

## Westfield Solar Fact Sheet

Solar is a rapidly growing segment of America's energy mix and an increasingly common option for homeowners across the United States.

The State of New Jersey has been a national leader in recognizing and encouraging the use of solar energy, and solar energy facilities are considered an "inherently beneficial use" in the Municipal Land Use Law. New Jersey already boasts over 128,000 solar installations with a capacity of over 3.3 GW, enough to power nearly 500,000 homes.<sup>1</sup>

### How Does a Solar Photovoltaic (PV) System Work?

Solar photovoltaic (PV) systems include solar panels, inverters, a meter, and other components. Solar panels contain semiconductor material that converts sunlight to direct current electricity. Inverters convert the electricity from direct current (DC) to alternating current (AC) that can be used in the home and on the grid. Inverters also shut down the flow of electricity if there is a problem with the system or if there's a power outage. The system also includes a meter that helps owners take advantage of the opportunity to sell power back to the grid at a retail rate.<sup>2</sup>

### Why Is Solar Power Growing So Quickly?

The extraordinary growth in solar has been driven by decreasing costs of solar panels, inverters, other components and financing. Median installed prices for residential solar decreased 60% from \$7.34/W in 2010 to \$2.95/W in 2020 in NJ.<sup>3</sup> The change in utility-scale solar has been even more dramatic, decreasing 77% from \$4.63/W in 2010 to \$1.06/W in 2018. On average, costs for installed solar declined by 10-15% annually and costs are expected to continue declining for the foreseeable future.

### How Does Solar Energy Contribute To The Economy?

New Jersey's solar industry accounts for \$9.5 billion dollars of investment and employs over 6,000 people from over 400 companies.<sup>4</sup>

### Do Solar Panels Increase Home Values?

Research from Zillow found that homes with rooftop solar systems sold for nearly \$24,000 more than similar homes without one in the NY Metro area.<sup>5</sup>

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<sup>1</sup> <http://njcleanenergy.com/renewable-energy/project-activity-reports/project-activity-reports>

<sup>2</sup> [https://icma.org/sites/default/files/306948\\_Solar%20Guidebook%20for%20New%20Jersey%20Municipalities.pdf](https://icma.org/sites/default/files/306948_Solar%20Guidebook%20for%20New%20Jersey%20Municipalities.pdf)

<sup>3</sup> <https://www.energysage.com/solar-panels/solar-panel-cost/nj/>

<sup>4</sup> <https://www.seia.org/state-solar-policy/new-jersey-solar>

<sup>5</sup> <https://www.zillow.com/research/solar-panels-house-sell-more-23798/>

### Do Solar Panels Create Glare Problems For Neighbors?

For solar panels, reflected sunlight is wasted energy. That's why solar PV panels are made using blue or black materials and use anti-reflective coatings to absorb as much sunlight as possible. Modern solar PV panels can reflect down to 2% of incoming sunlight, which is less than soil or wood shingles.<sup>6</sup>

### Where On A Roof Should Solar Panels Be Installed?

Since the sun rises in the East, moves along the South and sets in the West, a Southern facing roof will generally provide the longest time for solar exposure and most optimal conditions for production of energy. Other factors such as shading and the tilt of the roof will also impact solar production. A solar installation firm and its engineers can help a homeowner determine the viability of solar power on a roof.<sup>7</sup>

### Do Solar Panels Become Toxic Waste When They Are Taken Off Roofs?

The vast majority of rooftop solar installations use monosilicon and polysilicon solar panels, which are constructed of silicon (glass), aluminum and copper (for wiring). These panels do not contain heavy metals or other toxic materials. Additionally, over 90% of a PV module is recyclable and many manufacturers offer take-back programs.

Some types of thin-film solar modules do contain heavy metals such as cadmium<sup>8</sup>, but these modules are not regularly used for rooftop solar.<sup>9</sup> Additionally, credible studies have shown little to no evidence of toxic leaching from these types of solar modules and recycling programs exist to handle these modules when they are decommissioned.<sup>10 11</sup>

### What Incentives Are Available to Support Rooftop Solar

- **Net Metering:** When the solar PV system generates more electricity that is needed by the owner, the excess electricity can be sold back into the electricity grid at the retail rate.<sup>12</sup>
- **SRECS:** When a solar system generates a megawatt-hour (MWh) of solar power, it earns an SREC, which can then be sold to utilities to help them meet the New Jersey Renewable Portfolio Standard (RPS).<sup>13</sup> The price for a 2020 SREC in NJ was \$228 in July 2020.<sup>14</sup>

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<sup>6</sup> [https://icma.org/sites/default/files/306948\\_Solar%20Guidebook%20for%20New%20Jersey%20Municipalities.pdf](https://icma.org/sites/default/files/306948_Solar%20Guidebook%20for%20New%20Jersey%20Municipalities.pdf)

<sup>7</sup> <https://news.energysage.com/does-my-roof-have-to-face-south-for-solar-to-make-financial-sense/>

<sup>8</sup> [https://icma.org/sites/default/files/306948\\_Solar%20Guidebook%20for%20New%20Jersey%20Municipalities.pdf](https://icma.org/sites/default/files/306948_Solar%20Guidebook%20for%20New%20Jersey%20Municipalities.pdf)

<sup>9</sup> <https://energyinformative.org/best-solar-panel-monocrystalline-polycrystalline-thin-film/>

<sup>10</sup>

[https://icma.org/sites/default/files/306948\\_Solar%20Guidebook%20for%20New%20Jersey%20Municipalities.pdf](https://icma.org/sites/default/files/306948_Solar%20Guidebook%20for%20New%20Jersey%20Municipalities.pdf)

<sup>11</sup> <https://www.ncbi.nlm.nih.gov/pmc/articles/MC5607867>

<sup>12</sup> <https://www.energysage.com/solar-panels/solar-rebates-incentives/nj/>

<sup>13</sup> <https://www.njcleanenergy.com/srec>

<sup>14</sup> [https://www.srectrade.com/markets/rps/srec/new\\_jersey](https://www.srectrade.com/markets/rps/srec/new_jersey)

- **Federal Investment Tax Credit:** The current 26% federal investment tax credit will step down to 22% in 2021 and then 10% starting in 2022.
- **Solar Sales Tax Exemption:** Home solar systems are 100% exempt from NJ sales tax.
- **Property Tax Exemption:** Installing a solar system will not increase property taxes on the addition to the home's value.<sup>15</sup>
- **Utility Incentives:** PSE&G has historically provided solar loans and SREC incentive programs for residential and commercial owners.<sup>16</sup>

### How Much Can I Save With Solar Panels?

The amount you can save depends on how you finance the purchase of the solar system. Similar to buying a car, you can lease a solar system, purchase one with a loan, or buy a system with cash. Each option provides different payback periods and long-term benefits.

Generally, a solar lease requires no upfront payment and can range from 15-25 years. With a lease, the homeowner doesn't own the system, the tax benefits or the energy credits<sup>17</sup> and savings average 10-30% compared to pre-installation utility bills.<sup>18</sup>

A solar loan from either a bank, finance company or the local utility often requires an upfront payment but can provide far greater savings as homeowners keep the tax credits and SRECs.

Finally, an all cash purchase will require the most upfront costs but can potentially reduce your electricity utility bills to a minor fixed inter-connection payment to the utility. Currently, this cost is \$5.00/mo for PSE&G for systems larger than 10kW.<sup>19</sup> Due to high electric prices and favorable incentives, payback periods in NJ are substantially shorter than the national average.<sup>20</sup> In NJ, solar panels typically pay for themselves in about 5 years, but last about 25 years.<sup>21</sup>

In addition to lower costs, solar power also reduces your exposure to future electricity price hikes. Electricity prices can be volatile and unpredictable in the long term as they are based on the price of nuclear, gas or coal power, which can be volatile. With a free fuel source, the price of solar energy is stable throughout the project lifetime.

### Solar Calculators

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<sup>15</sup> <https://www.energysage.com/solar-panels/solar-rebates-incentives/nj/>

<sup>16</sup> <https://www.energysage.com/local-data/net-metering/pseg/>

<sup>17</sup> <https://nicleanenergy.com/renewable-energy/tools-and-resources/ownership-financing-options>

<sup>18</sup> <https://www.energysage.com/solar/financing/solar-leases-and-solar-ppas/>

<sup>19</sup> <https://www.energysage.com/local-data/net-metering/pseg/>

<sup>20</sup> <https://www.solar-estimate.org/solar-panels/new-jersey>; <https://solarmetric.com/learn/new-jersey-solar-panel-installation-costs/>;

<sup>21</sup> <https://www.energysage.com/local-data/solar-panel-cost/nj/>; <https://solarmetric.com/learn/new-jersey-solar-panel-installation-costs/>; <https://www.solar-estimate.org/residential-solar/solar-panels/new-jersey>

Input your home address and utility bill to determine if your home is a good candidate for Solar

Google Project Sunroof - <https://www.google.com/get/sunroof>

Energy Sage - <https://www.energysage.com/solar/calculator/>

### **Town of Westfield Municipal Ordinance and Process for Solar Installation**

#### **What are the requirements for front facing panels under the Revised Westfield Municipal Solar Ordinance?**

- 1) Front facing solar panels will be a conditionally permitted use as long as the installed system meets aesthetic requirements and will achieve a Solar Production Ratio (SPR)<sup>22</sup> of at least 1.0.
- 2) The solar panels must be flush mounted to the roof
- 3) The solar panels must not interfere with character-defining roof features
- 4) The color of the solar panels, trim and any visible mounting hardware must closely match the color of adjacent roofing material; and
- 5) No wiring, cables, conduit, etc., may travel from the front-facing roof to any front façade of the structure.

Front-facing solar would not be permitted for historically designated properties.

#### **What is the municipality installation process and what permits are required?**

- 1) Solar energy systems shall be allowed as an accessory use in all zone districts, subject to the requirements set forth in the Revised Solar Ordinance
- 2) All applications for solar energy systems shall be accompanied by a property survey showing the proposed location or locations of the solar energy system and distance from property lines.
- 3) Photographs showing the property from the public view, and the location of the proposed solar energy system, must be submitted so as to determine compliance with the visibility and other provisions of this ordinance.
- 4) For front-facing solar panels, the certification of a professional engineer that no other roof-mounted solar energy system array on the property, other than a front-facing solar array, will generate an SPR of at least 1. The professional engineer's certification must include the SPR calculation for each roof plane on which a solar energy system array could be erected;
- 5) Electrical Inspectors from the Town's Building Department will review the proposed project construction and provide the permits.

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<sup>22</sup> SPR is an acronym for Solar Production Ratio ( year 1 production ratio (kWh) / system size (kW)). Learn more about how SPR sare calculated at <https://news.energysage.com/solar-installers-calculate-solar-production-estimates/>

