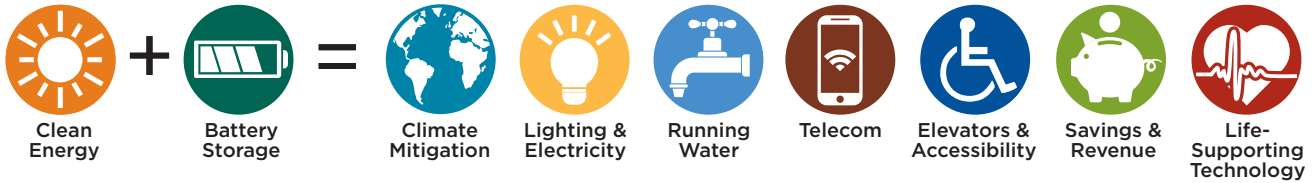


RESILIENT POWER

A project of Clean Energy Group



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PROTECTING COMMUNITIES IN NEED

Solar+Storage Project Checklist

Clean Energy Group's Solar+Storage Project Checklist is intended to serve as a starting point for individuals and organizations who are considering implementing a solar PV and battery storage (solar+storage) project. The benefits of solar+storage are many and varied, from supplying power to critical loads in an emergency to saving building owners money on utility bills and generating revenue by providing utility and grid services.

For more detailed information about solar+storage, including design considerations, battery types, and project economics and financing, see Clean Energy Group's guide, [Understanding Solar+Storage: Answers to Commonly Asked Questions About Solar PV and Battery Storage](#). The guide addresses questions about solar+storage to help establish a foundation of knowledge and understanding for individuals and organizations beginning to investigate solar+storage options for their homes, businesses, or community facilities.

More resources can be found on our website at www.resilient-power.org.

A version of this checklist in Spanish can be found at www.cleangroup.org/publication/Lista-de-Verificación-del-Proyecto-Solar-Almacenamiento.



As you begin the process of deciding whether to install a solar+storage system, there are many questions and considerations to explore. Some initial steps to consider are detailed below.



Get to know your utility bill

Becoming more familiar with your building's energy needs and utility rate structure is a good first step in thinking about a solar+storage system. Your electric utility may be able to assist you in answering the following questions.

QUESTIONS TO CONSIDER

- ☐ What is your monthly/annual energy use (kWh)?
- ☐ Are you subject to [demand charges](#)? If so, how much are they (\$/kW)?
- ☐ Are you on a time-of-use rate structure that may reward you for shifting loads to off-peak periods? If not, does your utility offer a time-of-use rate option?



Seek out expert advice

Connect with professionals who have experience and technical expertise in solar+storage to help you evaluate your options and examine potential solutions. A bit of guidance can help your project move forward and ensure you'll benefit from the experience of others.

If you are working on a community-serving solar+storage project and could use some assistance, explore our [Technical Assistance Fund](#) initiative, or contact us at TAF@cleanegroup.org.

QUESTIONS TO CONSIDER

- ☐ Who is the point person at your facility for the solar+storage process?
- ☐ Do you have access to building and electrical system plans for your building?
- ☐ Is resilience your main goal or are you primarily concerned about economic benefits, such as utility bill savings?
- ☐ Have you considered ownership preferences for the system (such as direct ownership or third-party financing)?
- ☐ Are you in need of external expertise to act only as an advisor or to provide a full range of options and solutions?





Research utility policies and state and local interconnection standards

Reach out to your utility, local permitting authorities, and any experienced solar+storage developers in your area to find out what you'll need to do to get your system permitted and connected to the grid.

QUESTIONS TO CONSIDER

- ☐ What are the local zoning and permitting requirements for solar and battery storage?
- ☐ Are there any utility interconnection issues and/or costs you should be aware of?
- ☐ Is [net metering](#) available for your solar+storage system?
- ☐ Are there any policies that restrict the addition of storage to a net metered solar system?
- ☐ What market opportunities are open to your system for possible revenue streams?
- ☐ Can your system generate revenue by providing grid services, such as frequency regulation, or by participating in demand response programs?

See [Understanding Solar+Storage](#), "Question 3: How do I determine the value of solar+storage (savings, revenue, resilience)?" to learn more about potential solar+storage revenue streams.



Evaluate critical loads

One of the first steps in designing a resilient solar+storage system is to determine what critical electric loads your system will cover. Start with the devices that absolutely must have power during an emergency and build out a list from there. Research what the maximum power draw is for each device you'd like to keep running. Power requirements may be specified directly on the device or available online. Then think about how long you'll realistically need to power each device in an emergency situation.

QUESTIONS TO CONSIDER

- ☐ What services are absolutely critical to your facility during a power outage?
- ☐ How long will you need to run the devices that support these services?
- ☐ Will you be relying solely on solar+storage, or will these technologies complement additional resources, such as a gas or diesel generator?
- ☐ For facilities with existing sources of backup power, how will incorporating solar+storage affect the operation and capabilities of these resources?
- ☐ Are your critical loads isolated in a separate electric sub-panel?





Explore your solar needs and limitations

Investigate what size solar system would be well suited to your electricity usage and evaluate any limitations you may have on the placement of solar panels at your facility.

QUESTIONS TO CONSIDER

- ☐ What size solar array (kW) would satisfy your monthly/annual solar production goals (kWh)?
- ☐ Will the facility's roof support a solar array? How old is the roof? Does it need to be replaced?
- ☐ How much unobstructed roof space is available? Are there any trees or other structures that might shade the panels throughout the day?
- ☐ Is your roof flat or tilted? If it is tilted, at what angle?
- ☐ Is any other space available, such as carports or open land for ground-mounted systems?
- ☐ Can panels be positioned to primarily face south?



Decide on an energy storage technology

This will most likely involve a decision between advanced lead acid batteries and lithium-ion batteries. Lead acid may be a more cost effective choice for systems primarily concerned with emergency backup power. If a system will also provide demand reduction, grid services, or load shifting, lithium-ion batteries may be a better choice. See [Understanding Solar+Storage](#), "Question 7: What different types of batteries are available (and which one is right for me)?" for more information about battery system types and other considerations.

Once you've decided on the proper technology, you can use your maximum critical load power requirements (kW) and emergency energy supply needs (kWh) to estimate the battery size for your system. See [Understanding Solar+Storage](#), "Question 8: What size battery do I need?" to learn more about sizing a battery storage system.

QUESTIONS TO CONSIDER

- ☐ What services should the battery storage system be able to provide? Backup power only? Demand management? Grid services?
- ☐ How much critical power demand will the system need to meet and for how long?
- ☐ What contribution will solar and other generation components make to powering loads and recharging the battery during an outage?
- ☐ How much room is available for a battery system? Will the batteries be installed indoors or outside?





Explore your financial options

Now that you have an idea of the size of your system and the revenue streams available, it's time to begin the process of figuring out how to pay for it all. Local solar+storage developers should be able to help you get started in this process. See [Understanding Solar+Storage](#), "Question 5: How can I pay for a solar+storage system (incentives, grants, financing)?" to learn more about available incentives and financing options.

QUESTIONS TO CONSIDER

- ☐ How much of your system costs could be offset by the [Federal Investment Tax Credit \(ITC\)](#)?
- ☐ Are there any state, municipal, and/or utility incentives that can be applied to the cost of your system?
- ☐ Is leasing or third-party ownership of solar and/or storage available? Would it be cost effective?
- ☐ Are green bank or other clean energy loan funds available?
- ☐ Are Solar Renewable Energy Certificates (SRECs) available in your state?

IF YOU NEED MORE INFORMATION

Clean Energy Group's Resilient Power Project has developed a suite of resources on solar+storage and resilient power to describe how clean energy technologies can provide more reliable, cost-effective electric power solutions. These resources, including reports, webinars, blog posts, fact sheets, and case studies, can be found on the Clean Energy Group website. We invite you to learn more about the Resilient Power Project and Clean Energy Group at www.resilient-power.org and www.cleanegroup.org.



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Clean Energy Group (CEG) is a national nonprofit that works to accelerate an equitable and inclusive transition to a resilient, sustainable, clean energy future. CEG fills a critical resource gap by advancing new energy initiatives and serving as a trusted source of technical expertise and independent analysis in support of communities, nonprofit advocates, and government leaders working on the frontlines of climate change and the clean energy transition. CEG collaborates with partners across the private, public, and nonprofit sectors to accelerate the equitable deployment of clean energy technologies and the development of inclusive clean energy programs, policies, and finance tools. CEG created and manages the Resilient Power Project to accelerate access to the benefits solar PV and battery storage technologies in historically marginalized and underserved communities. Learn more at www.cleanegroup.org and www.resilient-power.org.



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