*Prepared by R. Perez for IREC*

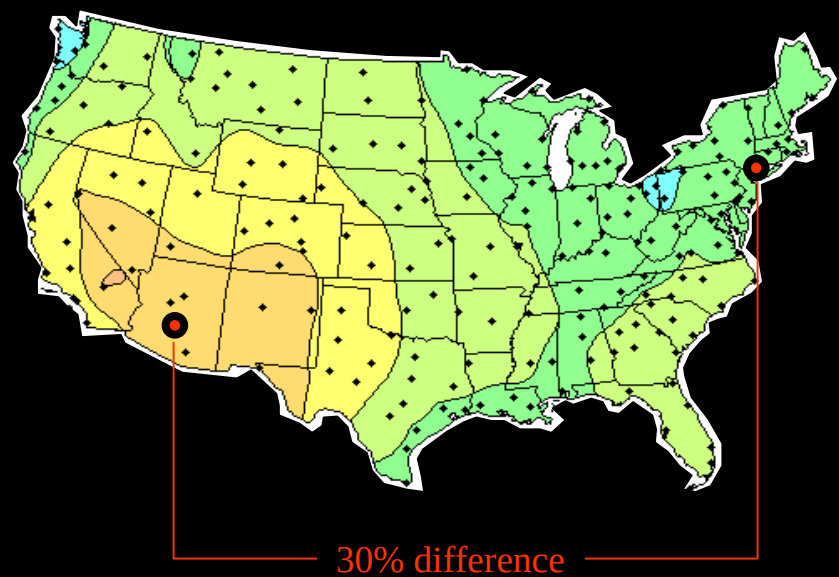
# Solar energy resource throughout New York *(kWh per square meter per day)*

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | **Year** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ALBANY | 3.0 | 3.9 | 4.5 | 4.9 | 5.1 | 5.4 | 5.5 | 5.2 | 4.8 | 3.9 | 2.6 | 2.4 | **4.3** |
| BINGHAMTON | 2.8 | 3.5 | 4.3 | 4.7 | 5.0 | 5.2 | 5.3 | 5.1 | 4.5 | 3.7 | 2.4 | 2.1 | **4.1** |
| BUFFALO | 2.4 | 3.3 | 4.2 | 4.8 | 5.2 | 5.5 | 5.5 | 5.3 | 4.6 | 3.6 | 2.3 | 1.9 | **4.1** |
| MASSENA | 3.0 | 4.2 | 4.9 | 5.0 | 5.2 | 5.4 | 5.6 | 5.2 | 4.7 | 3.7 | 2.4 | 2.3 | **4.3** |
| NYC - LONG ISLAND | 3.2 | 4.0 | 4.8 | 5.2 | 5.4 | 5.5 | 5.6 | 5.5 | 5.0 | 4.4 | 3.2 | 2.8 | **4.6** |
| ROCHESTER | 2.5 | 3.3 | 4.2 | 4.9 | 5.2 | 5.4 | 5.5 | 5.3 | 4.6 | 3.6 | 2.3 | 2.0 | **4.1** |
| SYRACUSE | 2.7 | 3.5 | 4.3 | 4.9 | 5.2 | 5.4 | 5.6 | 5.3 | 4.7 | 3.7 | 2.3 | 2.0 | **4.1** |
| Phoenix, Arizona | 5.1 | 6 | 6.7 | 7.4 | 7.5 | 7.3 | 6.9 | 7.1 | 7 | 6.5 | 5.6 | 4.9 | **6.5** |

There is enough sun in New York, despite widespread belief of the contrary. The table above shows the average amount of solar energy available throughout the state. Note that New York receives only 30% less energy than Phoenix, Arizona.

The scope of the resource is very large even in New York : to put matters in perspective, think that the State receives enough solar energy in two days to supply <u>All</u> its energy use for one year.

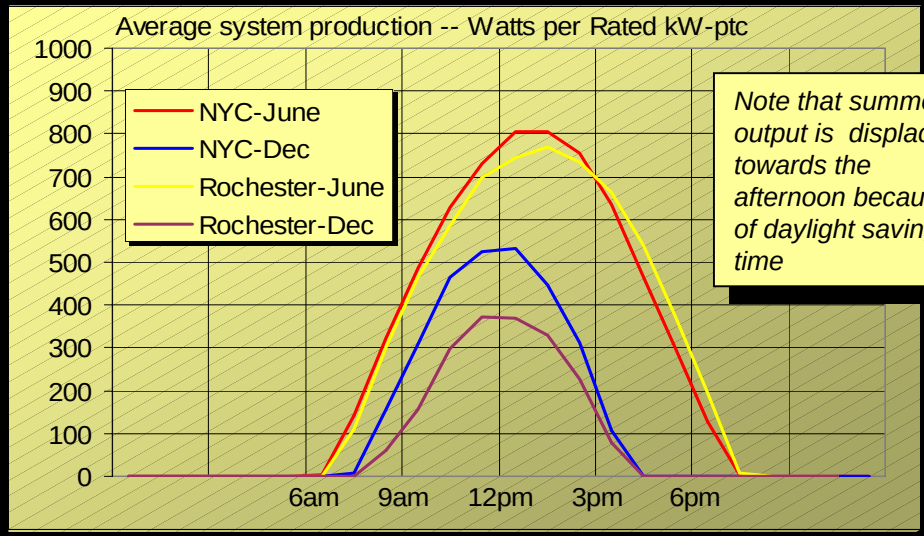
## Distribution of solar energy resource through the United States *-- source NREL*



## How much energy will the PV system on your roof produce?

The table below shows the average daily kWh output of a 1-kW* PV array installed on an unobstructed south-facing low pitch roof. The plot on the right shows how this output varies throughout a typical winter and summer day.

The slope and orientation of the array as well as obstructions in its field of view will affect energy yield. However, if one stays within 40 degrees of due south for a roof mounted array output will not decrease by much more than 10%.




Obstructions could further reduce system output. Simple system-sizing tools soon-to-be-deployed on the NYSERDA web site should let you evaluate the impact of system orientation and obstructions at your own site. For now you may want to take a look at one of these simple web-based programs:

PV-Watts (http://rredc.nrel.gov/solar/codes_algs/PVWATTS/) Clean Power Estimator (e.g., http://www.sunwize.com/default.htm)

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ALBANY | 3.2 | 4.3 | 4.6 | 5.5 | 6.0 | 5.8 | 6.0 | 5.7 | 5.1 | 4.0 | 2.4 | 2.3 | **4.6** |
| BINGHAMTON | 2.9 | 4.0 | 4.7 | 5.3 | 5.5 | 5.6 | 5.6 | 5.5 | 4.5 | 4.0 | 2.6 | 2.0 | **4.4** |
| BUFFALO | 2.4 | 3.3 | 4.7 | 5.3 | 6.0 | 6.0 | 5.9 | 5.6 | 4.4 | 3.5 | 2.0 | 1.8 | **4.3** |
| MASSENA | 3.1 | 4.3 | 5.2 | 5.6 | 5.6 | 6.1 | 6.1 | 5.5 | 4.6 | 3.7 | 2.4 | 2.2 | **4.5** |
| NYC - LONG ISLAND | 3.2 | 4.4 | 4.9 | 5.7 | 5.8 | 6.2 | 6.0 | 5.8 | 5.2 | 4.5 | 2.9 | 2.9 | **4.8** |
| ROCHESTER | 2.4 | 3.7 | 4.4 | 5.3 | 5.7 | 6.2 | 5.9 | 5.5 | 5.0 | 3.5 | 2.2 | 1.9 | **4.3** |
| SYRACUSE | 2.8 | 3.4 | 4.7 | 5.5 | 6.0 | 5.9 | 6.1 | 5.6 | 5.0 | 3.8 | 2.3 | 2.2 | **4.4** |

** Important note for the specialist: Not all 1-kW PV systems are rated equal. Here we refer to a 1-kW "ptc"rated array. A 1-kWptc array produces 1 kW of usable AC power at noon in summer. However PV systems are often marketed using a DC "stc" rating by simply adding the DC rating of their PV modules. Because module efficiency decreases with temperature and because DC to AC conversion is not 100% efficient, a 1 kWstc-rated array may only yield 0.75 kW of usable AC power on a hot summer day – if such a rating applies to your system, the numbers in the Table should be multiplied by 0.75 in summer and 0.85 in winter.*