

5 THINGS TO CONSIDER

WHEN INSTALLING SOLAR IN THE CARIBBEAN



CCREEE

CARIBBEAN CENTRE FOR RENEWABLE
ENERGY & ENERGY EFFICIENCY



1

WHAT DO I NEED TO CONSIDER BEFORE INSTALLING A PV SYSTEM?



Verify your local laws and requirements:

Verify existing laws and regulations for solar PV in your country. These may include:

- Interconnection requirements (if grid-tied)
- Application process for net billing (if grid-tied and exporting)
- Installation and operational standards and guidelines
- Protection and safety guidelines



Maximize your efficiency:

Before exploring a solar PV system, determine whether you are using energy as efficiently as possible.

- An energy audit is recommended to examine how energy is used at your premises and identify opportunities to reduce consumption. These opportunities may be investing in newer, more efficient appliances, or changing your behaviours. These may provide cheaper ways to reduce your bill than the installation of a solar PV system and should always be investigated first.



Determine your needs:

Determine your typical energy consumption, consider any potential future changes to that trend and then consider what proportion of your energy consumption you want to offset with your PV system. Do you want to:

- Supply all your regular electricity needs
- Cover some proportion of your regular electricity needs
- Establish a backup supply in the event of outage or emergency. This could be sized depending on what proportion of your needs must be covered, for what period of time



Evaluate your circumstances:

Understand your circumstances as they may affect your ability to easily install a system or affect the final system design:

- Is your building's electrical installation currently up to code? Typically, modifications to your building electricals - including the installation of a solar PV system - will be subject to reinspection by the authority having jurisdiction.
- Should other elements of your installation not meet code, you may have to rectify these deficiencies before getting approval. This can mean incurring additional expense not catered for.
- What is the condition of your roof, if considering a roof-mounted PV system? Will your roof covering require repairs in the next 5-10 years? What type of roof structure do you have, and what is its load bearing capability? Some of these questions will require the intervention of a professional - in this case, a structural engineer
- Is the land space free from any degree of shading? A small amount of shade will cause a drop in power output from your system.



DID YOU KNOW?

A grid-tied solar energy system turns sunlight into electricity to power a building while it is still connected or tied to your local electricity company. This differs from off-grid systems, which aren't connected to the grid/utility at all.



5 Identify potential locations for installation:

Examine your property for and identify that space is available to install a PV system. Suggested spaces include:

- The roof of your building for a roof-mounted system;
- The grounds surrounding your building for a ground-mounted system;

You may not know at this point what area your system requires, but it is nevertheless useful to identify possibilities. Look for areas with unobstructed sunlight through the course of the day. Completely unshaded areas are best but, identify any possible areas – even those with some shading. A solar professional can help you evaluate them for suitability later and discuss options to reduce shading.



6 Understand your budget:

Consider your budget and financing options: Determine whether government incentives for PV are available in your region;

- Examine your personal financial situation and the options available to you. Do you have money set aside which can be put toward the purchase of the PV system? If you wish to pursue financing, can you afford increased monthly expenditure?



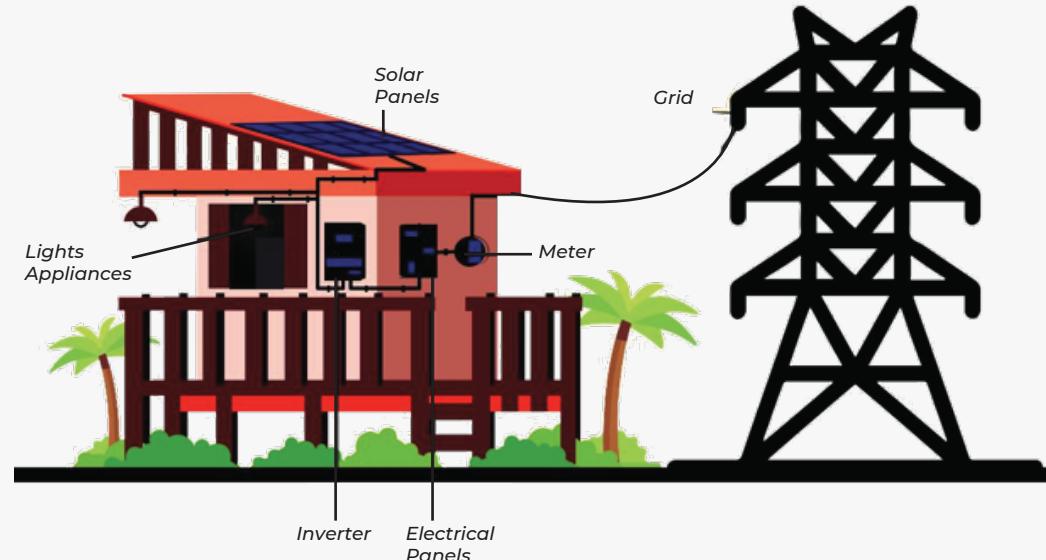
7 Talk to the professionals:

This is the point at which you engage professional services to undertake assessments on your specific circumstances. These may include solar PV installation companies, engineers, financial institutions and insurance companies.

- Engage solar PV professionals to discuss your needs, conduct an assessment at your property, determine your design requirements and provide a cost estimate based on the above.

Residential Solar Panels connected to the grid

Illustration showing main elements of the system that you may expect to discuss with a solar PV professional to obtain on your cost estimate



system to your roof would not void any existing warranties. You should also speak to a structural engineer before mounting anything on your roof.

- If financing is required, use the cost estimate provided to engage financial institutions. More institutions are establishing sustainability-focused financial products for consumers, some with concessionary rates.
- Occasionally, you may need to engage other professional services. You may want to verify with a roofing company for instance, that affixing a mounting

- An insurance company may provide guidance on how the system affects existing liability coverage, or how you might extend your coverage to include the new system.



HOW DO I ENSURE THE SYSTEM MEETS MY CURRENT AND FUTURE NEEDS?

In order to ensure that your PV system meets your energy needs – both present and future – you should begin by accurately determining your current energy usage.

Your electric utility billing history can provide a useful overview of your electricity consumption and your monthly expenditure on electricity.

After understanding how you currently consume electricity, you should consider whether your use may increase or decrease in the future.

Future increases in consumption may be caused by the purchase of totally new appliances, such as air conditioners or the replacement of existing non-electrical appliances with electrical ones, such as switching from a gas to an electrical range.

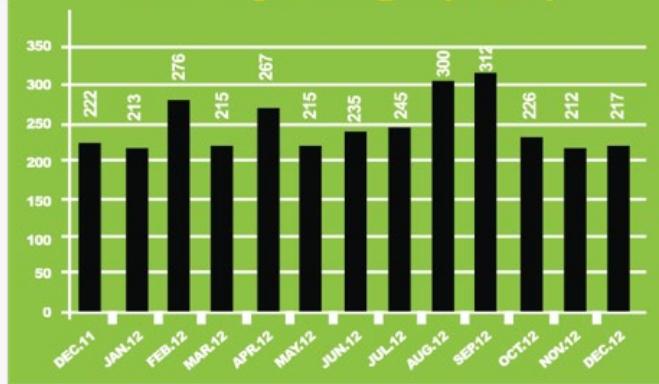
Decreases would be expected as a household downsizes, such as when children leave the family home to start households of their own.

Where uncertainty exists, it may be safer to design a system sized to produce less than, or just enough for your existing needs, but which has the capacity for future expansion.

Where you expect your electrical needs to increase in the future, be sure to indicate this to your solar professional, who can take this into consideration in the siting, design and installation of your system.

Note that this guidance is highly dependent on the type of interconnection arrangement which exists.

Monthly Usage (kWh)



Many modern electricity bills provide an inset chart showing a 12-month historical trend of energy



DID YOU KNOW?

Remember that it is always recommended that you first optimize your use of energy before installing a solar PV system.

3

WHAT DO I NEED TO CONSIDER BEFORE INSTALLING A PV SYSTEM?

Hurricanes and storms are serious considerations for us here in the Caribbean. As such, we need to be aware of the risks they present to our energy sources.

Before the storm

Safeguard your investment

The resilience of a PV system is directly linked to the resilience of the structure it is connected to. For distributed solar PV, the most common installation configuration is to mount systems on roofs.

The primary consideration for securing these systems is that the foundation it is mounted on the roof structure and covering is built to withstand severe damage or destruction caused by tropical cyclones.

In this respect, it is important have a roof inspection done before installation, to ensure your system uses a quality, tested PV racking system and confirm that proper installation procedures are followed to mount the racking system on your roof.

Generating your own power?

A solar PV system is often seen as the ideal way to ensure a constant source of power, no matter what happens on the grid.

Many new PV owners are surprised to learn however, that many eligible grid-tied system configurations require the system to sense the grid to operate.

In other words, during an outage or even a period of low voltage, your solar system may shut itself down. It will power back up once it senses that the grid is available and its parameters are within an acceptable range.

Technically, the design of a system to facilitate self-generation (for on-premises consumption) in the event of a grid outage is possible i.e. including energy storage. The important considerations are whether local law, regulations or codes support or prohibit these types of systems.

These systems are undoubtedly beneficial in the event of sustained outages following a natural disaster where the local utility has been affected. But this benefit comes at a price; these systems are typically more expensive than the average grid-tied system.

See the next section for further details on when it makes sense to consider battery storage

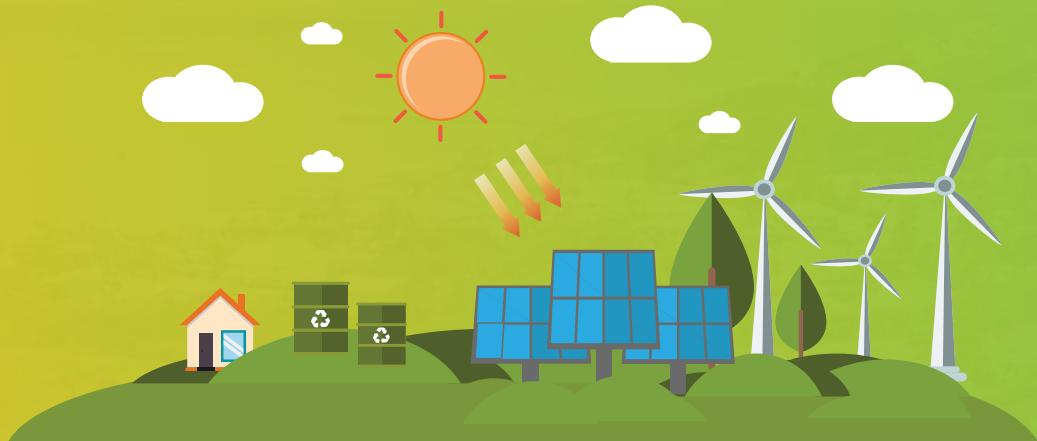


4

WHAT ABOUT BATTERY STORAGE? IS IT A MUST?

Battery storage is unnecessary for the average grid-tied customer. However, if you answer yes to one of the following, you may want to explore the addition of storage to your system:

- You want an off-grid solar PV system;
- You have an unreliable utility electrical supply and want to increase reliability of supply;
- You want to have emergency power backup at your home or facility in the event of power outage, disaster or because of the critical nature of your business;
- You are willing to pay extra for these services.



5

WHAT QUESTIONS SHOULD I POSE TO A POTENTIAL SERVICE PROVIDER OR INSTALLER?



Expect a quality professional to:

- Assess your location to gather information important to the installation of the system – e.g. orientation and angle of your roof, available space etc. Keep in mind that many aspects of solar PV design are specific to your situation; beware of a PV installer who provides a proposal without conducting a site assessment.
- Provide a quotation for your system, as well as quantify its benefits. A good solar professional can discuss with you the various options available to pay for your system and present payback periods for different options. Ensure the options provided take into account your usage pattern based on your energy audit or expected future usage pattern.

WHAT QUESTIONS SHOULD I ASK OF A PROVIDER?:

► Reputation:

How long have you been installing solar PV?
What projects have you worked on in the past?
What qualifications or accreditation is required for solar PV installation?

► Placement:

Have you considered tilt in placing the panels and how this may impact generating potential?
Is shading a concern and if so, how are you going to mitigate its impact?
Will the system make any noise?
If so, can it be placed away from bedrooms or other quiet spaces?

► Components:

What types of panels do you use?
Which ones do you think best for me, and why?
What racking will be used and what is the method of installation for it?

► Durability:

How long can I expect this system to last?
What repairs or maintenance is required and how often?
Will a professional be required each time maintenance is necessary and what are the associated costs?
Is a warranty included?
If so, what does it cover?
What time period is the warranty for?

► Installation:

Will you or a colleague check the structural integrity of my roof to ensure it can support the installation?
Will the wiring be concealed when installation is complete?
Will the system and its components be easily accessible for maintenance?
Will theft-proof hardware be included at installation?
Does the quote you provided include all installation costs?
What are the cost implications if work has begun but cannot be completed (for example, if a previously unknown challenge is identified)?
How long will the installation take?

► Connection:

What are my system options (off-grid vs. grid-tied)?
What additional costs do I need to consider for each?
What considerations are important for each type of system?
Will your services include the application for interconnection? If not, how do I do this?

► Monitoring:

Will a display unit be included?
What does it show?
Will I be taught how to read it?
Will it cost extra?
Will I be able to monitor the system remotely?

► Financial:

What is the payback period of the PV system?
Is there any risk of the current tariff or benefit scheme arrangement changing in the future?
Do you offer financing, or are you aware of other financing sources?

