

Proposed Enhancements for Wind and Solar Dispatch

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Distributed Resources Subcommittee
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- Renewable resources are making up an increasing portion of the PJM generation mix
- It has become difficult to manage the dispatch of these resources using PJM's real-time market clearing engines
 - Refer to PJM's paper on [renewable dispatch in market clearing engines](#)
- There are three areas of primary focus for enhancements in this Issue Charge:
 - Reducing the volatility that renewable resources can have on constraint control
 - Improving the data PJM's security constrained economic dispatch (SCED) uses to dispatch these resources (to improve overall system dispatch)
 - Improving SCED ability to dispatch these resources, thus improving system dispatch and reliability

- Introduced Problem Statement and Issue Charge at June 3, 2024 meeting
- Completed KWA #1-3
 - Education, Interests, Solution Options
 - Published paper in October, 2024
- Today: First read of PJM's proposal
 - Will seek non-binding polling for support after the April 2025 meeting for this proposal and any alternatives

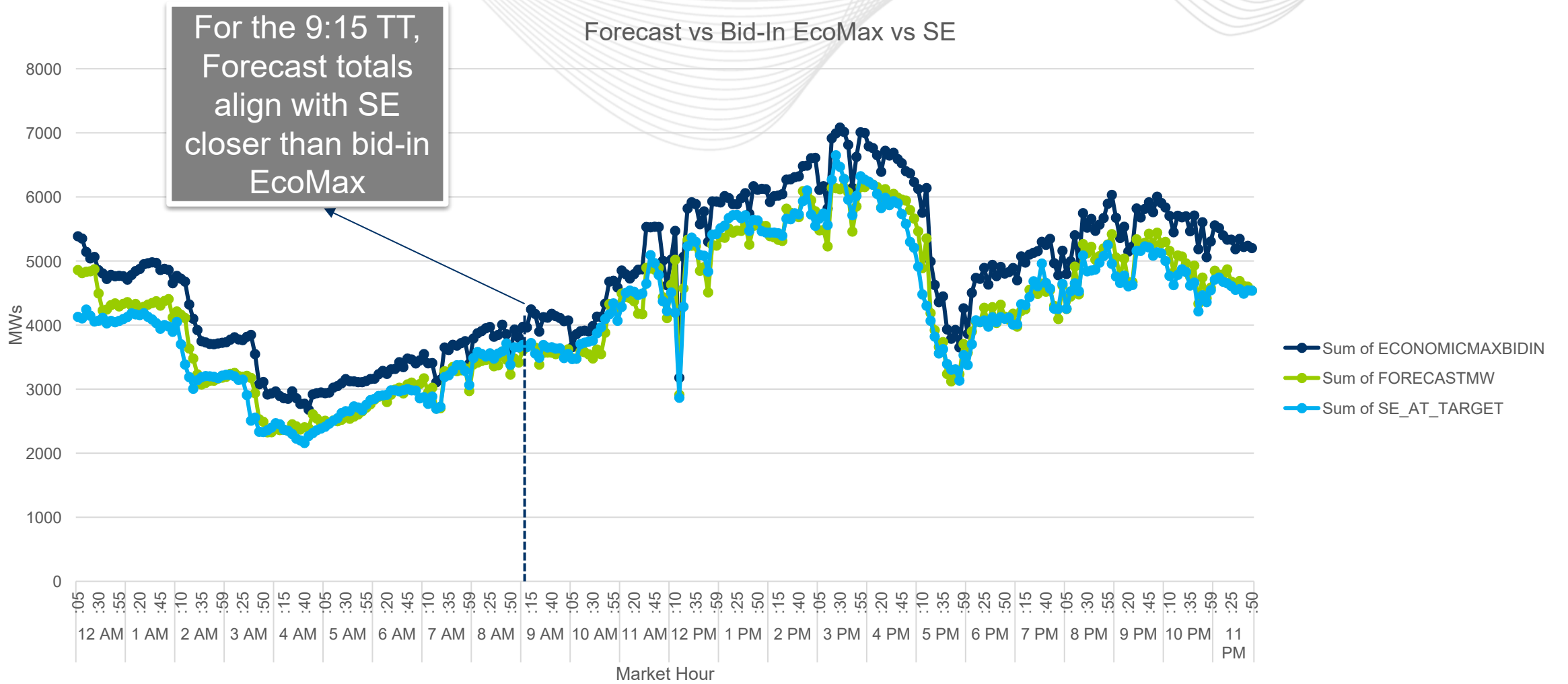
- In February, PJM introduced solution options that created an alternate dispatch methodology in SCED to utilize an “Effective EcoMax”
 - SE under non-constrained system conditions and a formulaic approach under constrained system conditions
- Cons outweigh the pros with this approach:
 - While SE is the most accurate data as to where the resource is currently operating, utilizing SE does not account for ramp capability (i.e. where the unit can be at target time). This is problematic during sunrise/sunset time.
 - Retaining the curtailment flag is undesirable based on PJM’s previous efforts to produce “Wind and Solar Unit Dispatchability” guidance (M-14D)

- The proposal simplifies the concept of an “Effective EcoMax” for all Wind and Solar resource dispatch via RT SCED
- The Effective EcoMax will be defaulted to the PJM Forecasted Value for the effective target time
 - An option will be created for Market Sellers to choose to be dispatched based on PJM Forecasted value or the Resources Bid-In EcoMax.
 - Option can be updated 65 minutes prior to operating hour for the next hour.
- No changes to market settlement or intra-day offer rules, regardless of option selected
 - Make whole / deviation charges remain as-is
 - Effective EcoMax will be utilized instead of Bid-in EcoMax if PJM Forecast is selected
 - If not utilizing default PJM forecast option, the EcoMax can (and should) be updated anytime

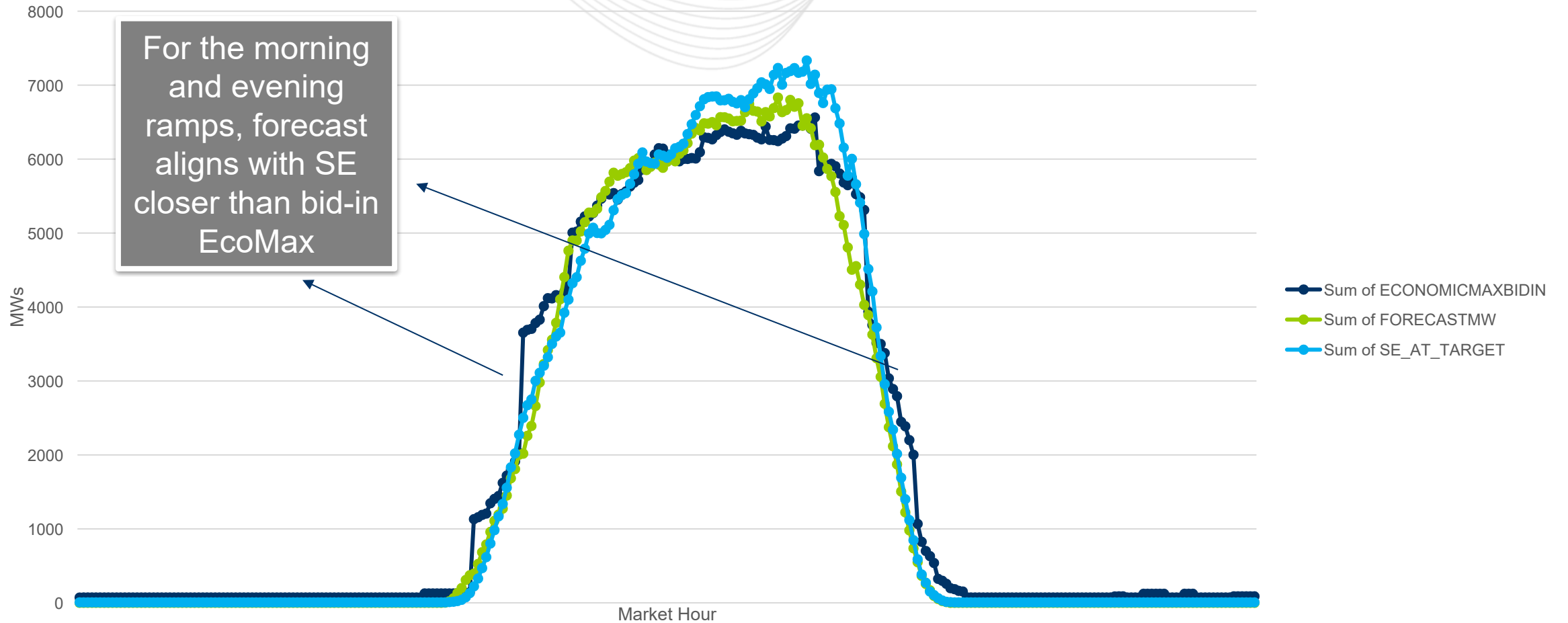
Reminder: All dispatchable (Economic or Must-run) resources are expected to submit accurate bid-in parameters, including ramp rates, and follow PJM’s dispatch signal for target time as closely as possible

- All wind and solar resource forecast values are provided to PJM in 5-minute increments, and updated every 10-minutes
 - This 5-minute increment goes 6 hours out, then hourly forecast goes out 1 week
- This improves RTSCED by utilizing an automatically updated EcoMax
 - More accurate representation of resource capability
- Does not require Market Seller to update Bid-In EcoMax

- The goal is to accurately account for how many MWs will be delivered at the target time
- At a system level the total amount of forecasted MWs for a specific target interval is more accurate to the MWs delivered than the total amount of bid-in economic max
 - Minimizing the difference between the basepoint and MWs delivered at the target time provides a better power balance solution



Forecast vs Bid-In EcoMax vs SE



Key Takeaway: Utilizing Forecast rather than Eco Max will give RT SCED a more accurate prediction of where the resource can operate in ten minutes. In this example, Dispatch may need to take manual action to correct power balance.

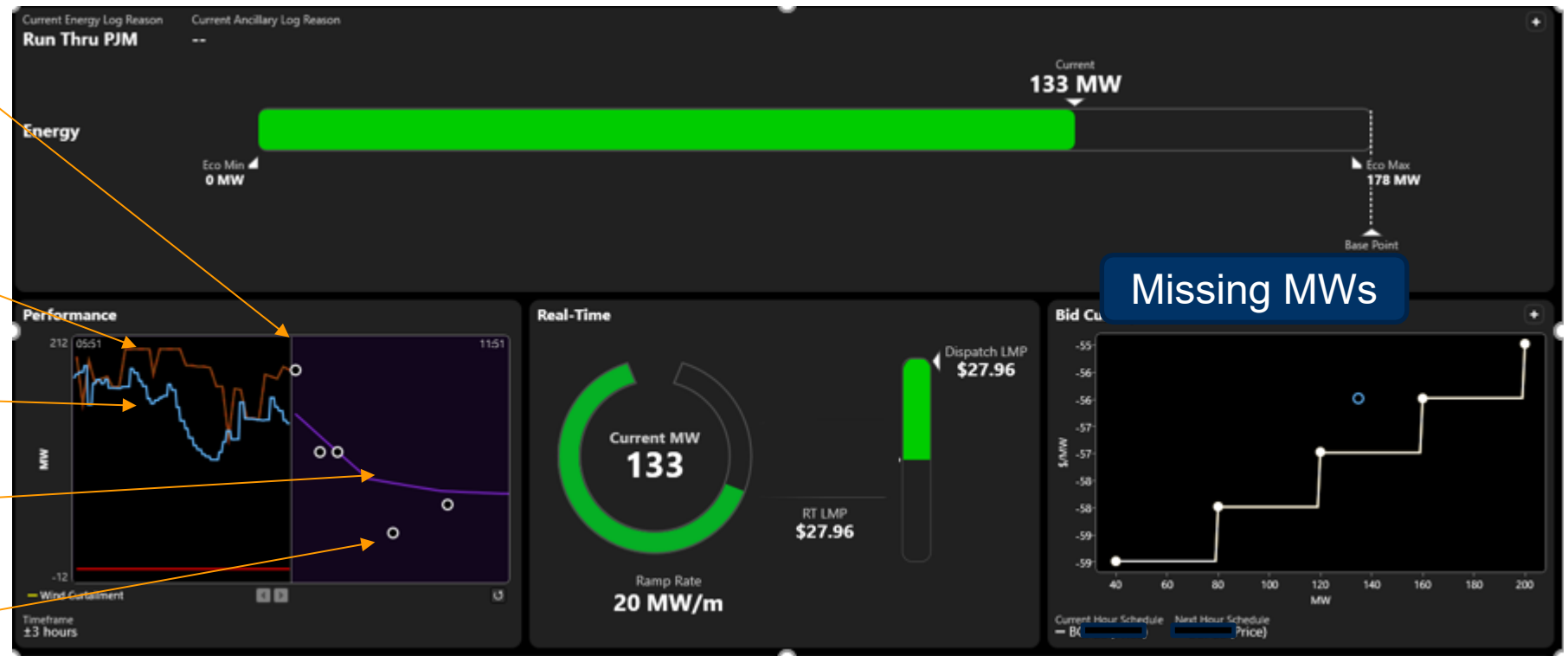
RT SCED
Target Time
(T+10 min)

Case Expected
(based on bid-in
parameters)

Actual
output

Forecast

IT SCED
Interval Solution



- Proposal addresses most of the identified interests but is not a perfect solution
 - Improves the data PJM's security constrained economic dispatch (SCED) uses to dispatch these resources
 - Constraint volatility remains an area of concern
 - Forecast, load uncertainty are larger, more complex issues
- Please review and provide feedback prior to April DISRS
- Intent to poll in April, First read at May MIC

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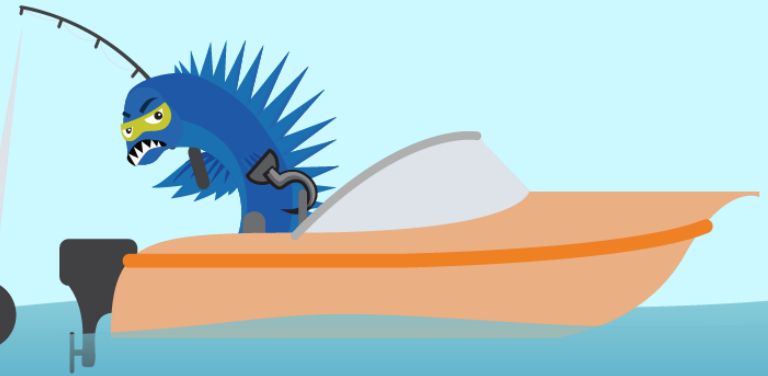
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