



New Jersey's Offshore Wind Transmission Journey

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* Views expressed are my own and may not represent the views of the Board or of Board Staff

New Jersey's Journey to a "Transmission First" Approach to Offshore Wind

- November 2019: 1st Technical Conference on Coordinated Transmission
- February 2020: 2nd Technical Conference on Offshore Wind Transmission Risk
- November 2020: Board authorizes PJM to solicit Offshore Wind Transmission Solutions
- September 2021: PJM Solicitation Window Closes
- October 2022: Board scheduled to reach decision

Intensive Work with
PJM Team



Grid Topology (and Regulatory Logjams) are Key Inputs

- Flows in PJM are historically West → East
 - The 500 kV system is predominately parallel to the coast and ~40 miles inland.
 - Shore areas historically have lower voltage T & D infrastructure.
- * PJM interconnection queue is highly congested.

Sensitive shore areas



Source: S&P

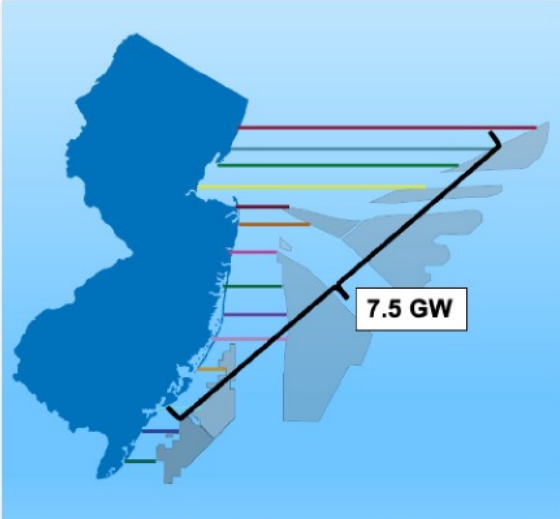


The “Aha” Moment @ 2019’s Technical Conference

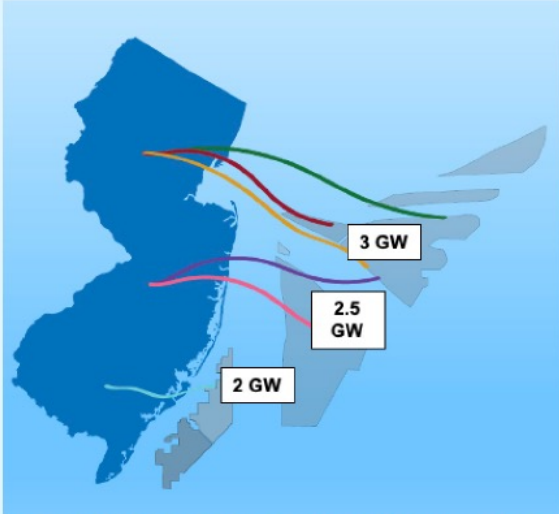
Importance of Planned Transmission



Transmission is critical to meeting the states’ climate and energy policy goals, as permitting and related upgrades are often the most difficult part of projects. **TWO BASIC WAYS TO DO IT:**



A SINGLE LINE TO EACH WIND FARM

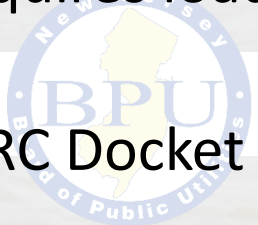


A PLANNED-OUT SYSTEM CONNECTING MULTIPLE WIND FARMS



About the State Agreement Approach

- The State Agreement Approach was proposed by PJM in coordination with its Order No. 1000 compliance filing.
 - SAA is technically a separate tariff provision from O. 1000.
 - PJM to post Public Policy Assumptions, pursuant to Operating Agreement, Schedule 6, §§ 1.5.6(b) and 1.5.8(b).
 - PJM to convene a project proposal window pursuant to Operating Agreement, Schedule 6, § 1.5.8(c).
- Allows a state (or states) to request that PJM incorporate public policy transmission needs into its Regional Transmission Expansion Plan.
- Requires load in the sponsoring state to bear 100% of the costs.
- FERC Docket No. ER22-920



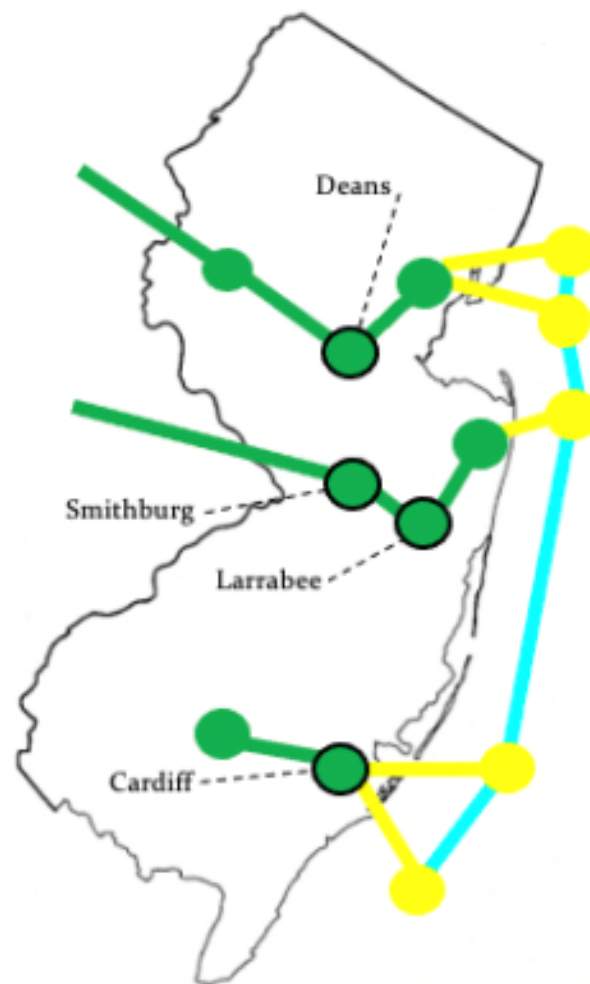
The Board's State Agreement Approach Request to PJM

- PJM with BPU Staff developed a solicitation for transmission project applications under the SAA to meet New Jersey's public policy of developing 7,500 MW of offshore wind.
 - Window Opened: April 15, 2021
 - Window Closed: September 17, 2021
- Requested bids for four distinct options, with each entity having the choice to propose more than one option.
- **Received Applications from 13 entities proposing a total of 80 projects.**

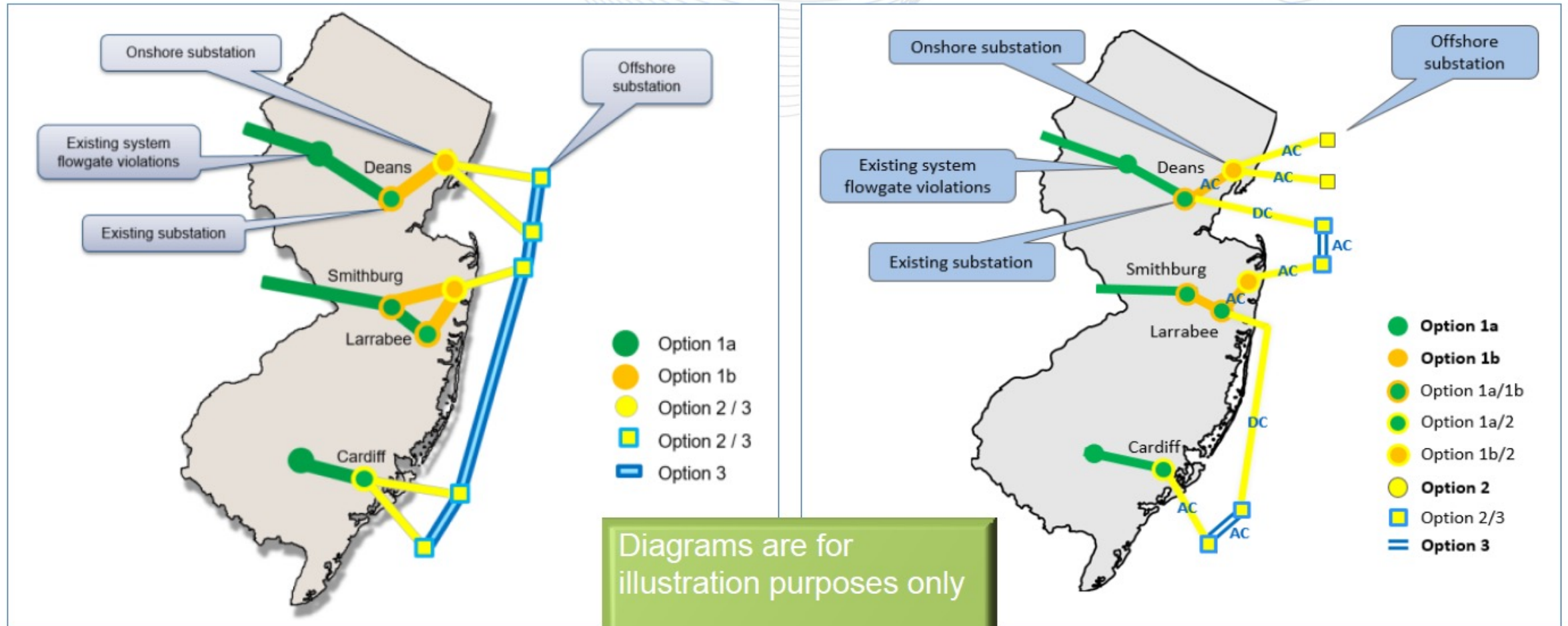


Solicitation Asked for Separate Bids for Each Distinct Piece of the Transmission Solution (Ver. 1)

- Green:**
- Option 1 – Upgrade PJM Transmission system to Shore substations
 - Black Outline indicates substations targeted for injections as described below.
- Yellow:**
- Option 2 – From Upgraded Shore Substations over Beach crossing to New (wet) collector Stations.
- Blue:**
- Option 3 – Interconnecting collector stations in a “network” or “backbone” to facilitate network delivery of Offshore Wind.



Solicitation Asked for Separate Bids for Each Distinct Piece of the Transmission Solution (Ver. 2)



SAA Evaluation Process

- BPU Staff is currently working with PJM to evaluate the SAA proposals.
- PJM and BPU Staff are also evaluating project costs, constructability, risk mitigation, environmental impacts, permitting plan, quality of proposal and developer experience, flexibility, modularity, and option value, and additional New Jersey benefits.
- <https://www.pjm.com/committees-and-groups/committees/teac>

7.18.2022 - TEAC Special Session - NJ OSW SAA

9.6.2022 - Transmission Expansion Advisory Committee

▶ TEAC Special Session - NJ OSW SAA
11.4.2022

- 9.1.2022 Item 11 - NJ OSW SAA [PDF](#)
- 9.2.2022 Item 12 - OSW Study - Phase 2 [PDF](#)
- 9.1.2022 Item 13 - Update to Board TEAC Review Appendix [PDF](#)
- 9.19.2022 NJ OSW Constructability Report for Option 2 and 3 Proposals September Final [PDF](#)
- 9.19.2022 NJ OSW Constructability Reports for Option 1a Proposals September Final [PDF](#)
- 9.19.2022 NJ OSW Constructability Reports for Option 1b Proposals September Final [PDF](#)
- 9.19.2022 NJ OSW Economic Analysis Report September Final [PDF](#)
- 9.19.2022 NJ OSW Financial Analysis Report September Final [PDF](#)
- 9.19.2022 NJ OSW Reliability Analysis Report September Final [PDF](#)



Hints Towards a Long-Term Solution?

PJM's "Offshore Wind Transmission Study: Phase I"

- The Phase I study proactively planned a \$3.2 billion portfolio capable of integrating **over 80 GW of new renewable and storage capacity**
 - Includes both PJM's Offshore Wind Integration Study looks at integrating 14 GW of OSW **and all existing RPS targets.**
 - RPS targets under two scenarios (short term to 2027 & long term to 2035).
 - Identified portfolio capable of handling all onshore network upgrades needed.



Hints Towards a Long-Term Solution?

Update on PJM's Renewables Integration Study (cont'd)

- Total cost of upgrades in a *coordinated* approach:

- ~\$600 million through 2027
- ~\$2 – 3 billion through 2035

- The portfolio would also reduce congestion and provide production cost savings region-wide, *lowering the cost of electricity in every PJM state*

VS

- Total cost of upgrades in a *piecemeal* approach:

- \$5* - \$34** billion through 2035

* Low-end estimate assumes historical interconnection costs for onshore resources and that the onshore network upgrades needed to interconnect OSW could be built at 1/3 of the cost identified in interconnection studies

** High-end estimate assumes average network upgrades costs for all resources match the per-kilowatt cost of the onshore network upgrades needed that interconnection studies identified as necessary for OSW



Brainstorm: Getting Offshore Wind Transmission Done

Option 1: FERC-Focused Process

Pros:

- Built-in ISO involvement yields best-in-class reliability & planning
- Incorporating of State policies into Transmission Plans provide established path to construction

Cons:

- Ratepayer funding mechanisms established
- Proven inability to get regional projects built
 - Rigid Order 1000 principles allow for objecting states to kill projects

Option 3: Regional State-Focused Process

Pros:

- Coordinated regional approach allows States to set priorities & present united front to ISOs & federal funders

Cons:

- Different state policies may lead to tension
- Never been done before

Option 2: DOE-Focused Process

Pros:

- Can taxpayer funds be substituted for ratepayer funds, bypassing FERC Gordian Knot???

Cons:

- Danger that state-based OSW projects compete against each other for scarce funding
- Less integrated with ISO planning efforts



Thank you

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