

# Tilted Photovoltaic Potential

## File Geodatabase Feature Class



### Tags

Solar Resource, Contiguous United States, Resource Potential, PV

### Summary

Provides information on solar resource potential

### Description

Monthly and annual average latitude equals tilt irradiance for Hawaii and the contiguous United States.

### Credits

NREL

### Use limitations

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### Extent

<b>West</b>	-161.000000	<b>East</b>	-66.900000
<b>North</b>	49.400000	<b>South</b>	18.000000

### Scale Range

**Maximum (zoomed in)** 1:5,000

## ArcGIS Metadata

### Topics and Keywords

\* CONTENT TYPE Downloadable Data

### Citation

TITLE Tilted Photovoltaic Potential

PRESENTATION FORMATS \* digital map

#### OTHER CITATION DETAILS

Perez, R., P. Ineichen, K. Moore, M.Kmiecik, C. Chain, R. George and F. Vignola (2002): A New Operational Satellite-to-Irradiance Model. Solar Energy

### Citation Contacts

#### RESPONSIBLE PARTY

INDIVIDUAL'S NAME Anthony Lopez

ORGANIZATION'S NAME NREL

CONTACT'S POSITION GIS Scientist

CONTACT'S ROLE point of contact

#### CONTACT INFORMATION

##### ADDRESS

##### TYPE

E-MAIL ADDRESS [anthony.lopez@nrel.gov](mailto:anthony.lopez@nrel.gov)

### Resource Details

DATASET LANGUAGES \* English (UNITED STATES)

DATASET CHARACTER SET utf8 - 8 bit UCS Transfer Format

SPATIAL REPRESENTATION TYPE \* vector

#### SUPPLEMENTAL INFORMATION

This data provides monthly average and annual average daily total solar resource averaged over surface cells of 0.1 degrees in both latitude and longitude, or about 10 km in size. This data was developed using the State University of New York/Albany satellite radiation model. This model was developed by Dr. Richard Perez and collaborators at the National Renewable Energy Laboratory and other universities for the U.S. Department of Energy. Specific information about this model can be found in Perez, et al. (2002). This model uses hourly radiance images from geostationary weather satellites, daily snow cover data, and monthly averages of atmospheric water vapor, trace gases, and the amount of aerosols in the atmosphere to calculate the hourly total insolation (sun and sky) falling on a horizontal surface. Atmospheric water vapor, trace gases, and aerosols are derived from a variety of sources. A modified Bird model is used to calculate clear sky direct normal (DNI). This is then adjusted as a function of the ratio of clear sky global horizontal (GHI) and the model predicted GHI. Where possible, existing ground measurement stations are used to validate the data. Nevertheless, there is uncertainty associated with the meteorological input to the model, since some of the input parameters are not available at a 10km resolution. As a result, it is believed that the modeled values are accurate to approximately 15% of a true measured value within the grid cell. Due to terrain effects and other microclimate influences, the local cloud cover can vary significantly even within a single grid cell. Furthermore, the uncertainty of the modeled estimates increase with distance from reliable measurement sources and with the complexity of the terrain.

\* PROCESSING ENVIRONMENT Microsoft Windows 7 Version 6.1 (Build 7601) Service Pack 1; Esri ArcGIS 10.3.0.4322

#### CREDITS

NREL

ARCGIS ITEM PROPERTIES

\* NAME energy\_potential\_solar\_pvtilt\_v2

## Extents

EXTENT

GEOGRAPHIC EXTENT

BOUNDING RECTANGLE

EXTENT TYPE Extent used for searching

\* WEST LONGITUDE -161.000000

\* EAST LONGITUDE -66.900000

\* NORTH LATITUDE 49.400000

\* SOUTH LATITUDE 18.000000

\* EXTENT CONTAINS THE RESOURCE Yes

EXTENT IN THE ITEM'S COORDINATE SYSTEM

\* WEST LONGITUDE -17922438.017717

\* EAST LONGITUDE -7447273.934070

\* SOUTH LATITUDE 2037548.544751

\* NORTH LATITUDE 6343007.591429

\* EXTENT CONTAINS THE RESOURCE Yes

## Resource Constraints

CONSTRAINTS

LIMITATIONS OF USE

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## Spatial Reference

ARCGIS COORDINATE SYSTEM

\* TYPE Projected

\* GEOGRAPHIC COORDINATE REFERENCE GCS\_WGS\_1984

\* PROJECTION WGS\_1984\_Web\_Mercator\_Auxiliary\_Sphere

\* COORDINATE REFERENCE DETAILS

PROJECTED COORDINATE SYSTEM

WELL-KNOWN IDENTIFIER 102100  
X ORIGIN -22041545.367140558  
Y ORIGIN -33272760.666300893  
XY SCALE 135368852.55357128  
Z ORIGIN -100000  
Z SCALE 10000  
M ORIGIN -100000  
M SCALE 10000  
XY TOLERANCE 0.001  
Z TOLERANCE 0.001  
M TOLERANCE 0.001  
HIGH PRECISION true  
LATEST WELL-KNOWN IDENTIFIER 3857  
WELL-KNOWN TEXT PROJCS["WGS\_1984\_Web\_Mercator\_Auxiliary\_Sphere",GEOGCS  
["GCS\_WGS\_1984",DATUM["D\_WGS\_1984",SPHEROID  
["WGS\_1984",6378137.0,298.257223563]],PRIMEM["Greenwich",0.0],UNIT  
["Degree",0.0174532925199433]],PROJECTION["Mercator\_Auxiliary\_Sphere"],PARAMETER  
["False\_Easting",0.0],PARAMETER["False\_Northing",0.0],PARAMETER  
["Central\_Meridian",0.0],PARAMETER["Standard\_Parallel\_1",0.0],PARAMETER  
["Auxiliary\_Sphere\_Type",0.0],UNIT["Meter",1.0],AUTHORITY["EPSG",3857]]

#### REFERENCE SYSTEM IDENTIFIER

- \* VALUE 3857
- \* CODESPACE EPSG
- \* VERSION 8.2.6

## Spatial Data Properties

#### VECTOR

- \* LEVEL OF TOPOLOGY FOR THIS DATASET geometry only

#### GEOMETRIC OBJECTS

- FEATURE CLASS NAME energy\_potential\_solar\_pvtilt\_v2
- \* OBJECT TYPE composite
  - \* OBJECT COUNT 91439

#### ARCGIS FEATURE CLASS PROPERTIES

- FEATURE CLASS NAME energy\_potential\_solar\_pvtilt\_v2
- \* FEATURE TYPE Simple
  - \* GEOMETRY TYPE Polygon
  - \* HAS TOPOLOGY FALSE
  - \* FEATURE COUNT 91439
  - \* SPATIAL INDEX TRUE
  - \* LINEAR REFERENCING FALSE

## Distribution

#### DISTRIBUTION FORMAT

- \* NAME File Geodatabase Feature Class

## Fields

#### DETAILS FOR OBJECT energy\_potential\_solar\_pvtilt\_v2

- \* TYPE Feature Class
- \* ROW COUNT 91439

#### FIELD OBJECTID

- \* ALIAS OBJECTID
- \* DATA TYPE OID
- \* WIDTH 4

- \* PRECISION 0
- \* SCALE 0
- \* FIELD DESCRIPTION  
Internal feature number.
  
- \* DESCRIPTION SOURCE  
Esri
  
- \* DESCRIPTION OF VALUES  
Sequential unique whole numbers that are automatically generated.

#### FIELD Shape

- \* ALIAS Shape
- \* DATA TYPE Geometry
- \* WIDTH 0
- \* PRECISION 0
- \* SCALE 0
- \* FIELD DESCRIPTION  
Feature geometry.
  
- \* DESCRIPTION SOURCE  
Esri
  
- \* DESCRIPTION OF VALUES  
Coordinates defining the features.

#### FIELD ID

- \* ALIAS ID
- \* DATA TYPE Double
- \* WIDTH 8
- \* PRECISION 0
- \* SCALE 0

#### FIELD GRIDCODE

- \* ALIAS GRIDCODE
- \* DATA TYPE Double
- \* WIDTH 8
- \* PRECISION 0
- \* SCALE 0

#### FIELD ANN\_LATILT

- \* ALIAS ANN\_LATILT
- \* DATA TYPE Double
- \* WIDTH 8
- \* PRECISION 0
- \* SCALE 0

#### FIELD DESCRIPTION

Annual average latitude equals tilt irradiance (kWh/m2/day)

#### DESCRIPTION SOURCE

NREL

#### FIELD JAN

- \* ALIAS JAN
- \* DATA TYPE Double
- \* WIDTH 8
- \* PRECISION 0
- \* SCALE 0

#### FIELD FEB

- \* ALIAS FEB
- \* DATA TYPE Double

- \* WIDTH 8
- \* PRECISION 0
- \* SCALE 0

#### FIELD MAR

- \* ALIAS MAR
- \* DATA TYPE Double
- \* WIDTH 8
- \* PRECISION 0
- \* SCALE 0

#### FIELD APR

- \* ALIAS APR
- \* DATA TYPE Double
- \* WIDTH 8
- \* PRECISION 0
- \* SCALE 0

#### FIELD MAY

- \* ALIAS MAY
- \* DATA TYPE Double
- \* WIDTH 8
- \* PRECISION 0
- \* SCALE 0

#### FIELD JUN

- \* ALIAS JUN
- \* DATA TYPE Double
- \* WIDTH 8
- \* PRECISION 0
- \* SCALE 0

#### FIELD JUL

- \* ALIAS JUL
- \* DATA TYPE Double
- \* WIDTH 8
- \* PRECISION 0
- \* SCALE 0

#### FIELD AUG

- \* ALIAS AUG
- \* DATA TYPE Double
- \* WIDTH 8
- \* PRECISION 0
- \* SCALE 0

#### FIELD SEP

- \* ALIAS SEP
- \* DATA TYPE Double
- \* WIDTH 8
- \* PRECISION 0
- \* SCALE 0

#### FIELD OCT

- \* ALIAS OCT
- \* DATA TYPE Double
- \* WIDTH 8
- \* PRECISION 0
- \* SCALE 0

#### FIELD NOV

- \* ALIAS NOV
- \* DATA TYPE Double
- \* WIDTH 8
- \* PRECISION 0

\* SCALE 0

#### FIELD DEC

\* ALIAS DEC  
\* DATA TYPE Double  
\* WIDTH 8  
\* PRECISION 0  
\* SCALE 0

#### FIELD Shape\_Length

\* ALIAS Shape\_Length  
\* DATA TYPE Double  
\* WIDTH 8  
\* PRECISION 0  
\* SCALE 0  
\* FIELD DESCRIPTION  
Length of feature in internal units.  
  
\* DESCRIPTION SOURCE  
Esri  
  
\* DESCRIPTION OF VALUES  
Positive real numbers that are automatically generated.

#### FIELD Shape\_Area

\* ALIAS Shape\_Area  
\* DATA TYPE Double  
\* WIDTH 8  
\* PRECISION 0  
\* SCALE 0  
\* FIELD DESCRIPTION  
Area of feature in internal units squared.  
  
\* DESCRIPTION SOURCE  
Esri  
  
\* DESCRIPTION OF VALUES  
Positive real numbers that are automatically generated.

## Metadata Details

\* METADATA LANGUAGE English (UNITED STATES)  
\* METADATA CHARACTER SET utf8 - 8 bit UCS Transfer Format

SCOPE OF THE DATA DESCRIBED BY THE METADATA \* dataset  
SCOPE NAME \* dataset

\* LAST UPDATE 2016-08-29

#### ARCGIS METADATA PROPERTIES

METADATA FORMAT ArcGIS 1.0  
METADATA STYLE FGDC CSDGM Metadata  
STANDARD OR PROFILE USED TO EDIT METADATA FGDC

CREATED IN ARCGIS FOR THE ITEM 2016-08-05 13:14:02  
LAST MODIFIED IN ARCGIS FOR THE ITEM 2016-08-29 91:91:30

#### AUTOMATIC UPDATES

HAVE BEEN PERFORMED Yes  
LAST UPDATE 2016-08-29 09:18:39

## Metadata Contacts

METADATA CONTACT

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ORGANIZATION'S NAME NREL

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