Sustain grid outages and avoid downtime

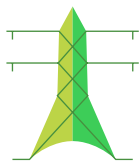
## Gain flexibility

- Self-consume solar energy
- Store energy
- Sell energy back to the grid

## Gain control

- Monitor and manage energy use
- Take advantage of money-making revenue streams and energy savings opportunities

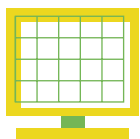
# How it works



1. Microgrids combine DER into one energy system that is grid-tied, grid-independent, or both.



2. The Energy Control Center simplifies the electrical integration of on-site DER into your energy system and safely distributes and controls electric power flow between the utility grid, DER, and loads.



3. The demand-side energy management software platform – [EcoStruxure™ Microgrid Advisor](#) – lets you monitor and automatically optimize your on-site energy resources so you know when to make, use, and store energy to ensure resilience, maximize the use of renewable energy, and achieve the most economical energy spend.



# Is a microgrid right for you?

Microgrids are not for everybody, but they can be an intelligent and powerful addition to your energy system. If any of the following is true, you may be in need of a microgrid:

You have or are considering adding a solar installation

You want multiple energy resources to work as a single system

Your energy use is high

You live in an area with high energy rates

Power is unreliable, the grid is overtaxed, or grid capacity can't meet your demand

Your region offers attractive incentives for greater renewable energy use or on-site generation

You want greater control over your energy mix and energy future

Energy resilience is critical to your business

## Prime microgrid candidates:

- Corporate campuses
- Data centers
- Industrial facilities
- Manufacturing plants
- Big box stores
- Government facilities
- Water treatment facilities
- Universities/colleges
- Hospitals
- Laboratories and R&D centers
- Military bases
- Ports

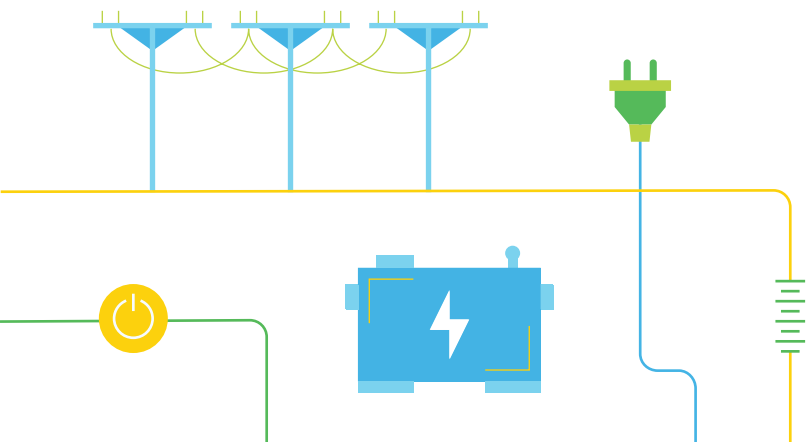
# Solar + microgrid = resilience

When keeping the power on 24/7 is an absolute must, a microgrid provides the assurance you need. Microgrids deliver the ability to use solar and other DER to keep your operations running when the main grid is interrupted or goes down.

Intelligent microgrid technology can predict threats to the grid system from incoming storms or other disruptions and then automatically switch your facility to DER use to weather the storm. With a microgrid, you may never have to risk losing power again.

## Where resilience matters most:

- Critical facilities with prioritized loads
- Commercial facilities with data centers on-site
- Industrial facilities that can't afford to lose a batch of products or have a manufacturing line go down
- Facilities in coastal or low power reliability areas where threats from storms are high and utility power disruptions are likely





# Customer profile: Montgomery County, MD

- Montgomery County, Maryland, is no stranger to severe storms that can cause extended power outages. Yet, county officials have an obligation to keep residents safe regardless of the weather.
- Deploying two advanced microgrids at the Public Safety Headquarters and Correctional Facility allows the county to leverage its solar energy system and natural gas generators to enable uninterrupted public services during emergencies.
- The microgrids produce approximately 3.3 million kilowatt hours of solar energy annually, equivalent to powering about 400 average size homes each year.

[Get the story](#)





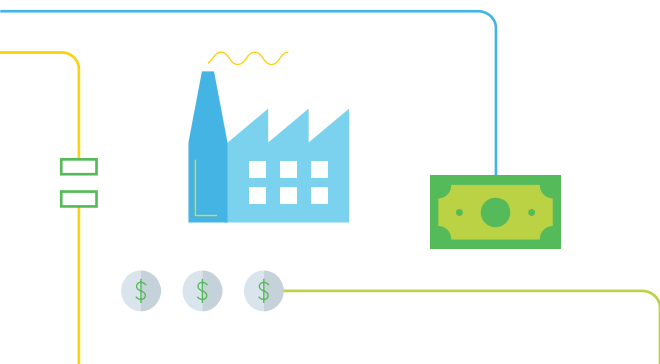
# Solar + microgrid = energy cost optimization

Solar delivers clear cost advantages by offsetting up to 100% of annual energy costs for some facilities. Add a microgrid to the equation and the financial opportunities become much more sophisticated.

You gain the flexibility to leverage solar as a revenue stream, by participating in demand response programs and grid balancing opportunities, or part of a cost avoidance strategy such as peak shaving or tariff management. Ultimately, a microgrid empowers you to proactively manage and use your energy resources for the greatest financial advantage.

## Where energy cost optimization matters most:

- High-energy use sites with high peaking load profiles and expensive demand charges
- Businesses that can significantly improve their bottom line through energy savings or revenue generation
- Sites with multiple DER that want to optimize their use



# Customer profile: North American Research & Development Headquarters

- Schneider Electric partnered with Duke Energy Renewables and REC Solar to install a microgrid at its own facility, reconfiguring its existing 400 kW backup generator to work in concert with a new 354 kW solar roof and carport system.
- The optimized microgrid not only results in greater resilience and higher performance, but the increased cost savings of the buildings electrical upgrades was offset by configuring the microgrid to use solar energy.
- The microgrid is programmed during normal operations to manage the building's energy use and can also provide shelter in place to first responders or employees during outages.

[Watch the video](#)



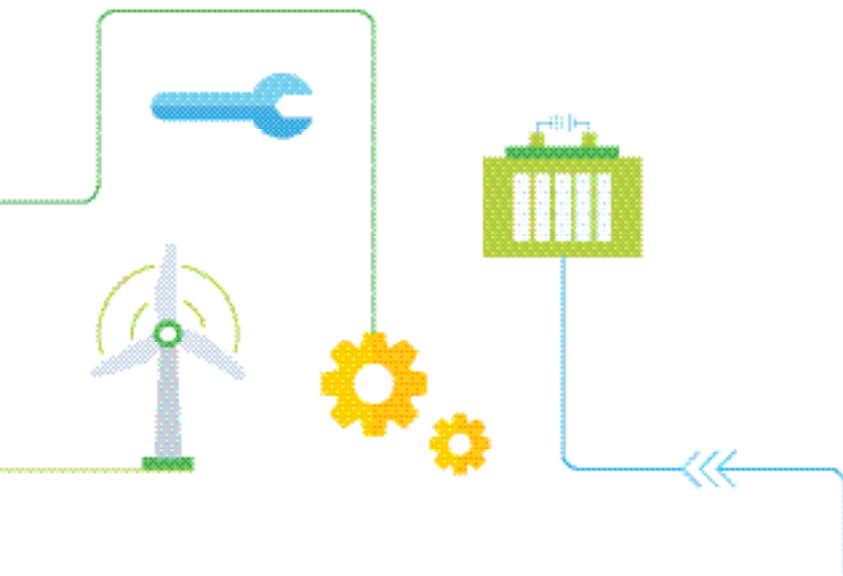
# Solar + microgrid = sustainability

Wherever sustainability falls on your priority list, a microgrid can help achieve your goals. By optimizing solar and other renewable DER, microgrids can reduce your carbon footprint.

Microgrids can also help you take advantage of state policies and incentives that promote clean energy. In some cases, state tax credits can offset a significant portion of installation costs.

## Where sustainability matters most:

- Companies with aggressive sustainability goals
- Facilities with a need to quantify and better track carbon reduction
- Organizations in states with significant incentives for green energy use





# Customer profile: Gordon Bubolz Nature Preserve

- Dedicated to environmental ethics, the Gordon Bubolz Nature Preserve advanced its mission significantly by installing a sophisticated microgrid that also serves as a learning lab. The site leverages five DER and intelligent software control that can test and automatically optimize for the most advantageous combination.
- The facility is designed to surpass net zero energy, producing all of the energy it needs and more. Any excess energy can be fed to the central electrical grid, creating an opportunity for the microgrid to earn revenue and provide grid stabilization for the larger community.
- The microgrid delivers superior energy resilience by allowing the site to operate with full energy independence from the grid should an outage occur.

[Get the story](#)



# Microgrid financing options

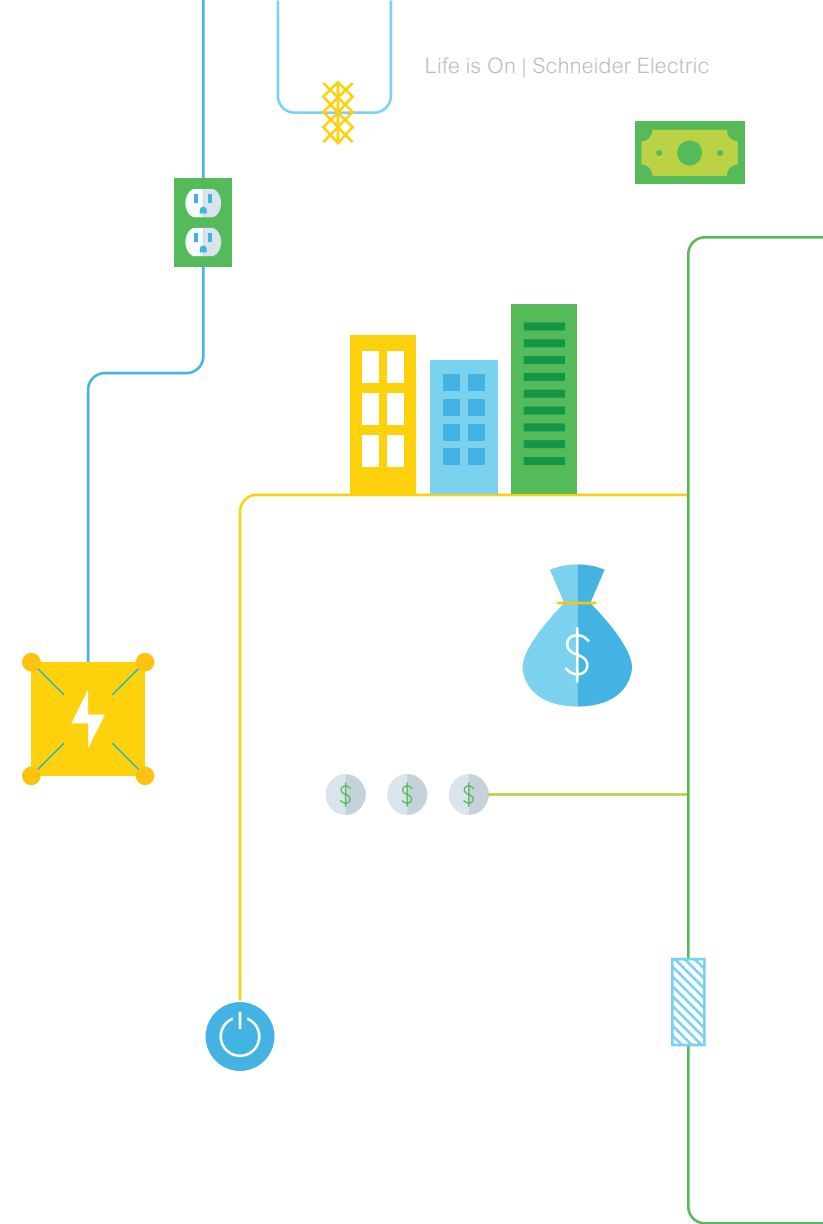
## Customer-owned: capital expense

Sometimes businesses prefer to own their microgrids outright, and cash and bank loans are always an option. You retain complete control over your system and benefit from the financial returns.

## Energy-as-a-Service (EaaS): operational expense

Energy-as-a-Service (EaaS) offers a flexible ownership structure and may represent the best opportunity to take advantage of the benefits of a microgrid. EaaS is essentially a power purchase agreement model: you pay a monthly fee for operational expenses and a third-party owns the microgrid.

EaaS eliminates your capital investment and reduces your financial risk. It also allows you to benefit from the expertise of developers who specialize in power system design and modeling.



# Financial incentives

Several state policies and incentives promote investment in solar and microgrids, including:



## Federal and state tax credits

The federal Investment Tax Credit, Maryland's Clean Energy Production Tax Credit, and California's Self-Generation Incentive Program can cover a significant portion of solar and microgrid installation costs.



## Renewable portfolio standards (RPS)

States that establish a well-intentioned RPS, including New York, Rhode Island, and Vermont, demonstrate their commitment to solar and renewable energy and are likely to support solar-friendly policies and incentives.



## Net metering

41 states have net metering policies that allow you to get paid for the solar you produce, sometimes offsetting the cost of installation in a matter of years. Massachusetts, Ohio, and New Jersey have particularly strong net metering policies.



## Interconnection policies

Some states, such as California, exempt small installations from pricey interconnection study fees.



## State-specific grant programs

Multiple grant programs are available for microgrids, solar, and other generation and storage technologies.



# Designing, deploying, and operating a microgrid

## 1. Define your energy objectives

Quantify the value of sustainability, resilience, and efficiency for your organization.

- What is the cost of downtime?
- What is your risk exposure to increasing energy costs?

## 2. Plan on an 8 to 12 month project timeline

Remember that your project timeline will vary depending on the type and size of DER you use as well as local regulations.

- Who will serve as your dedicated point of contact?
- Do you face any constraints related to a site shutdown which may be necessary during infrastructure improvements?

## 3. Design your system to be future-ready

With a solar + microgrid solution, you can build out your energy system over time:

- Start with a flexible set of grid components and a modular, scalable architecture.
- Future-proof your operations with the ability to add load or energy sources whenever you need.

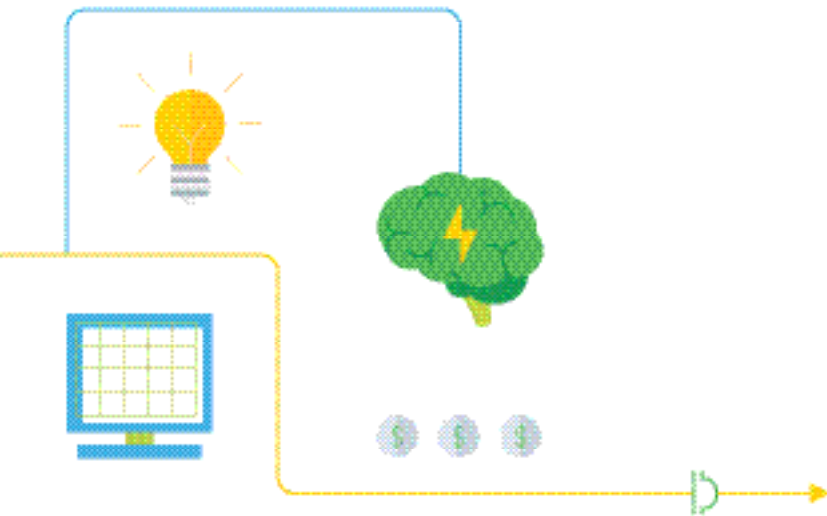
## 4. Optimize your system over time

Leverage integrated, IoT-enabled software like [EcoStruxure™ Microgrid Advisor](#) to optimize your DER automatically.

- Regularly update rate tariffs to ensure highest possible savings.
- Participate in demand response programs.

# Maximize the return of your solar investment today

Take your existing or planned investment in solar to the highest level by adding a microgrid to your energy solution. As the brainpower behind solar and all your DER, a microgrid gives you the energy flexibility and sophisticated control you need to fully realize your energy resilience, sustainability, and bottom line goals.



Take charge of your energy future today!  
Call our sales team

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More information about microgrids, visit:

[schneider-electric.com/microgrids](https://schneider-electric.com/microgrids)

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