

# Proposed Changes to PJM Manual 21: Calculation of Capacity Values for Wind and Solar Capacity Resources

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03/13/2019

- PJM is proposing to replace its current wind/solar capacity value calculation with an Effective Load Carrying Capability (ELCC) approach
- This is one of several proposed changes to PJM Manual 21
- The first read occurred at the March 7<sup>th</sup> Planning Committee
- The proposed changes impact Appendix B in Manual 21 (redline version of the Manual has been posted with the rest of meeting materials)

- ELCC will be calculated for existing and future wind/solar capacity resources scheduled to be in-service by the beginning of the Delivery Year for which a Base Residual Auction is next to be run
- The ELCC runs will use the 10 most recent load, wind and solar 8,760 hourly shapes
  - If 10 years worth of data are not available, all data available will be used
- The ELCC runs will use the capacity model from the most recent Reserve Requirement Study
- Future wind/solar capacity resources will be able to request project-specific capacity credits (provided they supply supporting data). Those requested project-specific capacity credits will be incorporated in the ELCC runs.

- Step 1: Calculate Composite ELCC of wind and solar capacity resources combined
- Step 2: Calculate ELCC of wind resources and solar resources separately
- Step 3: Allocate the Composite ELCC from Step 1 in a prorated manner based on the results from Step 2 to derive the Wind ELCC and Solar ELCC.

- Step 4: Allocate the Wind ELCC and Solar ELCC from Step 3 to existing individual wind and solar units based on the individual unit's output during the top 10 daily peak load hours in the 10 most recent DYs
- Step 5: Future units will get the class average capacity credit (if they did not request a project-specific capacity credit) or an adjusted version of the project-specific capacity credit (if they did request a project-specific capacity credit)

- Step 1: Composite ELCC (2018 RRS Capacity Model, Projected Wind and Solar Nameplate MW for 2022/23 = 19,910 MW)

Delivery Year	Projected Nameplate Solar & Wind Capacity 2022 (MW)	ELCC (MW)	ELCC (% of Nameplate)
2012/13	19,910	3,762	18.9%
2013/14	19,910	3,784	19.0%
2014/15	19,910	5,213	26.2%
2015/16	19,910	3,761	18.9%
2016/17	19,910	4,443	22.3%
2017/18	19,910	4,090	20.5%
		<b>Average</b>	<b>21.0%</b>

**The ELCC result indicates that the Capacity Credit of 19,910 MW of wind and solar resources is 21% x 19,910 MW = 4,181 MW**

- Steps 2 and Step 3: In previous PC meetings, PJM showed that the average ELCC for wind and solar resources analyzed separately are
  - Wind: 11.5% or  $11.5\% \times 14,620 = 1,681$  MW
  - Solar: 42.3% or  $42.3\% \times 5,290 = 2,238$  MW
- The Composite ELCC is greater than the sum of the two values above: 4,181 MW vs 3,919. If the difference is allocated on a pro rata basis
  - Wind ELCC = 1,681 MW + 112 MW = 1,793 MW or **12.3%**
  - Solar ELCC = 2,238 MW + 150 MW = 2,388 MW or **45.1%**
- The Wind and Solar ELCCs are then allocated to the individual units based in Steps 4 and 5

- PC First Read – 3/7/2019
- MRC First Read – 3/21/2019
- Request for PC Endorsement – 4/11/2019
- Request for MRC Endorsement – 4/25/2019
- Manual 21, Revision 13, effective date – 5/1/2019