

For the installation of a Distributed Generation (DG) Facility, Concho Valley Electric Cooperative (CVEC) has requirements in place to maintain safety and reliability for our Members and personnel. All the following requirements must be met.

Requirements Checklist:

- ❑ The Agreement for Interconnection must be completed, signed by the owner of the DG Facility and submitted to CVEC.
- ❑ A one-line diagram and facility layout diagram must be submitted to CVEC.
- ❑ A pre-inspection must be scheduled and completed with CVEC.
- ❑ Receive approval notice from CVEC for construction.
- ❑ A meter base must be installed on the output of the DG Facility.
- ❑ The DG meter base must be wired to have DG production flow from the bottom up through the meter.
- ❑ A Visible Lockable Labeled Disconnect (VLLD) device that has a visual break must be installed within 10 feet of the utility billing meter. If not, a site directory placard indicating the location of the VLLD must be placed on the Member's equipment beside the Cooperative's billing meter.
- ❑ The inverter must be UL 1741 and IEEE 1547 compliant.
- ❑ A post-inspection must be scheduled and completed with CVEC.
- ❑ A Permission to Operate (PTO) letter will be sent to the owner of the DG Facility.

NOTE: DG Facilities greater than 15 kW AC will require an additional engineering study and the DG Facility size shall not exceed 110% of the previous two-year historic maximum demand for that location.

How does it work?

When I generate power with my solar, where does it go?

Energy generated by your DG facility will flow through CVEC's Distributed Generation (DG) output meter and into your home. Your home will absorb all the energy needed from your DG facility and will pull energy from the CVEC grid to satisfy your load (Figure 1). If your DG facility produces more energy than your home needs, the excess will flow back onto the CVEC grid (Figure 2).

Member Load is Greater Than DG Facility Production

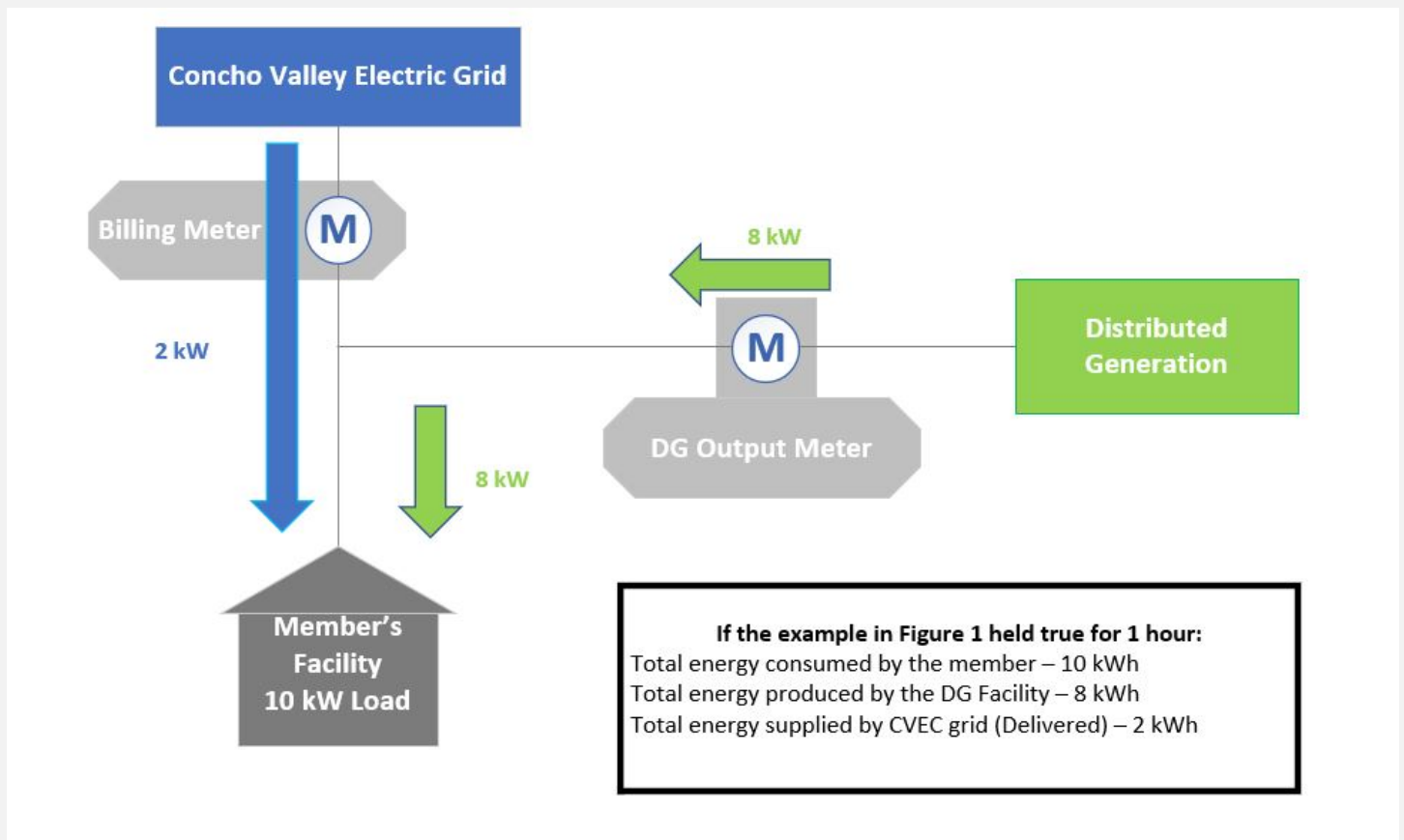


Figure 1.

Member Load is Less Than DG Facility Production

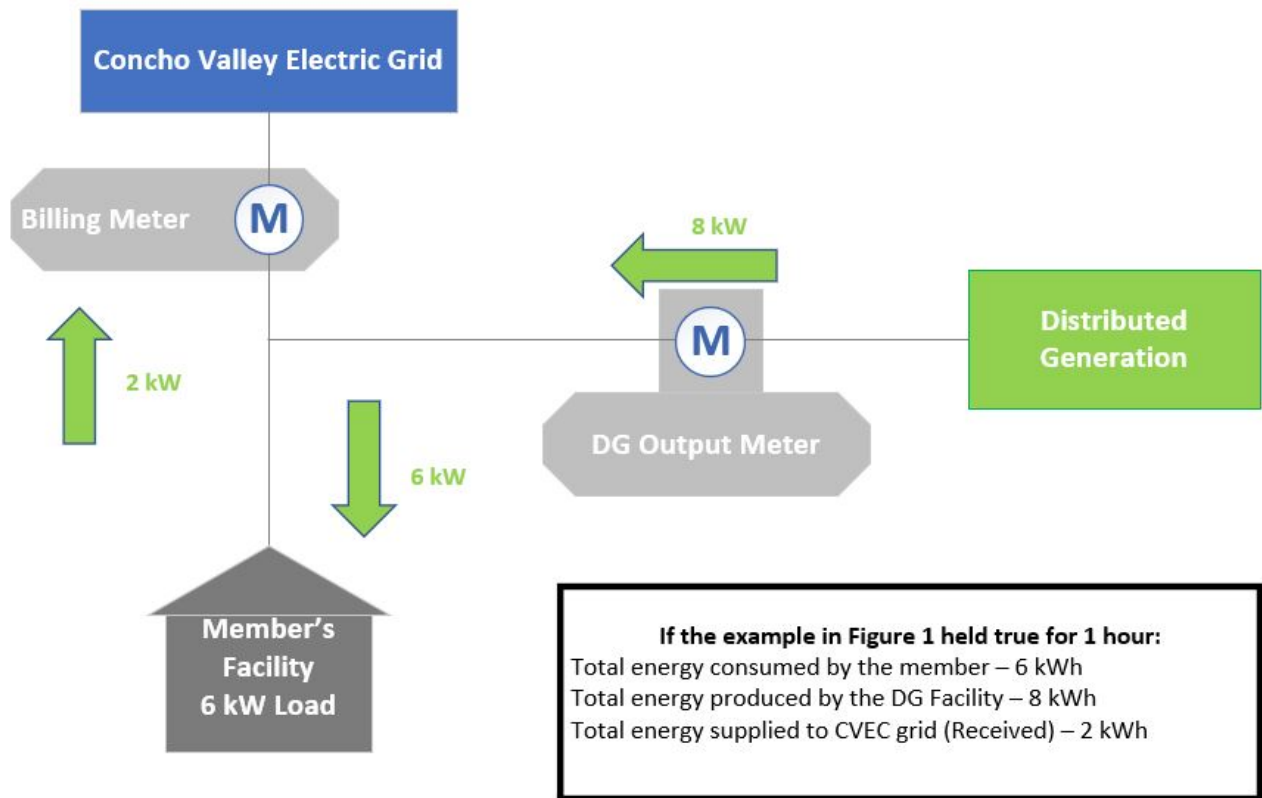


Figure 2.

CVEC FACT

There are over 50 DG Facilities installed by Members currently.

How will the power flow and be reflected on my bill?

Energy generated by your DG Facility first flows through CVEC's Distributed Generation (DG) output meter and then into your home. When your DG Facility is producing more than your home can consume, the excess will flow back to the CVEC grid. This will be labeled as "Received" on your bill. The power consumed from the CVEC grid will be labeled "Delivered" (Figure 3).

Power Flow/Billing Example

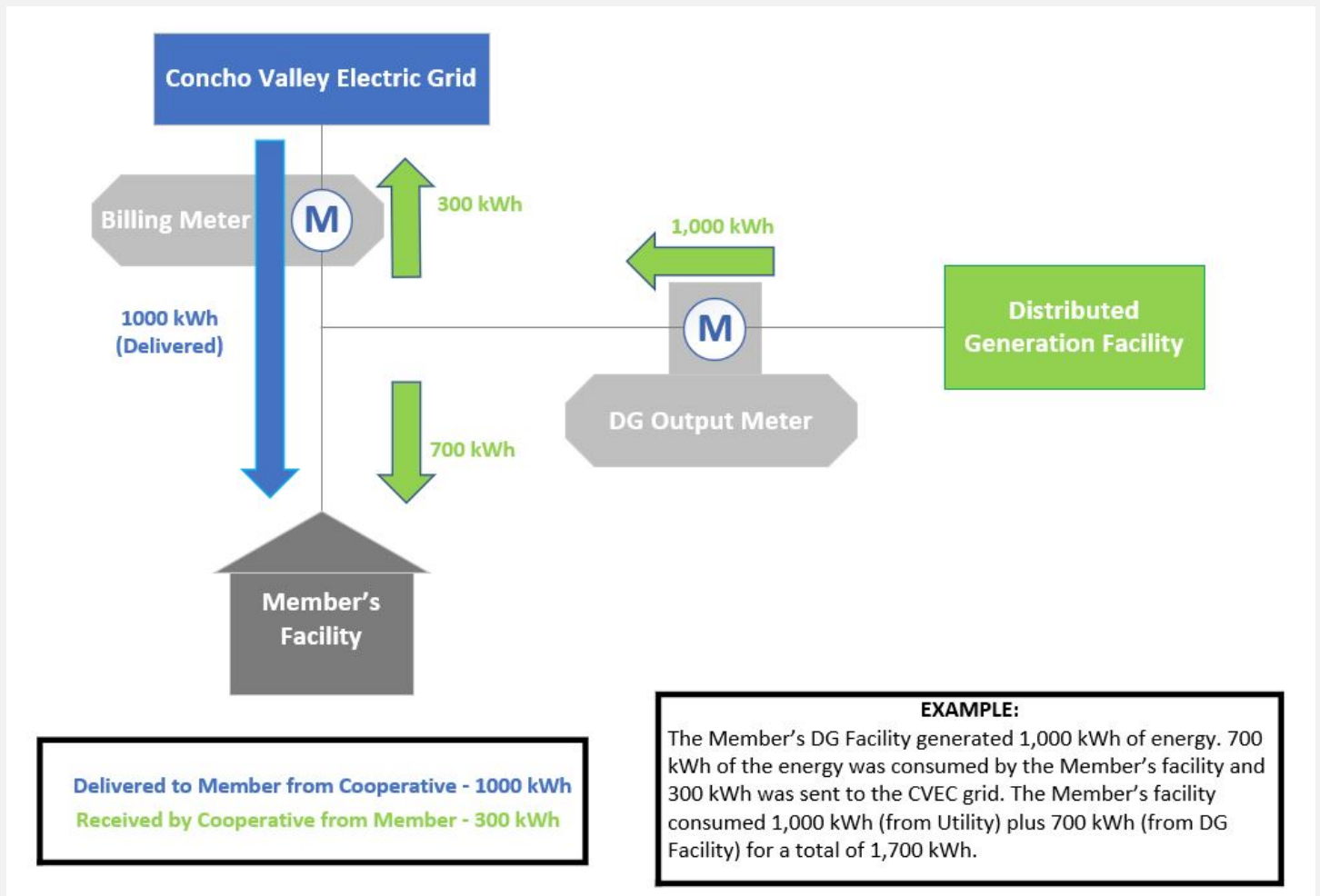


Figure 3.

Does CVEC buy back what is over produced by the Distributed Generation Facility?

During each billing period, CVEC will pay the member for power produced in excess of on-site requirements at Avoided Cost, as metered by the utility billing meter. Avoided Cost is the Cooperative's power supplier's avoided cost as calculated and provided to the Cooperative by its power supplier for the applicable period. The power produced in excess of on-site requirements will be noted on the bill as "Received". The "Received" kWh will be what is used to calculate your buy back at Avoided Cost. Below is a comparison of a typical bill versus a bill with a DG facility.

Typical Bill vs. Bill w/ DG Facility Example



 Typical Bill		 Bill w/DG Facility	
Energy Charge – 1,700 kWh @ \$0.109895	\$186.82	Energy Charge – 1,000 kWh @ \$0.109895	\$109.90
Power Cost Recovery – 1,700 kWh @ \$(0.0069573)	\$(11.83)	Power Cost Recovery – 1,000 kWh @ \$(0.0069573)	\$(6.96)
Customer Charge	\$24.75	Avoided Cost – 300 kWh @ *\$(0.0555)	\$(16.65)
		Customer Charge	\$24.75
		DG Facility Charge	\$15.25
		<div style="border: 2px solid green; border-radius: 15px; padding: 10px; display: inline-block;"> <p>That is a savings of \$73.45 on this month's electric bill!</p> </div>	
Total Bill	\$199.74	Total Bill	\$126.29

Figure 4.

What will CVEC charge me to connect my DG Facility to the CVEC grid?

All DG facilities with an installed capacity or nameplate rating of 50 kW and less will be billed a monthly DG Facility Charge in addition to their current basic Member charge. The Monthly DG Facility Charge is a cost associated with metering and billing components for interconnection to the CVEC grid.

Monthly DG Facility Charge

Rate Class	Monthly DG Facility Charge
Residential	\$15.25
Small Commercial and SIHE	\$18.50
Large Power and LP ED	\$93.00
Irrigation	\$26.00

Table 1.

Why does my inverter show a different amount of energy when compared to the CVEC billing meter?

The inverter energy output on the DG Facility will most likely resemble the energy output on the DG Output Meter and not the Billing Meter. This is because your facility will consume as much of the energy as possible prior to flowing through the Billing Meter and onto the CVEC grid. The DG Output Meter helps CVEC track how much energy is flowing out of the DG Facility with potential to flow to the CVEC grid.

Billing Meter vs DG Output Meter

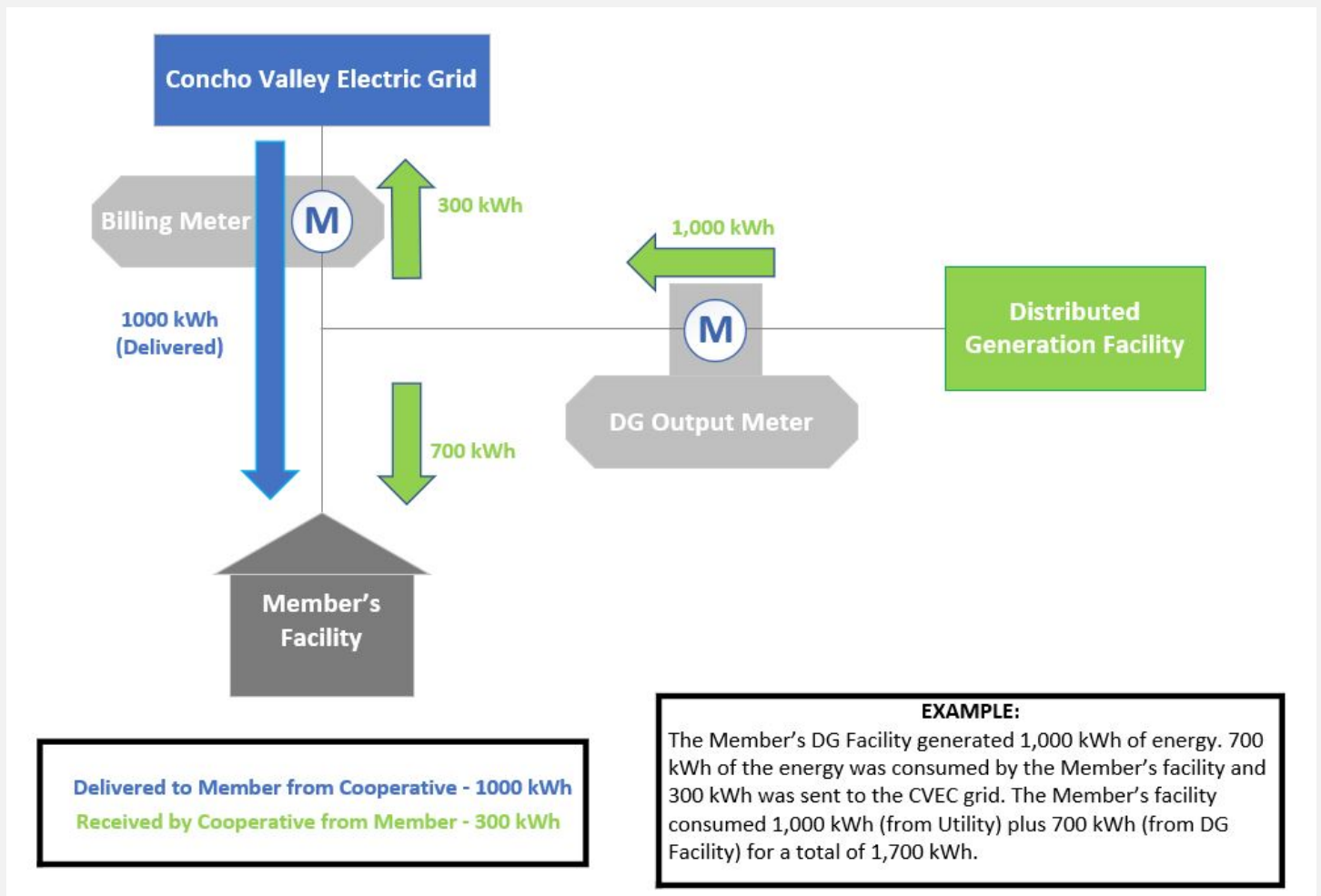


Figure 5.

Why does my DG Facility's energy production vary each month?

Many different factors play a role in the production of a DG Facility from installation to actual operation. The production is affected by the direction the panels face, the amount of sun light received each day, shading from clouds, trees, or other nearby objects, and even debris such as leaves or dirt can reduce total production. The different seasons play a large role in this as well considering we see a significantly greater amount of sun light in the summer months compared to the winter months. Below is an example of the production from a 10 kW DC solar array on a rooftop in San Angelo, Texas as predicted by pwwatts.nrel.gov. Please do not base your DG Facility on this graph as this is only an estimate. Please visit a site such as pwwatts.nrel.gov to estimate production for your DG Facility size.

Production Graph

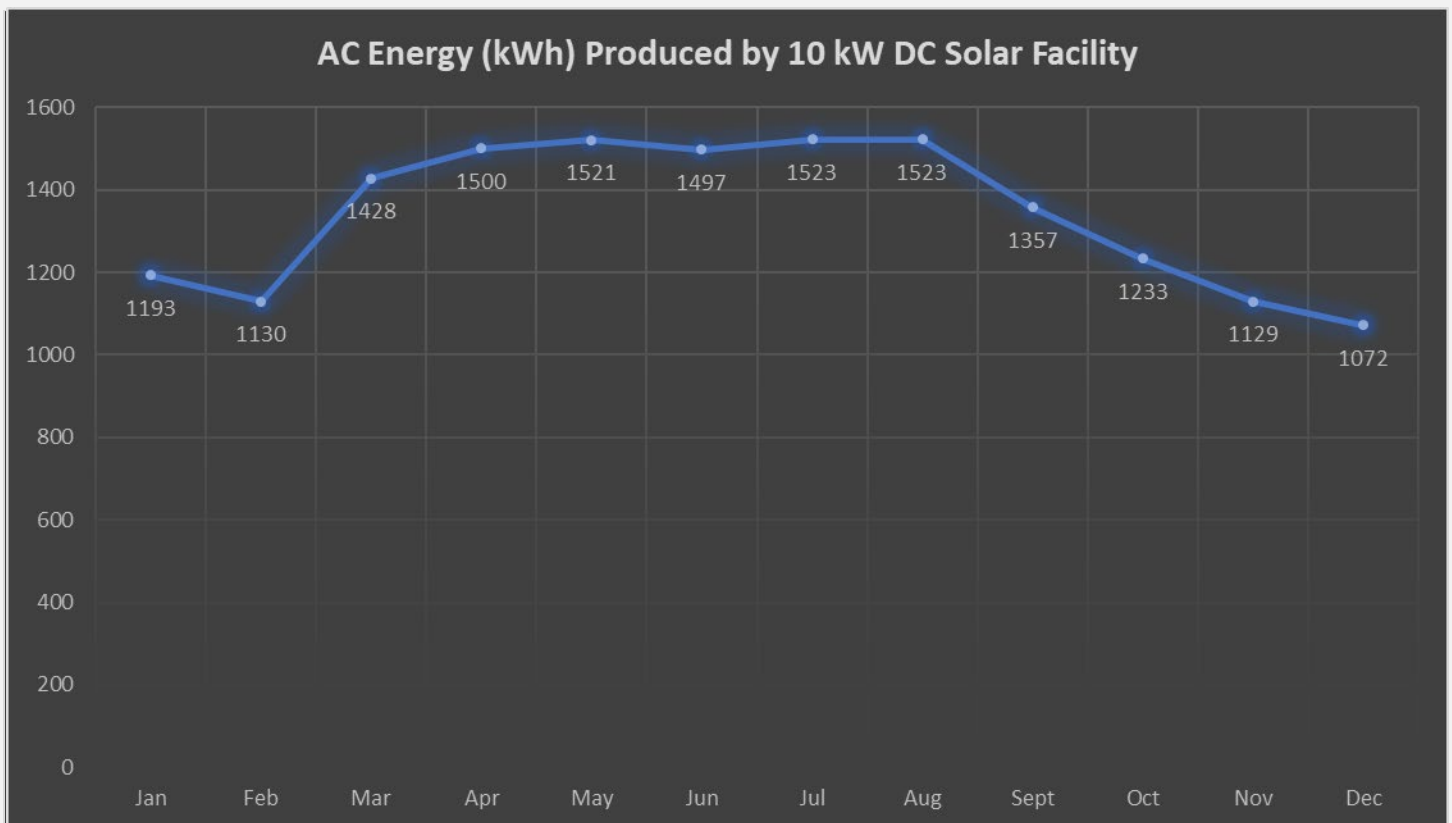


Figure 6.

Frequently Asked Questions

Q – How much will solar cost to install at my home?

A – This all depends on what size the system is and where it will be mounted. A general estimate is around \$3 to \$4 per watt. For example, an 8,000-watt (8 kW DC) system might cost you approximately \$24,000 to \$32,000. If applicable, a federal solar tax credit may be available to subsidize this cost. CVEC recommends contacting multiple installers and getting multiple quotes to compare.

Q – With solar, will I still have power during a CVEC outage?

A – No, due to safety regulations, an AC source is required for your solar array to operate. Therefore, if your power goes out, so will your solar production. This keeps CVEC linemen safe while they are actively working to restore power.

Q – Can CVEC help me analyze the quotes?

A – Yes, we can look over the quotes and provide recommendations based on your goals.

Q – What size DG Facility should I install?

A – The size of the DG Facility should be sized to the usage requirements at that location. When submitting for quotes, contractors will be able to make recommendations, however, below are some steps to help size your DG Facility on your own.

STEP 1: Contact CVEC and request a 12-month usage and demand history. You will be able to see consumption trends when looking at the usage (kWh) and the demand (kW) values for each month.

STEP 2: Sites such as pvatts.nrel.gov are great to model solar production. This will provide you a monthly estimate on how much a DG Facility of any given size will produce based on a few variables and your geographic location.

STEP 3: Compare the monthly kWh data from STEP 1 and STEP 2 to customize your system to your needs.

STEP 4: If the system is greater than 15 kW AC, verify that the size of the DG Facility does not exceed 110% of your maximum historic demand.

