



Transition Guide: PVWatts API to PowerBill® API

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Introduction

The PowerBill® API is a RESTful API. A valid username, password and client key is required to access this API. A preliminary demo instance of this API is available with requests of the form:

[https://powerbill.cleanpower.com/api/v1/SimulateTypicalYear?\[QueryStringParams\]](https://powerbill.cleanpower.com/api/v1/SimulateTypicalYear?[QueryStringParams])

After populating the query string parameters, HTTP GET requests of this form may be manually evaluated by entering the URL into a web browser.

The API version is indicated in the URL and is currently v1. If new fields are added that do not disturb the existing schema, they will be added to the existing API version. Client developers should write their code in such a way as to ignore unrecognized attributes or elements so they don't break when new fields are added.

If requirements change such that the schema must be fundamentally changed, then new versions of the API will be created. At that point, client developers will be encouraged to use the latest API in order to take advantage of new functionality. Existing clients will be able to continue to use older versions of the API without modification.

Sample Request URL

The sample below includes the required parameters for sending a request.

```
https://powerbill.cleanpower.com/api/v1/SimulateTypicalYear?  
PowerModel=CprPVForm&WeatherDataSource=TMY3&Latitude_Degrees=37&Longitude_Degrees=-120&  
GeneralDerate_Percent=86&Tilt_Degrees=30&Azimuth_Degrees=180&MaxPowerOutput_kWAC=1&  
EfficiencyRating_Percent=91&NameplateRating_kWDC=0.94&PtcRating_kWDC=0.82&key=CLIENT_KEY
```



Sample Output

```
<?xml version="1.0" encoding="UTF-8"?>
<SimulationResponse
RequestURL="/api/v1/SimulateTypicalYear?PowerModel=CprPVForm&WeatherDataSource=TM3&Latitude_De
grees=37&Longitude_Degrees=-
120&GeneralDerate_Percent=86&Tilt_Degrees=30&Azimuth_Degrees=180&MaxPowerOutput_kWAC=1&
&EfficiencyRating_Percent=91&NameplateRating_kWDC=0.94&PtcRating_kWDC=0.82&key=***2X"
Status="Success" xmlns="http://powerbill.cleanpower.com/api/v1"
xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <RequestInputs>
    <EnergySite>
      <Location Latitude_Degrees="37" Longitude_Degrees="-120"/>
      <PVSystems>
        <PVSystem Albedo_Percent="17">
          <PVSubsystems>
            <PVSubsystem GeneralDerate_Percent="86">
              <PVArrays>
                <PVArray>
                  <PVModule Count="1" PowerTemperatureCoefficient_PercentPerDegreeC="0.4"
NameplateRating_kWDC="0.94" PtcRating_kWDC="0.82"/>
                  <ArrayConfiguration Tracking="Fixed" TrackingRotationLimit_Degrees="45"
ModuleRowCount="1" RelativeRowSpacing="3" Azimuth_Degrees="180" Tilt_Degrees="30"/>
                </PVArray>
              </PVArrays>
            </PVSubsystem>
          </PVSubsystems>
        </PVSystem>
      </PVSystems>
    </EnergySite>
    <SimulationOptions PowerModel="CprPVForm" IncludeSummary="true" IncludeDebugInfo="true"
OutputFields="">
      <WeatherDataOptions SpatialResolution_Degrees="0.1" TimeResolution_Minutes="60"
WeatherDataPreference="Auto" WeatherDataSource="TM3"/>
    </SimulationOptions>
  </RequestInputs>
  <WeatherSourceInformation WeatherSiteName="FRESNO YOSEMITE INTL AP" Latitude_Degrees="36.783"
Longitude_Degrees="-119.717"/>
  <AnnualSummary>
    <Annual TotalEnergy_kWhAC="1331.249785"/>
    <Monthly>
      <Month MonthName="January" TotalEnergy_kWhAC="47.073207"/>
      <Month MonthName="February" TotalEnergy_kWhAC="76.045435"/>
      <Month MonthName="March" TotalEnergy_kWhAC="110.577359"/>
      <Month MonthName="April" TotalEnergy_kWhAC="135.458421"/>
      <Month MonthName="May" TotalEnergy_kWhAC="142.490923"/>
      <Month MonthName="June" TotalEnergy_kWhAC="145.709628"/>
      <Month MonthName="July" TotalEnergy_kWhAC="147.257870"/>
      <Month MonthName="August" TotalEnergy_kWhAC="150.962086"/>
      <Month MonthName="September" TotalEnergy_kWhAC="128.478773"/>
      <Month MonthName="October" TotalEnergy_kWhAC="115.877883"/>
      <Month MonthName="November" TotalEnergy_kWhAC="75.440005"/>
      <Month MonthName="December" TotalEnergy_kWhAC="55.878195"/>
    </Monthly>
  </AnnualSummary>
</SimulationResponse>
```



PVWatts API to PowerBill API Parameter Mapping

The table below shows the PVWatts API parameters and their corresponding PowerBill API parameters. Note that in the PowerBill API, all percentages take on the range 0 to 100 rather than 0 to 1.

PVWatts API	PowerBill API	Type	Options	Required	Description
format	<None>				The PowerBill API presently only supports XML output.
api_key	key	string		Yes	
address	<None>				The PowerBill API presently does not support geocoding.
lat	Latitude_Degrees	decimal	-90 to 90	Yes	
lon	Longitude_Degrees	decimal	-180 to 180	Yes	
dataset	WeatherDataSource	string	NSRDB_TMY10km2010, TMY3	Yes	Today, NSRDB_TMY10km2010 can only be used with the PVWatts PowerModel and TMY3 can only be used with CprPVForm PowerModel.
timeframe	<None>				Monthly and annual aggregated value output can be controlled with the "IncludeSummary" parameter. Hourly time resolution output values are controlled by the "OutputFields" parameter.
system_size	NameplateRating_kWDC	decimal		Yes	
<None>	PtcRating_kWDC	decimal		Yes	The PTC rating is not used in PVWatts, but is required for use with the CprPVForm model. For a rough estimate, the PTC rating can be estimated by multiplying the nameplate rating by 0.88. For a list of PTC ratings visit: http://www.gosolarcalifornia.ca.gov/equipment/pv_modules.php



PVWatts API	PowerBill API	Type	Options	Required	Description
<None>	PowerModel	string	CprPVForm, PVWatts	Yes	Today, CprPVForm can only be used with TMY3 WeatherDataSource and PVWatts can only be used with NSRDB_TMY10km2010 WeatherDataSource.
tilt_eq_lat	<None>				This functionality can be reproduced by defining the appropriate value in Tilt_Degrees.
derate	GeneralDerate_Percent	decimal	0 to 100	Yes	The appropriate general derate value you should use is dependent on the PowerModel.
tilt	Tilt_Degrees	decimal	0 to 90	Yes	
azimuth	Azimuth_Degrees	decimal	0 to 360	Yes	
track_mode	Tracking	string	Fixed, SingleAxis, DualAxis	No	Default is Fixed.
<None>	MaxPowerOutput_kWAC	decimal		Yes	The maximum AC power output for the inverter.
<None>	EfficiencyRating_Percent	decimal	0 to 100	Yes	The efficiency rating of the inverter.
<None>	OutputFields	string	PowerAC, EnergyAC	No	This parameter may be set to be a comma separated list that identifies the fields to be returned in the hourly output.
<None>	IncludeSummary	boolean	True, False	No	Default is True. If set to true, then a summary of aggregated annual and monthly values will be returned in the response.
callback	<None>				The PowerBill API does not support JSONP.