

Net Energy Metering 2.0 Solar PV Interconnection Handbook

Effective December 1, 2017



Important Information

- **The NEM 1.0 solar PV rate is closed. The NEM 2.0 is the current PV rate option available for solar PV interconnection.**
- **Effective January 1, 2018, all applications must have “smart” inverters to qualify for interconnection. See the MID PV Service Guide for more information.**
- **Interconnected energy storage (batteries) will be treated as distributed generation with regards to interconnections – applications are required. See MID’s solar website for more information.**

Overview

This handbook illustrates the steps, processes and requirements to apply for a solar photovoltaic (PV) interconnection for qualified Net Energy Metering (NEM).

Where to find information or ask questions

MID’s website mid.org has information on applying for a solar PV interconnection including downloadable applications, forms and manuals. If you are unable to locate the information you need, please contact the MID Solar Information line at (209) 526-7582 or for a faster response please email us at PV@mid.org.

Consumer Protection

As with any large investment, do your homework. Get multiple bids from separate contractors and ask for referrals. For additional tips or to review your contractor, visit the California State Contractors License Board website at <http://www.cslb.ca.gov/>. Deals that sound too good often are.

Frequently Asked PV Interconnection Questions:

Question: Once I submit an application how long will it take to receive approval to install my PV system?

Answer: Approximately 4 weeks. If there aren't any application package or engineering issues, then MID will send an approval letter. Your contractor will be notified of an incomplete/inaccurate application package or if the application fails MID engineering review. Once corrections are made and reviewed, MID will send a project acceptance letter.

Question: After our contractor submits the signed-off permit from the city or county how long will it take for an inspection?

Answer: Approximately 10 to 12 working days.

Question: I want to be home when the MID inspection is done.

Answer: Sure, please have your contractor send MID a request for an appointment – including your contact information – when they submit the final permit to MID.. MID will contact you and schedule a day and time for inspection.

Question: Why does MID require the contractor to sign the application?

Answer: PV requirements vary between utilities and MID wants to make sure contractors are familiar with our requirements so installations go smoothly.

Question: I have a PV system on my home and want to add additional panels but want to keep my NEM 1.0 rate.

Answer: Under the NEM 1.0 rate (closed) you can add up to 10% more panels or PV output to your current system (see www.mid.org for application). Adding more than 10% additional panels will result in the forfeit of the NEM 1.0 and you will need to apply for interconnection under NEM 2.0.

Question: I have an existing NEM 1 system on my home and I would like to install more panels under the NEM 2 program.

Answer: MID doesn't allow co-metering of generation for the NEM 1.0 rate and NEM 2.0 rate.

Question: How does NEM 1.0 differ from NEM 2.0?

Answer: NEM 1.0 has an annual true-up of generation and usage at retail electric rates whereas NEM 2.0 trues-up generation and usage in real time. Any excess generation delivered to MID will be credited at \$0.076 per kWh monthly on your bill.

Question: How do I know if solar is right for me?

Answer: To understand how beneficial solar may be to you under the NEM 2.0 rate, knowing how you use your power daily (usage profile) and how your PV panels generate (generation profile) is important. It's important to understand how generation and usage interact. MID can provide you hourly usage data to assist you to understand how and when you consume electricity. (Please contact MID if you have questions.)

Question: How do I access my hourly usage data from MID?

Answer: MID customers can login to their account online at mid.org to view your hourly usage and download the data in Excel. You will need to create an account if you don't have one. Your account number and phone number of record will be required.

A second way to access this data is to print out and complete the Billing History Release form found on the MID website under the Solar Information tab and email MID at PV@mid.org. MID staff will download the data and provide it to you or your contractor via email in an Excel format within 5 business days.

Application Requirements

To be eligible for interconnection 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 mid.org/solar.

Solar Rebates

Unfortunately MID solar PV rebates are no longer available.

Federal Tax Benefits

The Federal Investment Tax Credit (ITC) is currently at 30% but will be declining in future years. Check with your CPA or the Internal Revenue Service for more information.

Net Energy Metering (NEM)

Net Energy Metering (NEM) is applicable to 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 per billed meter account. There are two types of NEM:

NEM 1.0

Rate closed to new customers effective December 31, 2016.

NEM 2.0

Rate open. See <http://www.mid.org/tariffs> for specifics.

PV Modifications

When existing PV systems under the MID NEM 1.0 rate are modified, 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 or installations could result in the loss of NEM 1.0 agreement and the PV account may be retroactively recalculated under the NEM 2.0 rate.**

NEM 2 customers who add load and don't notify MID will be subject to proration of excess energy credits.

MID tracks generation output for all PV systems and reserves the right to audit PV installations where system output is in excess of calculated values for the system approved by MID. Failure to notify MID of PV system modifications could result in the PV system being shut down and locked off until proper applications are received and approved.

PV System Sizing

PV system size shouldn't exceed the average two year annual consumption of the meter where the PV is being installed based on the CSI calculator. Unfortunately, future new electrical loads not yet connected or anticipated cannot be included as usage. New construction or 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 the details. Your contractor should be aware of MID application paperwork, technical requirements and the economics of installing solar PV systems. 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 Interconnection Package:

- Engineering Review/GenMeter Fee Check payable to MID – \$300 fee for generation systems up to 99.9 kW-AC or \$800 for generation 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 a 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
- If electronic signatures are used on any document please provide a DocuSign certificate or comparable document legitimizing the signatures.
- Mail (USPS or Express Mail) or drop off package to MID
- Only current applications and forms will be accepted. Go to mid.org 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 – Insure Complete Packages

Application Package Requirements Check List	
✓	Documentation Description
	Interconnection Application (current version required see MID website)
	Details for Multiple Arrays Form (required if more than one array in system see MID website)
	Copy of contract with vendor/contractor
	Single Line Electrical Diagram with battery storage if applicable and identification of smart inverter
	Site Diagram/Plans
	Energy Storage Device Manufacturer Specifications
	CSI Evaluation (http://www.csi-epbb.com)
	Completed MID Interconnection Agreement
	Completed MID NEM 2.0 Net Metering Agreement (See MID website)
	\$300 check payable to MID for Engineering Review/GenMeter for PV systems with nameplates of <100kW-AC per meter or a \$800 check payable to MID for PV systems of 100 kW-AC or greater per meter. \$300 check payable to MID for review of battery storage systems.
✓	Required for Interconnection
	Copy of City / County Permit

Where to Send Application Package

To submit application package, please send to:
 Modesto Irrigation District
 Attn: Solar PV Program
 1231 11th St
 P.O. Box 4060
 Modesto, CA 95352-4060

Applications packages may also be submitted in person at the above address 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 and documentation has been submitted and plans have been approved by engineering. An acceptance letter will be sent to the MID customer of record via mail and the PV contractor listed on the application via email. MID must be notified of changes in address or email after the application is submitted to continue to communicate effectively with the contractor and customer.

Energizing the PV System for Testing Only

Once installed and before passing MID inspection the PV system should not be energized on a sustained basis prior to the “passing” of the 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, MID will normally perform the interconnection inspection within 12 working days. If an appointment is preferred, MID must be notified once the final permit is complete. The permit is required for MID to perform an interconnection 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.

As-Built Changes

The application and site plan must match the project. If as-built changes make the original site plan inaccurate, please submit a corrected site plan with your permit. Projects that don't match the application and site plan provided to MID may not pass 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. A \$100 inspection fee will be applied to the customer's account for each reinspection following the initial inspection. The contractor will address the issues and request a reinspection (a re-inspection by the city/county may be required). Following MID PV interconnection guidelines closely will help eliminate delays and MID reinspection fees.

Common Reasons for Interconnection Problems

Be sure to read the MID Solar Photovoltaic Service Guide before you install solar – click [here](#) to download this information. Failed interconnection inspections can result in fees and interconnection delays.

Project Stage	Common Issues
Project Approval	Missing documents (all required documents must be included. See table above.)
	Missing signatures and/or initials
	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"> • Number of panels / orientation does not match EPBB and/or application • Location of MID equipment not included • Gates and/ or fences not included • Gates must be marked as locked or unlocked (MID access required).
	Single Line Diagram- See MID Electric Service Guide for requirements. <ul style="list-style-type: none"> • Incorrect placement of AC disconnect and/or generation meter socket • AC disconnect and/or generation meter socket missing • AC disconnect and/or generation meter socket missing description
Interconnection <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, PV equipment not placed according to site plan
	Missing / inadequate placard(s)
	Placard not attached properly – see Solar Electric Service Guide
	Damaged Meter Clips – Clips fail tension test <i>Note: For testing, contractors may use jump covers to maintain meter clip integrity</i>
	Meter socket improperly wired- New permit required
	Meter socket height @ centerline exceeds maximum (48" to 75")

In the event any solar PV equipment is moved and/or rewired following a failed MID inspection a new city/county inspection will be required prior to scheduling a re-inspection with MID

PV System Modifications May Require a New and Current 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 by email at PV@mid.org or by phone at (209) 526-7582 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.

NEVER CUT A METER SEAL OR ATTEMPT TO REMOVE AN MID NET OR GENERATION METER

Cutting MID meter seals or removing an MID meter can result in tampering charges and potential loss of the NEM agreement.

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.

Definitions

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 Electric Service Guidelines.

Net Metering Agreements

Customers installing a solar PV system are required to complete a Net Metering Agreement to receive a NEM rate. NEM rates allow solar benefits to be passed on to the customer.

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 Energy Metering Agreement

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

“End of Document”