

# Solar PV Interconnection Handbook

Effective January 1, 2019



## **Overview**

This handbook outlines the steps, processes, and requirements to apply for a Solar Photovoltaic (PV) interconnection for qualified Net Energy Metering (NEM).

## **Contact Information**

Information on applying for a solar PV interconnection including downloadable applications, forms, and manuals can be found on MID's web site – [www.mid.org](http://www.mid.org). If you need additional information, please contact the MID Solar Information line at (209) 526-7582 or email us at [pv@mid.org](mailto:pv@mid.org).

## **Consumer Protection**

As with any large investment, do your homework. Get multiple bids from separate contractors and ask for referrals. Even if the project is offered for \$0 down, be sure you fully understand the details and terms of the agreement. For additional tips or to review your contractor, visit the California State Contractors License Board website at <http://www.cslb.ca.gov/>.

## **Application Requirements**

To be eligible for interconnecton a customer must have an active electric account in their name and be in good financial standing with MID. Applicants must also comply with all MID Electric Service Rates and Rules. MID solar PV interconnection applications, forms, and manuals can be found on the MID website at <http://www.mid.org/solar/>.

## **Solar Rebates**

MID solar PV rebates are no longer available.

## **Federal Tax Benefits**

The Federal Investment Tax Credit (ITC) is currently at 30% but will be reduced in the future. Check with a Certified Public Accountant or the Internal Reveue Service for more information.

## **Net Energy Metering (NEM)**

**Net Energy Metering is applicable to qualified renewable generating facilities intended primarily to offset part of or all of the customer's own electrical usage limited to 1,000 kilowatts CEC-AC Nameplate rating per billed meter account. Currently, MID only offers NEM 2.0. Please read this rate carefully before choosing solar PV.**

### **PV Modifications**

When existing PV systems under MID's NEM 1.0 rate are modified to where solar panels are added or rearranged that increases the PV system output by 10% or more, customers **MUST** apply for the new NEM 2.0 rate. Failure to notify MID of PV modifications could result in the loss of their NEM 1.0 agreement and the PV account may be retroactively recalculated under the NEM 2.0 rate.

### **PV System Sizing**

PV system size should not exceed the average two year annual consumption of the meter where the PV is being installed based on the California Solar Initiative (CSI) calculator. New construction will be estimated at 2 watts/square foot and vacant dwellings without kWh usage history will be subject to review by MID to determine the reasonableness of PV sizing.

### **Installing Solar PV**

MID will interact with your contractor to get your solar PV system interconnected. In most cases your contractor will handle all of the details. Your contractor should be aware of MID's application paperwork and technical requirements. Complete and correct PV applications will ensure you of a timely interconnection process. Installers must also follow MID guidelines in the placement of electrical interconnection equipment. Failure to adhere to MID requirements could delay the interconnection of the solar PV system.

## **Application Process (3 Steps)**

### **Step 1 - Submit MID PV Interconnection Application Package**

The following items must be included in the NEM 2.0 Interconnection Package:

- Engineering Review/GenMeter Fee Check - \$300 fee for PV systems less than 100kW-AC or \$800 for PV systems 100 kW-AC or greater
- NEM 2.0 Application (electronic signatures require verification receipt)
- Single Line Diagram (SLD) – a technical drawing provided by the PV contractor detailing the wiring and electrical components of the PV system must be legibly printed on 8.5"x11" paper

- Site Diagram (SD) – A detailed drawing depicting the layout and placement of PV panels and inverters, metering, switches/disconnects, placarding/signage, obstructions, and relative placement to dwelling and any obstructions to access such as gates (locked or unlocked) must be legibly printed on 8.5”x11” paper
- California Solar Initiative solar calculator (CSI) – This [calculator](#) is used to produce a report to show the expected production of the PV system installed
- NEM 2.0 Net Metering Agreement – signed by customer
- Interconnection Agreement – signed by customer
- Mail (USPS or Express Mail) or drop off complete application package to MID
- Only current applications and forms will be accepted. Go to [www.mid.org/solar](http://www.mid.org/solar) for a printable list of forms and manuals for solar PV interconnection.

**Please Note:**

**MID will not accept incomplete interconnection application packages. Packages that are missing information, incomplete, or are inaccurate, will be returned by USPS mail to the contractor. MID must be notified of any “as-built” changes that deviates from the original application package. Projects with significant deviation from application to “as built” could have the application cancelled and MID will require a new and corrected application package to be submitted.**

## **Application Check List – Ensure Complete Packages**

<b>Application Package Requirements Check List</b>	
<b>✓</b>	<b>Documentation Description</b>
	Solar PV Application (current version required – see MID website)
	Details for Multiple Arrays Form (required if more than one array in system)
	Copy of contract with vendor/contractor
	Single Line Electrical Diagram
	Site Diagram/Plans
	CSI Evaluation (www.csi-epbb.com)
	Completed MID Interconnection Agreement
	Completed MID Net Metering Agreement (See MID website)
	\$300 check for Engineering Review/GenMeter for PV systems with nameplates of <100kW-AC per meter or a \$800 check for PV systems of 100 kW-AC or greater per meter
<b>✓</b>	<b>Required for Interconnection</b>
	Copy of City / County Permit

### **Where to Send Application Package**

Please mail your complete application package to the following –

Modesto Irrigation District

Attn: Solar PV Program

P.O. Box 4060

Modesto, CA 95352-4060

Application packages may also be submitted in person at MID – 1231 11<sup>th</sup> Street – but no electronic applications will be accepted. Electronic signatures are permitted as long as certification is also included.

## **Step 2 - Application Package Received and Accepted by MID**

### Application Acceptance Letter Will be Issued

MID will issue an acceptance letter when all required information has been submitted and approved. An acceptance letter will be mailed to the MID customer of record and an e-mail acceptance letter will go to the PV contractor listed on the application.

### Energizing the PV System for Testing Only

Once installed, the PV system should not be energized on a sustained basis prior to the “passing” of MID’s Interconnection Inspection. Systems energized for testing purposes longer than 24 hours will be subject to tampering fines and could face termination of interconnection and net metering agreements with MID.

## **Step 3 - MID PV Interconnection Inspection**

After the PV system is installed, typically the solar contractor will submit the appropriate “signed-off” copy of the City/County permit to MID. Send a copy of the signed-off final permit to [pv@mid.org](mailto:pv@mid.org). MID will normally perform the Interconnection Inspection within 12 working days, however, the permit is required for MID to perform this inspection. The inspection verifies the installation and the correct electrical wiring of required devices (generation/production meter and ac disconnects) as well as installation of MID required signage (placarding).

If the PV system passes the inspection, MID will install the generation meter. The installation of the generation meter signifies that your system has been interconnected to MID and your PV system can be energized. MID will not energize customer PV systems. You and your contractor will receive a “Permission to Operate” (PTO) letter from MID formally informing you that MID has interconnected your system. This typically occurs within 10 days of a successful Interconnection Inspection.

### **Project Fails MID Inspection**

After the approved city/county inspection notice has been forwarded to MID by the contractor, MID will inspect the site. If the MID inspection fails, MID will send an email to the contractor stating the reasons for failure and copy the customer. The contractor will address the issues and request a reinspection once the re-inspection fee of \$100 is paid (new city/county permit may be required). Following MID PV interconnection guidelines closely will help eliminate delays and MID re-inspection fees.

## Common Reasons for Interconnection Problems

Be sure to read the MID Solar Photovoltaic Service Guide before you install solar - [http://www.mid.org/esg/Service\\_Guide\\_Solar\\_PV.pdf](http://www.mid.org/esg/Service_Guide_Solar_PV.pdf)

### Failed Application or Inspections Issues cost time and money

Project Stage	Common Issues
<b>Project Approval</b>	Missing documents (all required documents must be included. See table on pg. 4.)
	Missing signatures and/or initials (Electronic signatures must include certification.)
	Inconsistent information - Application form does not match EPBB worksheet, site plan and/or single line diagram
	Interconnection Review Fee not included with reservation/application packet
	Site Plan- See MID Electric Service Guide for requirements <ul style="list-style-type: none"> <li>• Number of panels/orientation does not match EPBB and/or application</li> <li>• Location of MID equipment not included</li> <li>• Gates and/or fences not included</li> <li>• <b>Gates must be marked as locked or unlocked (MID access required)</b></li> </ul>
	Single Line Diagram- See MID Electric Service Guide for requirements <ul style="list-style-type: none"> <li>• Incorrect placement of AC disconnect and/or generation meter socket</li> <li>• AC disconnect and/or generation meter socket missing</li> <li>• AC disconnect and/or generation meter socket missing description</li> </ul>
<b>Interconnection</b>  <i>(\$100 re-inspection fee will be applied)</i>	Missing city/county final approved permit
	MID seal(s) cut/missing
	No access to MID equipment
	Missing/inadequate placard(s)
	Placard not attached properly
	Damaged Meter Clips – new permit required <i>Note: For testing, contractors may use jump covers to maintain meter clip integrity</i>
	Meter socket improperly wired
	Meter socket height @ centerline exceeds maximum (48" to 75")

## **PV System Modifications That May Require a New PV Application**

- Adding new PV Panels to an existing system
- Relocating PV Panels
- Change or rearrangement of electrical interconnection equipment
- Adding a battery system

Contact MID at (209) 526-7582 or email us at [pv@mid.org](mailto:pv@mid.org) if you have questions. Any form of modification of your PV system requires MID to be notified. Systems not in compliance with MID Rates or Electric Service Rules may be subject to having their solar PV systems disconnected from the MID grid.

## **General Information**

### System Size for NEM

- NEM system size for qualified renewable generating facilities intended primarily to offset part of all of the customer's own electrical usage limited to 1,000 kilowatts CEC-AC Nameplate rating
- Maximum system per customer not to exceed 1,000 kW AC. Customer is determined by MID Account Number, MID Meter Number and Federal Tax Identification Number(s).
- MID reserves the right to determine maximum system NEM size. This includes for new construction or where only consistent electrical usage histories are not available.

### Installation Requirements

- Premises with multiple electric meters will be limited to one PV system per meter. MID will not increase transformer/service capacity to facilitate PV generation under this program.
- The solar PV system must be interconnected to the utility distribution grid and generate electricity to offset the end-use consumer's on-site electrical load.
- The solar PV system must be located on the same premises of the end-use consumer where the consumer's own electrical demand is located.
- Where multiple PV systems are installed, separate meter monitoring systems may need to be maintained for each installation.
- Eligible PV systems must be permanently mounted to a permanent structure. In addition, the building permit for the solar system must be approved by the building code enforcement.
- Systems must be installed in conformance with the manufacturer's specifications and all applicable electrical and building codes and standards.



- MID requires the installation of MID performance (generation) meter measuring the alternating current output of the PV system.
- Systems must meet MID interconnection standards. Please review the MID Electric Service Rules for complete details.

## **Definitons**

### **Grid Interconnection**

Qualifying PV systems must be grid-connected. This means that the PV system must be electrically connected (on the customer's property) to the MID electric system serving the customer's load. The interconnection of the customer's PV system must comply with all applicable electrical codes, MID interconnection requirements and MID's Electric Service Guidelines.

### **Electrical Interconnection and Net Metering Agreements**

Customers installing a solar PV system and customers requesting service at an existing service with a solar PV system are required to submit an Electrical Interconnection Agreement and a Net Metering Agreement. Net metering is designed to off-set the customer's existing load. Oversized systems are not eligible for net metering.

### **Electrical Interconnection Agreement**

The Electrical Interconnection Agreement allows the customer to interconnect their generating system with the MID electric system. MID reserves the right to inspect and verify all interconnected systems at any time.

### **Net Metering Agreement**

An agreement that specifies the terms and rate in which PV generation will be compensated

“End of Document”