# *Chart of the Week #24: Correction*: Total U.S. Annual Potential Solar Electricity Generation

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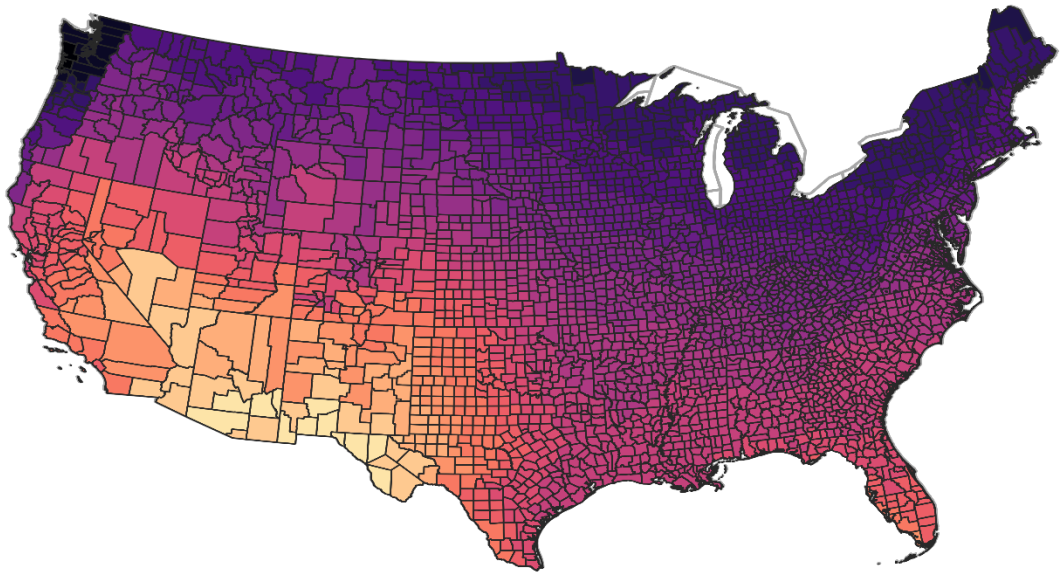
**September 1, 2021**

**Washington, DC**

# Available Solar Irradiance by U.S. County by kilowatt Hour per Sq Meter per Day



U.S. Counties Solar Irradiance

- Less than 3.8
- Between 3.8 and 4.0
- Between 4.0 and 4.2
- Between 4.2 and 4.4
- Between 4.4 and 4.6
- Between 4.6 and 4.8
- Between 4.8 and 5.0
- Between 5.0 and 5.2
- Between 5.2 and 5.4
- Between 5.4 and 5.6
- Between 5.6 and 5.8
- Between 5.8 and 6.0
- Between 6.0 and 6.2
- Between 6.2 and 6.4
- Between 6.4 and 6.6
- Between 6.6 and 6.8
- Between 6.8 and 7.0

*Analysis based on CDC, NREL, and EPA Data*

*EPRINC*

# Total U.S. Annual Potential Solar Electricity Generation

- **Through the use of photovoltaic (PV) panels, solar energy, measured in units of irradiance, can be harvested to produce electricity.**
- **In the U.S., average annual available solar irradiance is expressed in kilowatts per square meter per day: (kwh/m2/day).**
- **Solar irradiance across the contiguous portion of the United States (Lower 48) varies due to latitude, season, landscape, and weather. The range, as calibrated by DOE's National Renewable Energy Laboratory (NREL), EPA, and other U.S. agencies, is from 3.8 to 6.9, with a national average of 5.08 Kwh/m2/day.**
- **The highest rated U.S. counties are in the Southwestern U.S; the lowest are in Washington State, Vermont, and Maine.**
- **Current utility-scale solar panel efficiency is rated by NREL at 15.2% (15.2% of solar irradiance can be converted to electricity).**
- **According to NREL, the performance ratio (actual output of solar PV / theoretical output) is 86%.**
- **Combined, the formula for potential total Lower 48 annual generated electricity = Area of panels x solar panel efficiency x Kwh/m2/day x performance ratio x 365 days**
- **The 3,268 counties of the Lower 48 states are comprised of just over 3 million square miles (7.7 trillion sq. meters) of territory.**
- **Current average annual electricity production of the Lower 48 is almost 4 million thousand megawatt hours.**
- ~~**If solar PV panels covered the whole of the Lower 48, EPRINC projects that they could annually generate almost 2 million thousand megawatt hours, or 49.3% of total current requirements.**~~
- **CORRECTION: If solar PV panels covered the whole of the Lower 48, EPRINC projects that they could annually generate almost 2 billion thousand megawatt hours, or almost 500 times total current requirements.**
- **The expanded version of this slide deck is available at: https://eprinc.org/chart-of-the-week/**
- **For more information on this chart, please contact Max Pyziur (maxp@eprinc.org)**