Proxy Costs for Solar under Clean Energy Caucus Package

Reactive Power Compensation Task Force
September 28, 2022

PINEGATE RENEWABLES

AEP-Stated Rate Approach

- AEP is well-established. Every generator in PJM with FERC-accepted rate schedules is currently collecting a rate based on the *AEP* methodology.
- However, current practice requires generators to file for reactive power rates individually at FERC.
- The process can be streamlined by using an AEP-derived stated or fixed rate calculated by generation type rather than by individual generator.
- At a previous meeting, the Clean Energy Caucus presented “proxy” costs for wind to show how an *AEP*-derived rate would be determined for that generation type.
- Today, the Clean Energy Caucus will be presenting today “proxy” costs for solar generation.

Benefits of an AEP-derived Stated Rate

- No more rate cases at FERC
- Would be streamlined just like transmission formula rates are now streamlined
- Transparency, certainty, and predictability – rate would be known for each technology type
- Easy to implement future changes by updating proxy costs or adding new technologies
- Ensures compensation for costs incurred to provide reactive service
- Consistent with FERC's "comparability" policy

Schedule 2

- Would include the formula, i.e. the AEP-methodology, that is used to derive the rate per generation type
- Actual rates would be published on PJM's website

Proxy Reactive Capital Investment - Solar

- Inverter
- AEE: DC & AC collection system
- AEE: LV portion of Substation
- Capacitor and/or reactor banks
- GSU

Proxy Fixed Charge Rate

Typical components include:

- O&M / A&G
- Depreciation
- Cost of Capital
- Federal and State Income Tax
- ADIT
- Taxes Other Than income

For Simplicity, could include only

- Proxy O&M / A&G (is often 1.50 to 4.00% of original CapEx)
- Straight line depreciation rate for sinking fund recovery period calculation, such as 4% or 5%
- Proxy Cost of Capital: Wide variety among PJM Transmission Owners; use a weighted average cost of capital such as 50/50 cap structure, 4.0% debt rate, 10.5% equity rate
- No federal or state income tax gross-up or ADIT offset

Discussion

- Review Excel sheet with “proxy” solar data
- Appendix: questions from the Clean Energy Caucus regarding other solution packages.

Appendix A: Questions on PJM's Proposal
1) New Tools

PJM indicates that it would need to develop a new tool to implement its proposal.

Please explain (1) what that tool would look like; and (2) the time it would take to develop and implement the tool.

Without a better understanding of this new tool, stakeholders risk adopting a proposal that could take years to be implemented. Note, for example, after the Commission accepted SPP's proposed revisions to the compensation mechanism for SPP's Attachment Z2 credits, it took SPP 8 years before a tool was finally put in place.

2) Personnel

PJM resources are already taxed. PJM's proposal would require even more hands-on attention from PJM staff.

Please explain/demonstrate that PJM has sufficient staff resources to implement its proposal.

If the goal is to streamline the process, PJM's approach seems the opposite and would *increase* PJM attention and resources.

3) Value of the Resource

Response time is very important to grid reliability. PJM's proposal indicates that only fast-acting capacitor banks should be included. There are significant time differences to deliver VARs when a facility is offline and/or based on the capacity factors and dispatch profiles, e.g. coal, CT, or CCGT with or without blackstart, hydro, wind with or without wind free or caps, and solar with or without Q at night and/or caps.

If the focus is on delivered VARs, Will there be some uplift or rate adjustment from the base rate for "faster," baseline, or VARs available across a wide range of output levels and a penalty for reduction for "slower," infrequently dispatched generation, or VARs that are not available across a wide range of generation?

Will there be some uplift or rate adjustment from the base rate for higher capacity factor (baseload, solar) or availability factor (partial output wind, "windfree", solar with Q-at-Night, hydro, EFORd) factor and a reduction for lower capacity factor (potentially wind, hydro, CTs) or availability (EFORd)?

PJM proposes that generators will only be evaluated for compliance when they are online (matrix, line 11). It seems cases need to be built when they generators are offline to be counted against units for an availability adjustment because these units are not helping the transmission grid.

If that is the case, does this mean that PJM will be constantly updating resource information, which seems the opposite of a streamlined approach?

4) Testing – New vs. Existing

PJM proposes to use actual tested values rather than nameplate capability.

PJM states some resources have not been available to meet tested values. Does PJM have information/data about how many units or MW failed the PJM proposed test in recent years, e.g. 2020 and 2021?

PJM proposes to exempt existing rate schedules from either suspension or scaling down due to lack of performance, but subjecting new resources to this treatment. Please explain whether an existing, exempt resource could receive higher compensation for the same level of performance as a new resource.

PJM currently allows new construction to initially use design values in eDART. These values may not get updated for 60 months. Will that practice continue for new generation?

5) Testing – Demonstrating Capability

It is documented that system limitations during a scheduled test limit the ability to demonstrate the full MVAr capability of new generation; yet that MVAr capability is there to provide voltage support.

Will PJM require the interconnecting transmission owner to suspend the voltage schedule so full MVar capability can be demonstrated?

Is PJM will to consider alternatives, such as (1) allowing new resources to dedicate certain unit to absorb VArs while others provide VArs so the full range of delivered capability is captured without impacting system voltage constraints, (2) PJM telemetry to the low side or per feeder for wind and solar resources to allow for more granular detail of VAR capability and/or (3) PJM redispatch local generation, caps, reactors, etc., for VARs during testing?

If not, please explain (1) how this is not discriminatory to use values for new resources that are constrained and suppressed because of system conditions, yet allow existing resources that did not or would not face such restrictions to demonstrate MVARs?; (2) how this does not create a scheme that allows interconnecting utilities to game the system by precluding suppressing new resource MVar deliverability and thereby decrease new resource compensation yet maximize their own utility generation compensation?

7) Compensation Calculation – Resources with Low Min P Values

PJM proposes to calculate compensation using the average of leading and lagging VArs at max p (max MW output under the ISA) and min p (minimum dispatchable MW) using eDART data.

Is PJM willing to place min p at zero in the calculation of leading or lagging VArs to provide uplift to the most flexible units?

If not, certain resources with very low or 0 min p values may be disproportionately reduced, when it may be vastly preferable under low load periods when voltage is very low or high (i.e., April/September at night) to utilize a resource that can absorb VArs at 0 mw (or even one that can absorb MW and MVars such as Storage) versus one that requires a 20% or 40% min MW output level to absorb VArs (thus requiring a potential redispatch of a second or third unit to reduce MW), or may require a significant time delay prior to being able to provide reactive support (i.e., offline coal or nuclear unit).

8) Compensation Calculation – Source of Inputs

Roger Cao's previous presentation seemed to use the sum of the average q min at p min and p max and q max at p min and p max to calculate the per unit rate. PJM's flat rate methodology (matrix row 10) appears to calculate the per MVar rate by dividing the 1/1/22 rates ($377,522,624.82) by the system MVAr capability based on the nominal plant MW ratings of all units and a .95 power factor.

Does this only include units in eDART or all units?

Does this factor in units that have a power factor schedule, no power factor or voltage schedule, or power factor schedules of units that are less than .98 to reduce the total system MVar?

Does this include generator VArs only or are capacitor banks / reactors included too?

How does this calculation compare to Mr. Cao's calculation? Is Mr. Cao's calculation of system MVars just lagging?

9) AVR Out of Service

On line 11 of the matrix, PJM provides “no compensation if AVR out of service for the month.”

Please explain what this means. Is the rate suspended during any forced or scheduled outage, or just an outage that is AVR-related?

How much of a month is required for the rate to be suspended?

10) Existing Generation

Please expound how PJM would treat existing generation with rates determined per the *AEP* method.

How does PJM intend to treat testing for existing generation with rate schedules determined per the *AEP* method?

How does PJM intend to treat penalties for existing generation with rate schedules determined per the *AEP* method?

If PJM is proposing to compensate new generation under a deliverable standard and with penalties, etc., and preserve existing generation rate schedules, how does PJM's proposal comport with FERC's "comparability" provision?

Appendix B: Questions on ODEC's Proposal

ODEC states: "MVAR Rate will be based on the PJM average reactive rate as of 1/1/22" and "(Total Reactive Compensation (approx.. $335 million)) divided by (System MVAR capability based on nominal plant MW ratings of all units and a 95% Power Factor)" (Matrix Point 10).

Please provide what this rate would be.

ODEC proposes penalties for non-performance and bonus payments (Matrix Point 11). Please provide details on both of these items so financial implications can be understood.

Please explain on what grounds wind and solar would be ineligible for uplift payments, but other resources would be eligible to receive these payments (Matrix Point 12).

Will ODEC's proposal apply to only to new generation or to existing generation as well?

Sponsor Companies

- Pine Gate Renewables, LLC
- Solar Energy Industries Association
- GlidePath Power Operations LLC
- NextEra Energy Resources, LLC
- Clearway Energy
- Open Road Renewables
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- Leeward Renewable Energy
- Invenergy
- Jupiter Power
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- Geenex Solar
- Cypress Creek Renewables

Thank You

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