

# OFFICIAL COPY



Martha Lynn Jarvis  
Chief Clerk  
North Carolina Utilities Commission  
430 North Salisbury Street  
Raleigh, NC 27603

**FILED**  
SEP 22 2017  
Clerk's Office  
N.C. Utilities Commission

Re: Docket No. EMP-93, Sub 0  
Wilkinson Solar LLC

Dear Clerk Jarvis,

In a recent letter to the Commission regarding Wilkinson Solar LLC's application for a Certificate of Public Convenience and Necessity, Dr. Herb Eckerlin stated that Wilkinson Solar overestimated its system's performance based on a calculated capacity factor of 27 percent. Dr. Eckerlin argued that this value is unrealistic and much greater than the typical range of capacity factors in North Carolina, which he noted as being 16 to 20 percent. Dr. Eckerlin attributed this 16-20 percent range to Shawn Fitzpatrick of Advanced Energy; however, we believe that its application in this situation is inappropriate and problematic.

The capacity factor range of 16 to 20 percent appears to have originated from a 2012 Advanced Energy study that examined generation data of 22 commercial PV systems across North Carolina. These systems ranged in size from 8 kW AC to 1 MW AC and were built between 2008 and 2010. The average annual capacity factor for all sites was found to be 19 percent.

For the following reasons, though, we do not believe that the results of this 2012 study are representative of capacity factors of large-scale solar farms being built in North Carolina today, such as Wilkinson Solar:

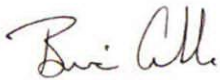
1. The 22 systems that were studied were built nearly a decade ago, during the first two years of North Carolina's solar expansion starting in 2008. The last decade has seen substantial changes in facility design and improvements in solar equipment.

2. The systems had low DC-to-AC ratios, typically in the 1.0 to 1.2 range. Today's large facilities have higher ratios usually ranging from 1.3 to 1.4.
3. Several systems had reduced annual capacity factors due to premature inverter failures that went unnoticed or unaddressed for weeks to months at a time.
4. Most systems did not incorporate real-time performance monitoring to identify warnings, faults or failures, and instead relied on a monthly utility meter read. This resulted in extended downtime. Today's large PV facilities have extensive real-time weather and performance monitoring systems to rapidly respond to and maintain system availability.
5. Most of the installations were relatively small commercial rooftop systems. Although three systems were 1 MW AC ground mount systems, the average system size was 263 kW AC. A typical solar farm in North Carolina has a size of 5,000 kW AC.
6. Commercial rooftop installations have higher shading losses than typical solar farms because of rooftop equipment obstructions.

Using the National Renewable Energy Laboratory's PVWatts Calculator (version 5.3.8), we determined that a more appropriate capacity factor range for large-scale systems in North Carolina is 23 to 28 percent. The low end of the range represents standard efficiency silicon PV modules in a fixed array, while the high end represents premium efficiency silicon PV modules with single axis backtracking technology. The application for a Certificate of Public Convenience and Necessity for Wilkinson Solar (Docket no. EMP-93, Sub 0) specifies that the facility will generate 175,376.816 MWh per year, which equates to a capacity factor of 27 percent, as Dr. Eckerlin stated in his letter. This value falls within our expected range for typical large-scale solar farms in eastern North Carolina.

If you have any questions or concerns, please do not hesitate to contact us. Thank you for your time and consideration.

Sincerely,



Brian Coble  
Senior Vice President