

# Solar Tariffs and Rates

## Solar Policy Survey

October 2016



---

The NESEMC Solar Policy Survey compiles information on state-level policies that significantly influence the solar energy market. The survey was produced with the help of the Pace Energy and Climate Center's team of student researchers. The vast majority of the information contained within this document has been obtained from [the Database of State Incentives for Renewables & Efficiency](#) (DSIRE) with additional information and research obtained from various sources.

**Note:** These factsheets are updated periodically to reflect policy changes within each state. If you notice a mistake or out of date information, please contact Nick Martin at [nmartin@nesemc.com](mailto:nmartin@nesemc.com).

---

### POLICY BACKGROUND

Solar PV customer rates and tariffs can have a large impact on the overall economics of a solar PV system. High fixed charges (e.g. customer charges, standby charges) and/or low compensation rates for solar PV production can significantly reduce the value of a solar PV installation for a potential customer.

Currently, the most common approach to solar PV customer rate design is simple net metering, which typically credits solar production at the retail energy rate towards the customer's electric bill. Some states may limit the amount of solar PV that may receive net metering benefits by placing limitations on eligible system sizes as well as state wide limits on aggregate net metering capacity.

Recently, many solar supporters have noted that net metering, by effectively valuing solar PV generation at retail energy rates, fails to compensate solar PV customers for the full value of their electricity generation. Some states and organizations have begun investigating this issue by conducting value of solar studies that incorporate the value solar PV provides to the grid and society.

**SUMMARY**

	<b>NET METERING</b>	<b>VALUE OF SOLAR</b>
<b>CT</b>	<p><b>Systems:</b> Facilities &lt;2MW  <b>Cap:</b> None  <b>Excess generation:</b> Valued at retail, carried over for 1 year.</p>	<p>Study found solar PV energy values between \$0.204 to \$0.260 per kWh to the grid.</p>
<b>ME</b>	<p><b>Systems:</b> Facilities &lt;660kW  <b>Cap:</b> Utilities must notify PUC if they reach 1% of peak demand  <b>Excess generation:</b> Valued at retail, carried over for 1 year.</p>	<p>Study found a 25 year levelized value of \$0.337 per kWh to the grid.</p>
<b>MA</b>	<p><b>Systems:</b> Facilities &lt;2MW (private) and &lt;10MW (public)  <b>Cap:</b> Larger facilities subject to limit of 7% of the utility's peak load for private entities and 8% of utility's peak load for municipalities and government entities.  <b>Excess generation:</b> For larger facilities, excess generation is repaid at approximately 60% of the retail rate.</p>	<p>Study found values between \$0.22 to \$0.28 per kWh to the grid, with additional societal values of \$0.067 per kWh.</p>
<b>NH</b>	<p><b>Systems:</b> Facilities &lt;1MW.  <b>Cap:</b> 100MW  <b>Excess generation:</b> Valued at retail, carried over indefinitely.</p>	<p>Study found solar PV values between \$0.19 to \$0.24 per kWh to the grid, with additional societal values of \$0.07 per kWh.</p>
<b>NJ</b>	<p><b>Systems:</b>  <b>Cap:</b> May be limited at 2.9% of total electricity sales  <b>Excess generation:</b> Credited to customer's next bill at retail rate with excess reconciled annually at wholesale electric rate.</p>	<p>Study found values ranging between \$0.256/kWh to \$0.280/kWh for the New Jersey locations analyzed.</p>
<b>NY</b>	<p><b>Systems:</b> Facilities &lt;25kW (residential), &lt;100kW (agricultural), and &lt;2MW non-residential  <b>Cap:</b> 6% of 2005 peak demand exists, however, PSC has ordered continuation of net metering past limit until REV concludes  <b>Excess generation:</b> Valued at retail, carried over for 1 year or indefinitely, depending on system type.</p>	<p>On-going Reforming the Energy Vision proceeding is evaluating the value of distributed energy resources.</p>
<b>PA</b>	<p><b>Systems:</b> Facilities &lt;50kW (res.), &lt;3MW (non-res.), and &lt;5MW (emergency/microgrids)  <b>Cap:</b> None  <b>Excess generation:</b> Valued at retail, carried over for 1 year.</p>	<p>Study found values ranging between \$0.282/kWh to \$0.318/kWh for the analyzed Pennsylvania locations.</p>
<b>RI</b>	<p><b>Systems:</b> Facilities &lt;10MW  <b>Cap:</b> None for state's largest utility.  <b>Excess generation:</b> Up to 125% of the customer's usage will be paid credits worth the utilities avoid cost rate, unless a different plan is agreed to by the customer and utility.</p>	<p>Study found between \$0.20 to \$0.25 per kWh to the grid, with additional societal values of \$0.07 per kWh.</p>
<b>VT</b>	<p><b>Systems:</b> Facilities &lt;500kW, and &lt;2.2MW (military)  <b>Cap:</b> 15% of 1996 peak demand rate or 15% of peak demand for most recent year whichever is greater  <b>Excess generation:</b> Valued at retail, carried over for 1 year.</p>	<p>No study conducted.</p>

## CONNECTICUT

### NET METERING

Connecticut state law mandates net metering for solar PV customers.<sup>1</sup>

**Maximum System Capacity:**

Net metered systems may be up to 2MW per facility.

**Aggregate Capacity Limit:**

There is not a specified aggregate (e.g. state-wide or utility-wide) capacity limit on net metered facilities.

**Applicable Entities:**

Investor owned utilities (representing approximately 96% of the state's customers) are required to offer net metering.

**Excess Generation:**

Excess generation is carried over as a kWh credit for one year. If not used, the credits are reimbursed to the customer at the avoided cost of wholesale power at the end of the year (March 31).

**Renewable Energy Certificate (REC) Ownership:**

The customer retains ownership of any RECs generated by a net metered facility.

## VALUE OF SOLAR

Connecticut's utilities do not offer any value of solar tariffs. The Acadia Center has analyzed the value of solar in Connecticut for several types of solar PV systems installed near Hartford, CT. The [study](#) found solar PV energy values between 20.4 to 26.0 cents per kWh to the grid.

## MAINE

### NET METERING

Maine state law mandates net metering for solar PV customers.<sup>2</sup>

**Maximum System Capacity:**

For customers of investor-owned utilities, net metered facilities may be up to 660kW per facility. For customers of municipal or cooperative utilities, net metered facilities may be up to 100kW per facility, although these utilities may voluntarily offer up to 660kW.

**Aggregate Capacity Limit:**

There is not a specified cap on net metering facilities. However, utilities must notify the Maine Public Utilities Commission (PUC) if the capacity of net metered facilities reaches 1% of their peak demand.

---

<sup>1</sup> [Conn. Gen. Stat. § 16-243h](#)

<sup>2</sup> CMR 65-407-313

**Applicable Entities:**

All utilities must offer net metering.

**Excess Generation:**

Excess generation is credited to the customer's next monthly bill at the retail rate. Excess generation is granted to the utility at the end of 12-month billing cycle with no compensation to the customer.

**Renewable Energy Certificate (REC) Ownership:**

REC ownership is not addressed by net metering rules.

**NOTE:** The Maine Public Utilities Commission is currently considering revisions to the state's net metering provisions in [Docket No. 2016-00222](#) – Public Utilities Commission Amendments to Net Energy Billing Rule (Chapter 313).

**VALUE OF SOLAR**

Maine's utilities do not offer any value of solar tariffs. The Maine PUC recently conducted a [study](#) on the value of distributed solar energy generation. The study found a 25 year levelized value of \$0.337/kWh.

**MASSACHUSETTS****NET METERING**

Massachusetts state law mandates net metering for solar PV customers.<sup>3</sup>

**Maximum System Capacity:**

Net metered facilities may be up to 2MW per facility. For municipal or government facilities, net metered systems may be up to 10MW.

**Aggregate Capacity Limit:**

Aggregate net metered facility capacity is limited to 7% of the utility's peak load for private entities and 8% of utility's peak load for municipalities and government entities. Systems 10kW and under on a single-phase circuit and systems 25 kW and under on a three-phase circuit are exempt from the private aggregate capacity limit.

**Applicable Entities:**

Investor owned utilities must offer net metering. Municipal utilities may offer net metering voluntarily.

**Excess Generation:**

Most net metered solar PV systems receive close to the retail rate for net excess generation (includes default service, distribution, transmission, and transition charges). Net metered facilities greater than 2MW or neighborhood net metered facilities used by customers other than government entities receive the same credit less the distribution charge.

Once 1,600 MW of aggregate solar capacity is reached in the state, net excess generation will receive "market net metering credits". These credits will be worth slightly less than the retail rate for governmental solar facilities and

---

<sup>3</sup> Mass. Gen. Laws ch. 164, § 138-140 (subsequently amended)

60% of the retail rate for all other solar facilities, except facilities exempted from the net metering aggregate capacity limit.

Credits may be carried forward to the next month indefinitely.

**Renewable Energy Certificate (REC) Ownership:**

The customer retains ownership of any RECs.

## VALUE OF SOLAR

Massachusetts' utilities do not offer any value of solar tariffs.

The Acadia Center analyzed the value of distributed generation in Massachusetts. The [study](#) found values between 22 to 28 cents/kWh to the grid, with additional societal values of 6.7 cents/kWh.

## NEW HAMPSHIRE

### NET METERING

New Hampshire state law mandates net metering for solar PV customers.<sup>4</sup>

**Maximum System Capacity:**

Net metered facilities may be up to 1MW per location.

**Aggregate Capacity Limit:**

There is an aggregate capacity limit of 100 MW state-wide. 50MW of this limit is allocated to the state's three investor-owned utilities with 80% of this capacity (i.e. 40MW) reserved for systems under 100kW. The remaining 50MW is allocated to the state's other utilities with no restrictions on facility size.

**Applicable Entities:**

All utilities must offer net metering.

**Excess Generation:**

Excess generation is applied to the customer's next bill as a kWh credit and carried forward indefinitely. Customers may elect to receive payment (at the utility's avoided-cost rate) for any excess credit remaining at the end of an annual period.

**Renewable Energy Certificate (REC) Ownership:**

The customer retains ownership of the REC, except for RECs associated with the net excess generation purchased by the utility at the end of an annual billing period, which may be claimed by the utility.

## VALUE OF SOLAR

---

<sup>4</sup> [RSA § 362-A 9](#)

New Hampshire's utilities do not offer any value of solar tariffs. The Acadia Center has analyzed the value of solar in New Hampshire for a solar PV system installed near Pembroke, NH. The [study](#) found solar PV energy values between 19 to 24 cents per kWh to the grid, with additional societal values of 7 cents per kWh.

## NEW JERSEY

### NET METERING

New Jersey state law mandates net metering for solar PV customers.<sup>5</sup>

#### **Maximum System Capacity:**

There is no firm limit on individual facility size. System capacity is limited to the amount necessary for annual on-site energy demand.

#### **Aggregate Capacity Limit:**

State law allows the New Jersey Board of Public Utilities (BPU) to limit net metered facilities at 2.9% of total electricity sales. However, the previous authorized limit of 2.5% of peak load had been exceeded, but the BPU did not exercise its authority to restrict net metering.

#### **Applicable Entities:**

Investor owned utilities and electricity suppliers are required to offer net metering.

#### **Excess Generation:**

Excess generation is generally credited to customer's next bill at retail rate with excess reconciled annually at wholesale electric rate. Customers may also choose to be compensated for all net excess generation on a real-time basis at the wholesale rate.

#### **Renewable Energy Certificate (REC) Ownership:**

The customer retains ownership of any RECs.

## VALUE OF SOLAR

New Jersey utilities do not offer any value of solar tariffs.

On behalf of the [Mid-Atlantic Solar Energy Industries Association](#) and [Pennsylvania Solar Energy Industries Association](#), [Clean Power Research](#) analyzed the value of distributed generation in New Jersey. The [study](#) analyzed the value of solar for three locations in New Jersey—Jamesburg, Newark, and Atlantic City. The study found values ranging between \$256/MWh to \$280/MWh for the New Jersey locations analyzed.

---

<sup>5</sup> N.J. Stat. § 48:3-87

## NEW YORK

### NET METERING

New York state law mandates net metering for solar PV customers.<sup>6</sup>

**Maximum System Capacity:**

Net metered facilities may be up to 25kW for residential, 100kW for agricultural facilities and 2MW for non-residential facilities.

**Aggregate Capacity Limit:**

There is an aggregate capacity limit for net metered facilities of 6% of each utility's 2005 peak demand. However, the NY Public Service Commission has ordered all utilities to continue to accept applications for net metering regardless of meeting the aggregate capacity limit until net metering is restructured as part of the [Reforming the Energy Vision](#) proceeding.

**Applicable Entities:**

Investor-owned utilities (representing ~85% of the state's customers) must offer net metering. Publicly owned utilities (i.e. PSEG Long Island) may do so voluntarily.

**Excess Generation:**

Excess generation is credited to the customer's next bill at the retail rate; excess for residential is reconciled annually at avoided-cost rate, while excess for non-residential solar carries over indefinitely.

**Renewable Energy Certificate (REC) Ownership:**

REC ownership is not addressed by net metering rules.

**NOTE:** The New York Public Service Commission is currently considering revisions to the state's net metering provisions in [15-E-0751 Interim Successor to Net Energy Metering](#).

### VALUE OF SOLAR

New York utilities do not offer any value of solar tariffs.

New York has yet to conduct a comprehensive study on the value of solar, but the on-going [Reforming the Energy Vision](#) (REV) proceeding is investigating the value of distributed energy resources including solar PV.

<sup>6</sup> NY CLS Public Service § 66-j and § 66-l

## PENNSYLVANIA

### NET METERING

Pennsylvania state law mandates net metering for solar PV customers.<sup>7</sup>

**Maximum System Capacity:**

Net metered systems may be up to 50kW for residential, 3MW for non-residential, and 5MW for microgrid and emergency systems.

**Aggregate Capacity Limit:**

There is not a specified aggregate (e.g. state-wide or utility-wide) capacity limit on net metering facilities.

**Applicable Entities:**

Investor-owned utilities (representing ~95% of the state's customers) are required to offer net metering.

**Excess Generation:**

Excess generation is credited to the customer's next bill at the retail rate. It is reconciled annually at a "price-to-compare," which includes the generation and transmission components of the rate, but not the distribution component.

**Renewable Energy Certificate (REC) Ownership:**

The customer retains ownership of any RECs.

### VALUE OF SOLAR

Pennsylvania utilities do not offer any value of solar tariffs.

On behalf of the [Mid-Atlantic Solar Energy Industries Association](#) and [Pennsylvania Solar Energy Industries Association](#), [Clean Power Research](#) analyzed the value of distributed generation in New Jersey. The [study](#) analyzed the value of solar for four locations in Pennsylvania—Pittsburgh, Harrisburg, Scranton, Philadelphia. The study found values ranging between \$282/MWh to \$318/MWh for the analyzed Pennsylvania locations.

---

<sup>7</sup> 73 P.S. § 1648.2 et seq.

## RHODE ISLAND

### NET METERING

Rhode Island state law mandates net metering for solar PV customers.<sup>8</sup>

**Maximum System Capacity:**

Net metered systems may be up to 10MW per location.

**Aggregate Capacity Limit:**

There is no aggregate capacity limit for Rhode Island's largest utility—National Grid. The state's two smaller utilities (serving <2% of total customers), Block Island Power Company and Pascoag Utility District, are capped at 3% of peak load.

**Applicable Entities:**

All utilities are required to offer net metering.

**Excess Generation:**

Excess generation up to 125% of the customer's usage will be paid credits worth the utilities avoid cost rate, unless a different plan is agreed to by the customer and utility.

**REC Ownership:**

REC ownership is retained if net metered.

## VALUE OF SOLAR

Rhode Island's utilities do not offer any value of solar tariffs. The Acadia Center has analyzed the value of solar PV systems in Rhode Island. The [study](#) found solar PV energy values between 20 to 25 cents per kWh to the grid, with additional societal values of 7 cents per kWh.

## VERMONT

### NET METERING

Vermont state law mandates net metering for solar PV customers.<sup>9</sup>

**Maximum System Capacity:**

Net metered systems may be up to 500kW for most facilities and 2.2MW for military facilities.

**Aggregate Capacity Limit:**

Aggregate net metered facility capacity is limited to 15% of the utility's 1996 peak demand or 15% of peak demand during most recent year (whichever is greater).

---

<sup>8</sup> R.I. Gen. Laws § 39-26.4

<sup>9</sup> 30 V.S.A. § 219a to § 219b

**Applicable Entities:**

All utilities are required to offer net metering.

**Excess Generation:**

Excess generation is credited to the customer's next bill at the retail rate. If excess credits are not used within 12 months, they are granted to the utility without compensation to the customer.

**Renewable Energy Certificate (REC) Ownership:**

The customer retains ownership of any RECs.

**NOTE:** In August 2016, the Vermont Public Service Board ordered changes to the state's net metering program to take effect on January 1<sup>st</sup>, 2017.<sup>10</sup> Among many changes, the new rules will:

- Modify credit for excess generation based on factors such as project siting characteristics and REC ownership,
- Limit net metered systems to facilities less than 150kW if not located on a "preferred site" and to less than 500kW if located on a preferred site<sup>11</sup>
- Not allow net metering customers to avoid "non-bypassable charges" (pre-existing facilities are exempt from this change for 10 years), and
- Eliminate any aggregate capacity limits on net metered facilities

**VALUE OF SOLAR**

Vermont utilities do not offer any value of solar tariffs.

Vermont is yet to conduct a study analyzing the value of solar in the state.

<sup>10</sup> See [Order on Reconsideration in Re: Revised net-metering program pursuant to Act 99 of 2014](#)

<sup>11</sup> See page 14 of Order on Reconsideration

## About NESEMC



The **Northeast Solar Energy Market Coalition** brings together solar energy business associations and other stakeholders in the Northeast United States to harmonize regional solar energy policy and advance the solar energy market. We are funded by the U.S. Department of Energy SunShot Initiative as a cooperative agreement through 2017.

Our vision is a thriving, efficient regional market for solar photovoltaic energy generation in the Northeast.

We will realize our vision by encouraging and engaging regional solar businesses in advancing market policy to lower costs and increase solar market opportunity. We will educate stakeholders and policy makers throughout the region directly, and by empowering our member organizations with robust analysis and timely information.

Visit us at [NESEMC.com](http://NESEMC.com)

*Powered by*  
**SunShot**  
U.S. Department of Energy