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Overview of PVWatts^{TM}

Solar ABCs PV System Energy Performance Evaluation

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PVWatts Purpose

PVWatts provides quick estimates of the a.c. energy production of grid-connected PV systems for buyers and sellers.

Minimal inputs required, defaults provided.
- DC rating (kW)
- DC to AC derate factor
- PV array type (fixed of tracking)
- PV array tilt angle
- PV array azimuth angle

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Technical

- Model based on Sandia's PVFORM Version 3.3 (1988)
- Uses TMY2 meteorological data for user-selected location.
- Hour-by-hour calculations for:
  - Plane-of-array irradiance
  - PV cell temperature
  - DC power
  - AC power

Versions

Version 1
- Original version, released in 1999.
- 25,000 visits/month

Version 2
- Released in 2001
- Uses 40 km solar radiation data grid to interpolate performance between TMY2 stations
- Uses a map server interface which is less user friendly than the Version 1 interface

New PVWatts Viewer

Can be used to run either Version 1 or 2
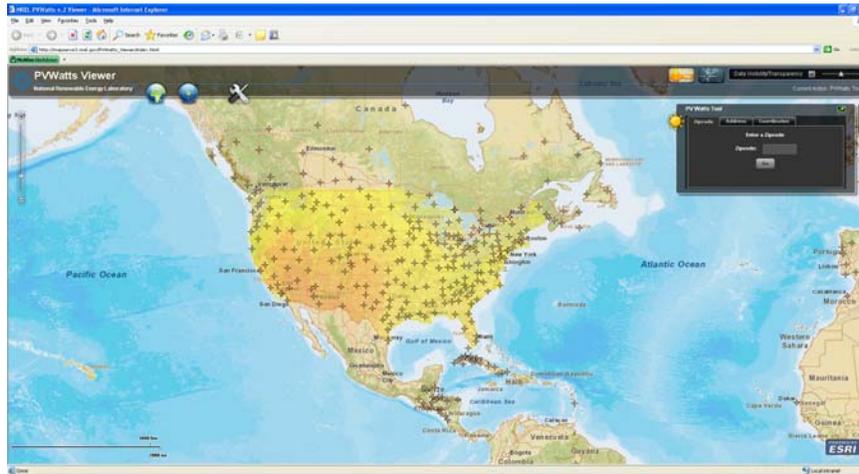
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PVWatts Web Service

Developed in 2006 to support the Californian Solar Initiative (CSI) Expected Performance Based Buy down (EPBB) calculator

– PVWatts input parameters sent to web service, returns performance results to calling web site

– For either Version 1 or 2 simulations

– Additional inputs allowed for Installed Nominal Operating Cell Temperature (INOCT) and power degradation temperature coefficient

– Commercial entities also using for performance estimates and to streamline applications for PV incentive rebates.

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