

PV Capacity Ratio and Inverter Over-Rating

Can a solar array be oversized relative to the inverter rating?

To maximize a solar project's value, it can be advantageous to oversize the array relative to the inverter rating to increase system output in partial production conditions. We use the term inverter loading ratio (ILR) to describe this ratio of the array's nameplate DC power rating to the inverter's peak AC output rating.

Do PV inverters oversize?

PV inverters are designed so that the generated module output power does not exceed the rated maximum inverter AC power. Oversizing implies having more DC power than AC power. This increases power output in low light conditions. You can install a smaller inverter for a given DC array size, or you can install more PV modules for a given inverter.

Should a solar inverter rating be increased?

When designing a solar project, increasing the ILR is one option that developers may consider to decrease the unit cost of electricity and increase the effective capacity factor relative to the inverter rating. A complete analysis for such a developer would also include an assessment on the impacts of higher ILRs on inverter longevity.

What is the nameplate rating of a solar inverter?

Thus the nameplate rating of the inverter is its capacity to process the power of the PV array. For example, a 7.6 kW inverter can produce an output of up to 7.6 kW AC. A 9 kW DC solar array rarely produces this much power.

What is a good DC/AC ratio for a solar inverter?

Because the PV array rarely produces power to its STC capacity, it is common practice and often economically advantageous to size the inverter to be less than the PV array. This ratio of PV to inverter power is measured as the DC/AC ratio. A healthy design will typically have a DC/AC ratio of 1.25.

What is a good inverter load ratio?

At the end of 2016, the United States had 20.3 gigawatts (GW) AC of large-scale photovoltaic capacity in operation with a DC module rating of 25.4 GW, resulting in a capacity-weighted average ILR of 1.25. For individual systems, inverter loading ratios are usually between 1.13 and 1.30.

There is a trend toward ever increasing DC:AC ratios. This blog unpacks why this is occurring and how you can take advantage of this trend. The DC power rating of a field of solar panels ...

For economic and engineering reasons, capacity values reported in DC typically are 10% to 30% higher than those reported in AC capacity. This ratio is often referred to as the ...

PV Capacity Ratio and Inverter Over-Rating

When you pair an inverter that is underrated for the amount of power the system is designed to generate, that's called undersizing. There is also a situation where it may make sense to pair ...

The DC: AC ratio is the relationship between PV module power rating and inverter power. Every PV system has a DC:AC ratio regardless of architecture. Many inverters have DC:AC ratio ...

Supersize It! How increasing your array-to-inverter ratio can improve solar-power system economics By Jon Fiorelli and Michael Zuercher-Martinson, Solectria Renewables and ...

Due to decreasing solar module prices, some solar developers are increasing their projects' inverter loading ratio (ILR), defined as the ratio of DC module capacity to AC inverter ...

The measurement of inverter utilization is the capacity factor--the ratio between actual and maximum energy production. A significant portion of system cost is tied to the AC rating of the ...

The DC-to-AC ratio -- also known as Inverter Loading Ratio (ILR) -- is defined as the ratio of installed DC capacity to the inverter's AC power rating. It often makes sense to oversize a ...

The ratio of the DC output power of a PV array to the total inverter AC output capacity. For example, a solar PV array of 13 MW combined STC output power connected to a 10 MW AC ...

The DC:AC ratio is the relationship between PV module power rating and inverter power. Every PV system has a DC:AC ratio, regardless of the architecture. Many inverters have DC:AC ratio ...

