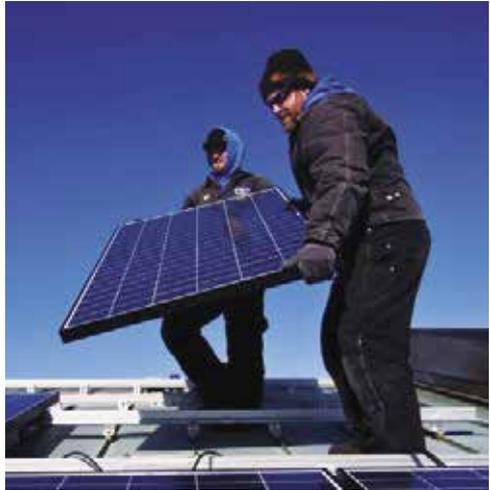


Residential Solar

Connecting to the grid



taking responsibility

As an individual, your efficient use of energy brings benefits such as lower bills, improved comfort levels in your home and a reduced personal impact on the environment.

Acting together, our individual choices add up – for the benefit of our community, our environment and our energy future. That’s the power of working together.

As your community energy company, we are committed to sharing our experience and energy expertise. You can always contact us for:

- Answers to your energy questions.
- Energy efficiency information and advice.
- Help in evaluating energy-saving options.
- Assistance in finding energy-efficient products.

ATTENTION

This guide is for interconnection of customer-owned generation that meets all of the following criteria:

1. The generation is for residential use.
2. The generation is entirely solar photovoltaic.
3. There are no energy-storage devices on the system.
4. The generation is 20 kilowatts (kW) or less.

If your generation does not meet all of the above criteria, please use the “Customer-Owned Generation: Connecting to the grid” guide instead.

Guide for installing photovoltaic systems

As rooftop solar becomes more affordable, more businesses and homeowners are installing photovoltaic (PV) systems. MGE wants to help installers integrate customer solar projects to the grid.

This guide walks you through the process and explains the requirements for connecting PV systems to MGE's electric distribution system. Statewide standards – Wisconsin Administrative Code Chapter PSC 119 – help ensure the interconnection process is safe, reliable and consistent. All public utilities, customers and installers are responsible for following these standards.



Step 1 - Complete the Standard Distributed Generation Application Form

You can find an application form at mge.com/customer-service/customer-owned-generation. Use Form 6027 for projects 20 kW and under.

The completed application must be signed by both the applicant and the installer.

Step 2 - Gather the necessary application materials to include with the completed Standard Distributed Generation Application Form

Along with the Standard Distributed Generation Application Form, you will need to submit the following materials:

- Proof of required liability insurance
- One-line schematic diagram
- Site plan including photos of existing meter socket area (to verify proper clearances and access exists)

It is helpful if you also submit the following materials:

- Spec sheets for each model of inverter
- Spec sheets for each model of solar panel
- The Distributed Generation Interconnection Agreement signed by the applicant (explained in Step 11)

What are the insurance requirements?

Insurance requirements are outlined in PSC 119. The minimum liability insurance coverage is \$300,000 per occurrence.

The proof of insurance should be an official document from the applicant's insurance company and, at a minimum, should contain the following items:

- Name and address that match application
- Policy expiration date (must be at least one month out)
- Total amount of liability coverage
- Name and contact information for insurance provider

What should be included in the one-line schematic diagram?

- MGE Meter - All metering facilities to be shown, including all meter sockets on premise as well as any disconnects or CT cabinets that may exist
- Generator or inverter
- Point of distributed generation connection to customer's electrical system
- Point of common coupling
- Lockable interconnection disconnect switch with a visual open – must be located outside as close to the transformer or service entrance as possible
- Method of grounding (generator and transformer ground connections)
- Protection functions and systems, including inverter model number
- Size of installation (kW-AC)
- Clearly identify any existing solar facilities and how they are connected to the existing system

What should be included on the site plan?

- Location of exterior interconnection disconnect switch
- Adjoining street name
- Street address for the exact location of the distributed generation facility
- Location of major equipment
- Electric service entrance
- MGE electric meter
- Interface equipment
- MGE transformer or utility pole

Step 3 - Submit the Standard Distributed Generation Application Form and necessary application materials to MGE

Applications can be submitted electronically, by mail or in person.

- Electronic submittals should be sent to mgeDGAdmin@mge.com. It is preferred if all materials are submitted at the same time in separate PDFs. At a minimum, this should be four separate PDFs.
- Mail-in submittals should be mailed to:
Administrative Support
Madison Gas and Electric Company
PO Box 1231
Madison, WI 53701-1231
- In-person submittals can be dropped off during normal business hours in MGE's lobby at 623 Railroad St., Madison, WI 53703.

Please address materials to Administrative Support.

Step 4 - MGE reviews the Standard Distributed Generation Application Form materials

Once all of the application materials have been received, MGE will review those materials. MGE will notify the applicant within 10 working days if all the application materials are approved and if an engineering review is necessary. If an engineering review is not necessary, then the application process will proceed to Step 9.

Step 5 - MGE performs engineering review

If an engineering review is necessary, MGE will communicate such to the applicant. The applicant will not be charged for the engineering review. MGE will then perform the engineering review within 10 working days.

The engineering review will determine if interconnecting a PV system could affect the electric distribution system. For example, the interconnection may cause equipment-loading concerns or system-protection issues. The engineering review may uncover potential issues that warrant a distribution study. If needed, MGE will notify the applicant that a distribution system study is required.

Step 6 - MGE conducts a distribution system study

If a distribution system study is required, MGE will communicate such to the applicant. The applicant will not be charged for the distribution system study. MGE will then perform the distribution system study within 10 working days.

The purpose of the distribution system study is to further analyze potential issues identified during the engineering review. The study will determine if distribution system modifications are needed to accommodate the proposed PV system.

Step 7 - MGE notifies applicant of distribution system study results

MGE will notify the applicant of the distribution system study results. Modifications to the electric distribution system may be needed. Modifications may include, but are not limited to, replacing smaller MGE high-voltage wires with larger wires, replacing distribution transformers at the point of interconnection with the customer, modifying MGE's system protection schemes or installing telemetry equipment to monitor the status of the PV system.

Step 8 - MGE completes electric distribution system modifications

If modifications to the electric distribution system are needed, MGE will provide a written cost estimate. Applicant must agree in writing to pay for the modifications and send payment before MGE will perform the modifications.

MGE will then complete the electric distribution system modifications and notify the applicant in writing when the work is done.

Step 9 - The Standard Distributed Generation Application Form is approved

Once the application is approved, MGE will send an official approval email to the applicant. This email will contain an unsigned copy of the Distributed Generation Interconnection Agreement if one was not submitted with the application materials.

The email will also contain next steps for commissioning of the system.

MGE will automatically exchange the applicant's electric meter after the application has been approved.

This meter exchange will enable PV billing and will be done at no cost to the applicant. It is not necessary for anybody to be at home for the meter exchange, provided the meter is at an accessible location.

Step 10 - The PV system is installed

You may now complete the PV system installation.

The PV disconnect cannot be closed until the permission to operate has been granted.

Step 11 - Submit the Distributed Generation Interconnection Agreement

The Distributed Generation Interconnection Agreement is preferably submitted with the rest of the application materials in Step 3. This Agreement should be signed and dated by the applicant at the bottom. None of the other fields should be filled in by the applicant, especially the date at the top of the Agreement.

You can find an agreement form at mge.com/customer-service/customer-owned-generation. Use Form 6029 for projects 20 kW and under.

If the signed Agreement was not submitted with the application materials, then you should now sign, date and submit the Agreement that was included in the official approval email you received from MGE in Step 9.

Step 12 - Submit photos of installed PV system

After the PV system has been installed, you should submit the following photos with the necessary information clearly visible:

- Photos of each inverter installed in order to confirm they are UL1741 rated and also to confirm that their sizes match the applicant's interconnection application and one-line drawing. If using microinverters, these photos are not necessary.

- A single photo including both the disconnect switch and the meter socket in order to verify the location of the disconnect switch. If the meter is inside, then show the disconnect switch next to mast/LB entering the house.
- A single photo of the inside of the disconnect switch in order to confirm if the blade is fused or solid.

Step 13 - MGE reviews photos of installed PV system

MGE reviews the photos of the installed PV system. MGE will then notify the applicant whether their photos were approved or not. If not, MGE will also provide a detailed description why.

MGE will not review these photos until the signed Distributed Generation Interconnection Agreement has been received.

Step 14 - Electrical inspection

After the installation is complete, call the electrical inspector to schedule an inspection. It is recommended that you wait until after MGE has approved the photos of the installed PV system, but it is not required.

After your PV system passes the electrical inspection, the inspector should send the completed electrical permits to MGE. It is recommended that this be done within two days of the inspection.

Step 15 - MGE signs the Distributed Generation Interconnection Agreement and authorizes applicant to energize their PV system

After the photos of the installed PV system have been approved and the electric meter has been exchanged, MGE will sign the Distributed Generation Interconnection Agreement and send a copy to the applicant. Receipt of this fully executed Agreement serves as authorization for the applicant to energize and begin operating the PV system.

The interconnection process is now complete.

MGE Parallel Generation rates

If a customer wants to interconnect a PV system to the electric distribution system and sell electricity back to MGE, the customer has two rate options.

- PG-1 - Parallel Generation
 - For interconnected PV systems of any size
- PG-2 - Parallel Generation: Net Metering
 - For interconnected PV systems up to 100 kW (default rate)
 - Net metering is a rate option that credits the customer's MGE bill at the appropriate retail rate for any electricity generated from the PV system that flows back onto the electric distribution system. If over the previous 12-month period the amount of electricity from a PV system sent to the electric distribution system exceeded the amount of electricity used, the customer is a net seller to the electric distribution system. Net sellers are credited at a different rate for a portion of electricity generated.

For more information, call 608-252-4873.



Listening. Learning.

MGE takes responsibility to provide information and education to serve our customers and stakeholders. We educate customers today to help inform their decision making. We educate tomorrow's stakeholders so they can help plan our energy future.

Bring MGE into the planning process early on to keep your projects running smoothly. *Working together, we can make a difference.*

Call MGE and ask for a business account manager or visit our website for information about energy and more. We provide the technical, financial and educational services you need to stay competitive.

- mge.com/business
- 608-252-7222
- 1-800-245-1125

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