Layer Name: Solar Resource Potential in GHI (Global Horizontal Irradiance)

Layer Type: Polygon

Status: Complete

Geog. Extent: Main Hawaiian Islands

Projection: Universal Transverse Mercator, Zone 4 (Meters)

Datum: NAD 83 HARN

Please note - if you are using data in the State's web services or downloading from the State's geoportal, the data is served and exported in WGS84 coordinates, although it is stored internally in UTM coordinates.

Description:

Monthly and annual average solar resource potential for the state of Hawaii measured in global horizontal irradiance (GHI). 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 meterological input to the model, since some of the input parameters are not avalable 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.

Source: State University of New York at Albany and National Renewable Energy Laboratory.

History:

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Attributes: Polygons:

GHI Units:	**watt hours per square meter per day (Wh/m2/day)**
GRIDCODE	Grid code
LON	Longitude
LAT	Latitude
GHI 01	Average Global Horizontal Irradiance (GHI) in January
GHI 02	Average Global Horizontal Irradiance (GHI) in February
GHI 03	Average Global Horizontal Irradiance (GHI) in March
GHI 04	Average Global Horizontal Irradiance (GHI) in April
GHI 05	Average Global Horizontal Irradiance (GHI) in May
GHI 06	Average Global Horizontal Irradiance (GHI) in June
GHI 07	Average Global Horizontal Irradiance (GHI) in July
GHI 08	Average Global Horizontal Irradiance (GHI) in August
GHI 09	Average Global Horizontal Irradiance (GHI) in September
GHI 10	Average Global Horizontal Irradiance (GHI) in October
GHI 11	Average Global Horizontal Irradiance (GHI) in November
GHI 12	Average Global Horizontal Irradiance (GHI) in December
GHI ANN	Average Global Horizontal Irradiance (GHI) Annually

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