

Answering Common Questions About PNM's Solar PV Program

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About PNM's Program

Does PNM install solar panels?

No. But the New Mexico solar energy association Web site, at www.nmsea.org, provides a list of local contractors who do.

Before you contact a contractor, we suggest that you start by taking a look at how much electricity you use on average over the year. You can get this information from your paper PNM statements or, if you have a login account at www.pnm.com, you can see your usage there. Going back a year, get each month's figure for kWh and calculate the average for the year. This will help the contractor understand how big a system it would take to cover your usage, if that's your goal.

Secondly, try to determine how much you would be comfortable spending on a solar PV system. You can aim for offsetting your entire usage or just some of it. A lot of people who have smaller PV systems also sign up for Sky Blue, so that they either generate or offset all of their energy use with renewable sources.

Also, just like you would with any big project, for example remodeling, it's a good idea to get quotes or bids from at least a few different vendors.

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What does PNM do?

If you've decided to install solar PV at your home and connect it to our power grid, we require an application from you or your contractor before you start building your PV system. This lets us make sure the setup you have in mind will connect to our system properly.

Then after you've got your system installed, we coordinate a final inspection just to make sure your system meets all the interconnection requirements and everything's ready to go.

Once your system is up and running, we provide two incentives to help offset the cost of your system. Note that these incentives only apply to systems that are rated at 10kW or less, but that's plenty for most homes. Work with your contractor to figure out how large a system you would like to get.

The first incentive is called Net Metering. Net Metering means that if your system produces more energy than you use, we pay you for that extra energy in the form of a credit on your bill.

The second incentive is called a REC purchase. REC stands for Renewable Energy Credit, and it basically means we're paying you for the energy you produce using a renewable energy source, while connected to the grid. It's as if we consider your house part of our generation system. Since PNM is required to have a certain amount of power come from renewable energy, and you're helping us meet that commitment, we pay you for what you produce with your panels.

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Can you tell me more about net metering?

Net metering refers to one type of incentive that we offer for customers with home PV systems. With net metering, your normal electricity meter, the one we use to measure your usage and determine your bill each month, will run backward whenever your solar PV system is producing more electricity than you are using. That excess energy goes onto the PNM electric grid for use elsewhere. When you're using more electricity than your panels are producing, the meter runs forward like a standard electric meter. So by the end of each billing period, the meter is really telling us the difference - or the "net" - between the electricity you bought from PNM and the electricity you produced with your PV energy system.

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Can I have a PV electric system on my house and still be connected to the PNM electrical grid?

Yes. This is referred to as being grid-connected and is in fact the typical arrangement for PNM customers. The two main advantages are that you have power whenever you need it (even when the sun's down) and you can take advantage of two different PNM incentives, described [above](#), that help reduce the overall cost of your system. The PNM incentives are in addition to the state and federal tax incentives.

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Do I need permission from PNM to connect my solar PV system to the grid?

PNM has rules and procedures that must be followed to connect any generator to the grid safely and legally. Our requirements and the necessary forms can be found at PNM.com/solar/.

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If I rent a home or apartment, can I still get a system?

No. Solar electric systems are available only to property owners. This is because the installation of a solar electric system requires the property owner to enter a contractual agreement that includes a potential property lien (called a mechanic's lien).

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When do I send in the application?

You should send us the application *after* you have a preliminary design for your system and how it will be installed, but *before* actual PV construction begins. This will ensure, before you've spent money on construction, that your system will interconnect properly to ours.

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What do I need to hand in with my application? Are there examples I can look at to make sure I'm providing everything correctly?

The application package that you send us has 4 pieces:

- the application form
- a technical drawing, called a one-line diagram, that shows how your system will interconnect to ours. Your contractor, if you're using one, can prepare this diagram for you. You can see an example of a one-line diagram at http://www.pnm.com/customers/pv/drawing_one_line.htm.
- a simple map, called a site diagram, showing where the panels are installed in relationship to your house or other building, where the disconnection switches will be installed, and where your system connects to ours. This is something your contractor can prepare for you. Also, you can see an example of a site diagram at http://www.pnm.com/customers/pv/diagram_site.htm.
- for the inverter that will be used with your system, we need a copy of the specification sheet or other piece of literature that shows the UL 1741 listing information so that we can verify it. Again, this is something that your contractor

can provide, or you can download literature of this kind by looking up the inverter on the manufacturer's Web site.

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Can the contractor take care of the application process for me?

Yes. But please make sure your contractor is aware of the materials available on the PNM Web site, PNM.com/solar/.

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There are different fees and programs on the application – how do I know which one to use?

The form has different options because there are a couple of different ways to participate related to the two incentive programs:

The first incentive is called Net Metering. Net Metering means that if your system produces more energy than you use, we pay you for that extra energy.

The second incentive is called a REC purchase. REC stands for Renewable Energy Credit, and it basically means we're paying you based on how much energy you produce using a renewable energy source, while connected to the grid. It's as if we think of your house as part of our generation system. Since we're required to have a certain amount of power come from renewable energy, and you're helping us meet that commitment, we pay you for what you're producing.

You can take advantage of both of these incentives as soon as your system is up and running.

When you're ready to fill out the application, here are the options:

- If you want to install a PV system, connect it to PNM, and get both types of incentives, you need to check the box labeled "Application for both net metering interconnection and small PV REC sales." The charge for this is \$150, and it covers the cost of interconnection and the REC meter.
- If you have a PV system at your house and it's already connected to us, and now you want to start receiving REC payments, check the box labeled "Application for Small PV REC Sales Only." The charge for this application is \$100, which covers the cost of the REC meter.
- If you just want to put panels on your house, interconnect to us and receive the net metering benefit, but you don't want the REC payments, there's a different form, available as a PDF at this Web address: http://www.pnm.com/customers/pdf/ic_app_small.pdf. The charge for this type of interconnection is \$50, which covers the cost of the interconnection. But we highly recommend that you consider taking advantage of the REC payment option, because PNM will pay you 13 cents for every Kilowatt hour your PV system produces – this is energy that you're going to produce anyway – and as a result you will very quickly recover your \$100 application fee and then have an ongoing revenue stream for years to come.

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Is everyone in New Mexico able to apply for the incentives?

Only PNM electricity customers can apply. If your electricity is provided by and billed for by a different company, such as a coop, we can't help you, but you can call your provider to find out if they offer a similar program.

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What happens after you get my application?

Your application gets in line to be processed. We'll examine it to make sure your proposed system meets all the requirements. Once your application is approved, we will notify you or your contractor – whoever submitted the application -- typically by phone. You can start construction of your PV system at that point.

We will also send you a contract package by mail, and you'll need to sign the contracts in the package and return them to us.

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I am (or my contractor is) almost done installing my system. What do I need to do?

First make sure you've signed your contracts and sent them back to us. Then when your system installation is almost complete, you or your contractor needs to arrange for city, county or state electrical inspection. Which one depends on your location: in the City of Albuquerque, outside Albuquerque but in Bernalillo county, or outside Bernalillo County jurisdiction. In that last case, you need to contact the State Electrical Inspector.

When the appropriate inspector comes to your site and your system passes inspection, the inspector typically notifies us but it's a good idea for you to notify us too. Just send an email to Frank Andazola; his address is frank.andazola@pnm.com telling him that your system passed city, county or state inspection.

When we receive verification that your system has passed inspection, if your application calls for a REC meter our meter department will send someone to install it according to the location you specified on your diagram. You don't need to be present. Please be aware that applications have roughly quadrupled since the program began; you might experience a wait of as long as 5-7 business days to get your REC meter installed.

Once we have installed the REC meter, we'll arrange a time to meet with you at your home to interconnect your system and complete the inspection. At that point, your system is up and running.

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When do I start receiving REC payments, and when will my bill go down from net metering?

Once your system is approved and running and all paperwork is signed, you'll see the benefits in the very next billing cycle.

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About PV and Home PV Systems in General

What is a residential solar electric system?

The residential solar electric system that most people are familiar with consists of panels mounted on the roof of a home, or somewhere else on the property where they are exposed to the most possible sunlight. These panels connect to additional

components that convert the captured sunlight into usable electricity for the house. Depending on the size of the system, and of course depending how much electricity the homeowner uses, the solar panels could provide all of the home's electricity or just some of it.

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How does a residential solar electric system work?

The rooftop panels have solar cells that convert sunlight directly into DC power. Then, a component called an inverter converts this DC power into AC power that can be used in your home. PNM customers with home solar can connect their systems to PNM's system; that's referred to as "interconnection." During the day, if your solar system produces more electricity than your home is using, PNM credits your account for the excess power that you've generated and contributed to the grid. This type of incentive is called "net metering." Because your home is still connected to the PNM system, we provide your power as usual at night and during the day when you need more power than your panels are producing. It's also possible to equip your system with a battery backup. In this case, part of the power produced by your solar system during the day is used to charge the batteries.

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What happens during a power outage?

That depends which type of home PV system you have. There are two types of solar residential systems. One type of system powers your home during daylight hours but does not provide power in an outage, even on a sunny day. Another type of system powers your home during daylight hours but also has a battery backup designed to provide power to your home's critical loads during an outage, day or night.

In this latter case, PNM requires that the PV system include a UL-listed transfer switch that lets a worker manually switch between the PV system's battery back up and grid power use. We require this switch on battery-equipped systems because it enables us to temporarily disconnect the PV system from the PNM electric grid in the event of an outage or other required maintenance. That makes it safe for PNM personnel to work on the PNM grid.

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What do the terms on-grid, grid-connected, grid-tied and off-grid mean?

On-grid, grid-connected and grid-tied all mean the same thing: the system is connected to the PNM electrical grid. Most solar electric systems in PNM's service territory are designed as on-grid systems, meaning that they interconnect with your existing PNM electric service. Off-grid refers to systems that are not connected to the PNM electrical grid or other public grid.

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Are government incentives available to reduce the price of a home PV system?

Yes. There are tax incentives from both the state of New Mexico and the federal government. Incentives can cut the cost of your system significantly, saving you thousands of dollars. Your contractor can tell you more about the incentives available in your area, or you can check at: <http://www.emnrd.state.nm.us/ecmd/> or

<http://www.emnrd.state.nm.us/ecmd/CleanEnergyTaxIncentives/solartaxcredit.htm>.

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Where Can I Find Examples of PV Systems?

You can contact various PV installation contractors to see examples of their work. There's a convenient list of local PV installers on the New Mexico Solar Energy Association Web site. That address is www.NMSEA.org.

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Is Solar Affordable?

On average, an installed, grid-connected PV system will cost approximately \$10,000 per kW. The Kilowatt figure refers to the size of the system in terms of how much energy it can generate. System sizes for homes usually range between 1 and 5 kW (1 kW = 1,000 watts), based on a variety of factors, including your energy use, whether you're able to orient your system to get the best sun exposure, and how much of your electricity use you want to offset with a PV system. The state of New Mexico has a tax credit program for systems installed between 2006 and 2015; the federal government also has a credit. Your contractor can tell you more about the incentives available in your area, or you can check at: <http://www.emnrd.state.nm.us/ecmd/> or

<http://www.emnrd.state.nm.us/ecmd/CleanEnergyTaxIncentives/solartaxcredit.htm>.

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Are PV Systems Reliable?

PV systems are very reliable. Most solar modules show little degradation over many years of operation, and would be expected to last 20 to 30 years. They have no moving parts and minimal maintenance requirements compared to other sources of electricity, and modern installation techniques allow them to withstand exposure to wind, rain and other natural forces. Your contractor can advise you on the specific reliability statistics for your system.

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How long will my solar power system last?

Most solar modules show little degradation over many years of operation, and would be expected to last 20 to 30 years.

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Where are solar electric modules installed?

Solar modules can be mounted on rooftops or on the ground. Ground-mounted panels are typically attached to a structure designed to lift them up several feet. Asphalt-shingled and steel roofs can accommodate panel mounts.

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What size system do I need to produce enough electricity to run my house?

The system size depends on your average electrical usage, climate, roof angle and many other factors. As a rough guide, you can do some simple math. First, use either your monthly PNM statements or your online account at pnm.com to find your monthly electricity use in kilowatt hours, shown on your statements as kWh, for each of the last 12 months. Add those up and divide the total by 365 to get the daily average kWh figure. Finally, multiply that by 0.25. The result is the approximate size of solar array, in

kilowatts, needed to meet your electrical demand. Your contractor will be able to give you more specific information about the sizing of your PV system.

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Will a system produce enough energy to cover all my electricity needs?

The amount of power produced by a system varies depending on the size of the system, your geographic location and climate, and whether the system has a battery backup. You would need to consult with a PV installation contractor as to your particular requirements.

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Do I need approval from my homeowners' association?

If you belong to a homeowners' association, consult your covenants for details.

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Are PV Systems Safe?

Like all large electrical devices, PV systems generate electricity and should be treated with care. One reason we require an application before installation, plus an inspection after installation, is to make sure your system meets requirements such as UL 1741 certification, which ensures safe operation when interconnected with the PNM electric grid. Generally speaking, if properly installed PV systems pose no more threat than the standard electrical system that you use every day.

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Will my system work at night and on cloudy days?

Your system will not work at night because solar modules need sunlight to produce power. Solar modules will still produce power on a cloudy day although they will probably only produce about half as much as under full sun.

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Can I install the system myself?

A licensed electrician must perform the grid interconnection portion of the work.

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What other options do I have if the system cannot be mounted on my roof?

You can consider a ground-mount, trellis or pergola installation. Your contractor can likely suggest at least a few alternatives to roof-mounting, depending on your property site.

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How can I tell how my system is performing?

Your system's inverter, which the contractor will show you, will most likely display status messages when it begins working in the morning, throughout the day, and when it stops working for the evening. You can also check your meters during sunny hours to make sure they are moving. Finally, your bill will be issued in a different format that explains the amount of kWh produced by your photovoltaic system.

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