



2021 SAA Proposal Window to Support NJ OSW

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Committee

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Description of Options

- Option 1a, Onshore Upgrades on Existing Facilities
- Option 1b, Onshore New Transmission Connection Facilities
- Option 2, Offshore New Transmission Connection Facilities
- Option 3, Offshore Network

- PJM has divided the Option 1a proposals into multiple geographical clusters to facilitate reviews
 - Northern NJ
 - Central NJ
 - Southern NJ
 - Southern NJ Border
 - PA-MD Border

Note: Details regarding the constituent proposals for the clusters is located in the Appendix

- PJM is currently performing reliability studies for about 20 POI scenarios
- All POI scenarios include NJ BPU OSW Solicitations #1 and #2
 - Some POI scenarios examine variations of the Solicitation #2 POIs
- Over half of the POIs in the POI scenarios are alternative POIs that have been proposed as part of this SAA window

- Initial reliability analysis is focusing on generator deliverability testing
 - Summer, winter & light load
 - Single contingency, common mode outages
- Onshore upgrade requirements are being identified
 - Option 1a proposals that address violations
 - Incumbent Transmission Owner upgrades as needed to address violations due to injections that were not previously identified

- In the following slides, each POI scenario has been color coded to differentiate between proposals when more than one proposing entity is included in a single POI scenario
- A number of the POI scenarios have additional Option 1b and/or Option 2 MW capability that is not being dispatched as part of this phase of the reliability analysis in order to not exceed the desired 6,400 MW
 - The benefits of any additional capability will be considered as part of the overall performance evaluation
- Other proposals not listed are still under consideration. The initial order of analysis is based on discussions with NJ BPU in order to get to a suite of representative scenarios



POI Scenarios - Option 1b Only

Scenario ID	Proposing Entities	Option 1b Proposal IDs	Option 2 Proposal IDs	Total (MW)	Excess Capacity (MW)	Alt POI	Alt POI	Default POI	Alt POI	Default POI	Alt POI	Default POI	Alt POI
						Orchard 500 kV (MW)	New Freedom 500 kV (MW)	Cardiff 230 kV (MW)	Half Acre 500 kV (MW)	Smithburg 500 kV (MW)	Atlantic 230 kV (MW)	Larrabee 230 kV (MW)	Werner 230 kV (MW)
2	AE, JCPL	797 929.9,10,12 453.1-18,24,28-29	None	6258	0	1148		1510		1200	1200	1200	
2a	AE, JCPL	797 929.9 453.1-18,24,28-29	None	6258	0			1510 1148		1200	1200	1200	
2b	AE, JCPL	797 929.9 453.1-18,24,28-29	None	6010	0			1510 900		1200	1200	1200	
3	AE, RILPOW, JCPL	797 127.8,9 490 376 453.9-11,16-17	None	6458	200		1148	1510	2200			1200	400
14	RILPOW, JCPL	490 171 453.18-27,29	None	6400	710			1510	2400	1690			800

Note 1: All POI Scenarios include Solicitation #1 (1,100 MW), which has been subtracted from the total MW.

Note 2: All MW assumed to be injected at the offshore platform.

Note 3: Excess capacity represents additional transmission capability to the POI beyond the amounts being studied.

LEGEND

Alt POI = Alternative POI



POI Scenarios - Options 1b/2

Scenario ID	Proposing Entities	Option 1b Proposal IDs	Option 2 Proposal IDs	Total (MW)	Excess Capacity (MW)	Alt POI	Default POI	Alt POI	Default POI	Alt POI	Default POI	Alt POI	Default POI	Alt POI	Alt POI	Alt POI
						Reega 230 kV (MW)	Cardiff 230 kV (MW)	Fresh Ponds 500 kV (MW)	Deans 500 kV (MW)	Lighthouse 500 kV (MW)	Smithburg 500 kV (MW)	Atlantic 230 kV (MW)	Larrabee 230 kV (MW)	Neptune 230 kV (MW)	Oceanview 230 kV (MW)	Sewaren 230 kV (MW)
1.1	COEDTR	None	990	6400	0		1510		2400		1200		1200			
1.2	COEDTR	None	990	6310	0		1510		1200		2400		1200			
1a.1	COEDTR	None	990	3910	0		1510				1200		1200			
4	NEETMH	None	461 27	6010	0		1510	3000							1500	
5	JCPL, MAOD	453	321	6310	0		1510				2400	1200	1200			
6	CNTLM	781	594	6400	TBD		1510			4890						
7	CNTLM	629	594	6400	TBD		1510			4890						
8	ANBARD, MAOD	None	145 551	6310	200		1510		1200				3600			
9	ALTPWR, MAOD	None	210 172 431	6310	0		1510		2400				2400			
10	ANDBARD	None	831 841 921 131	6400	510		1510		2290				1200			1400
11	PSEGRT	None	683	6399	459		1510		1247		1148		1247			1247
15	NEETMH	None	250	6400	1110		1510	4890								
16	NEETMH	None	604 860	6400	758	2658		3742								
17	ALTPWR, NEETMH	None	210 172 15	6400	510		1510		1890					3000		

Note 1: All POI Scenarios include Solicitation #1 (1,100 MW), which has been subtracted from the total MW.

Note 2: All MW assumed to be injected at the offshore platform.

Note 3: Excess capacity represents additional transmission capability to the POI beyond the amounts being studied.

LEGEND

Alt POI Alternative POI

- Reliability analysis of various injection scenarios/combinations is ongoing
- Market Simulation analysis, consistent with the scope described in the Problem Statement FAQ, for the combinations selected for reliability analysis is ongoing
- Constructability and independent cost review of the proposals is ongoing for onshore and offshore proposals
- Cost commitment evaluation of the proposals with cost commitment is ongoing
- NJ BPU is conducting a series of stakeholder meetings to collect stakeholder input regarding the evaluation of offshore wind transmission proposals.

<https://nj.gov/bpu/pdf/publicnotice/Notice%20SAA%20Public%20Stakeholder%20Meeting.pdf>

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APPENDIX



NJ BPU OSW Solicitation Schedule

Solicitation	Capability Target (MW)	Capability Awarded	Issue Date	Submittal Date	Award Date	Estimated Commercial Operation Date
1	1,100 ⁽¹⁾	1,100	Q3 2018	Q4 2018	Q2 2019	2024-25
2	1,200-2400 ⁽²⁾	2,658	Q3 2020	Q4 2020	Q2 2021	2027-29
3	1,200	N/A	Q1 2023 ⁽³⁾	Q2 2023	Q4 2023	2030
4	1,200	N/A	Q2 2024	Q3 2024	Q1 2025	2031
5	1,342	N/A	Q2 2026	Q3 2026	Q1 2027	2033

(1) NJ BPU Solicitation Award - June, 2019

(2) NJ BPU Solicitation Award - June, 2021

<https://www.njcleanenergy.com/renewable-energy/programs/nj-offshore-wind/solicitations>

(3) On February 28, 2022, New Jersey updated the Solicitation Schedule for third Offshore Wind Solicitation.

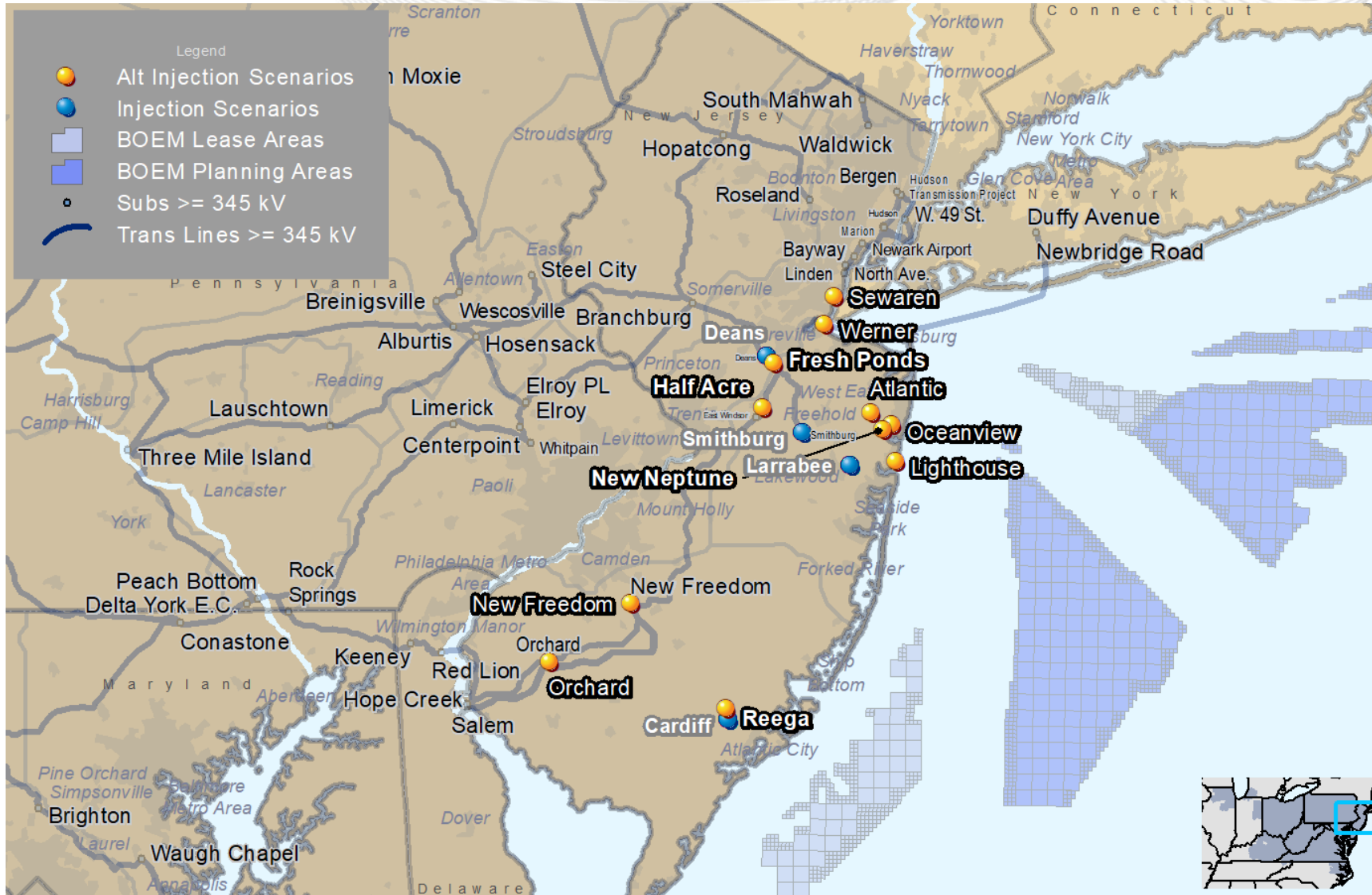


Changes to Offshore Wind Injection Assumptions

Default POIs and Injection Amounts		Prior to June 30, 2021		After June 30, 2021	
Solicitation	POI	Awarded MW	Modelled* MW	Awarded MW	Modelled* MW
1	Oyster Creek 230 kV	1100	816*	1100	816*
1	BL England 138 kV		432*		432*
2	Cardiff 230 kV		900	1510	1510
2	Smithburg 500 kV		1200	1148	1148
3-5	Deans 500 kV		3100		2542
3-5	Larrabee		1200		1200
TOTAL		1100	7648	3758	7648

* Solicitation #1 modeled MW per awarded queue position.

Default and Alternate Injection Locations



- **New Substations**

- Reega 230 kV substation that taps Cardiff-New Freedom 230 kV
- Neptune 230 kV substation that taps Oceanview-Larrabee 230 kV and Oceanview-Atlantic 230 kV
- Fresh Ponds 500 kV substation that taps Deans-Windsor 500 kV and Deans-Smithburg 500 kV
- Half Acre 500 kV substation that taps Deans-Windsor 500 kV
- Lighthouse 500 kV substation at the shore that connects to a new Crossroads 500/230 kV substation near Larrabee 230 kV

- **Existing Substations**

- Atlantic 230 kV, Oceanview 230 kV, Sewaren 230 kV, Werner 230 kV, New Freedom 230 kV, Orchard 500 kV



Options 1a Proposal Clusters – See slide 4



Option 1a Proposals: Northern NJ Cluster

IDs	Brief Description	Location	TO Zone	Cost Estimate(\$M)
180.3, 180.4, 180.7	Linden & Bergen Subprojects	Northern NJ	PSEG	30.45
44.2, 44.3 or 651.7, 651.8 or 315.3, 315.4	New Aldene PAR Upgrade Bergen 138 kV bus section	Northern NJ	PSEG	18
651.4	Reconductor Pierson Ave H-Metuchen 230 kV	Northern NJ	PSEG	1



Option 1a Proposals: Central NJ Cluster

IDs	Brief Description	Location	TO Zone	Cost Estimate(\$M)
17.11, 17.18	Add third Smithburg 500/230 kV	Central NJ	JCPL	17.52
331.1, 331.11, 331.12 or 878.1, 878.3, 878.4	Build new Atlantic-Smithburg 230 kV	Central NJ	JCPL	81.04
44.4 or 315.5 or 878.7	Eliminate contingencies that derate Smithburg-East Windsor 230 kV winter rating	Central NJ	JCPL	5
17.8, 17.9, 17.10	Local 34.5 kV upgrades	Central NJ	JCPL	15.02
520.1, 520.4, 520.5	New Atlantic-Oceanview 230 kV; loop in existing Larrabee-Oceanview 230 kV into Atlantic 230 kV	Central NJ	JCPL	21.983
331.15, 331.16 or 878.8, 878.9	New Larrabee-Oceanview 230 kV	Central NJ	JCPL	61.97
17.4, 17.5, 17.6	New Smithburg-East Windsor 500 kV line	Central NJ	JCPL	174.11



Option 1a Proposals: Central NJ Cluster

IDs	Brief Description	Location	TO Zone	Cost Estimate(\$M)
651.6	Put Smithburg 500/230 kV spare transformer in service	Central NJ	JCPL	11.51
331.4, 331.5	Reconductor Atlantic-Smithburg 230 kV	Central NJ	JCPL	32.38
331.2, 331.3	Reconductor Larrabee-Smithburg 230 kV 1 & 2	Central NJ	JCPL	30.56
331.7	Reconductor Raritan River-Kilmer 230 kV	Central NJ	JCPL	7.91
331.10	Reconductor Smithburg-East Windsor 230 kV	Central NJ	JCPL	5
331.8, 331.9	Reconductor Windsor-East Windsor 230 kV 1 & 2	Central NJ	JCPL	6.86
17.17	Upgrade Hopewell-Lawrence 230 kV	Central NJ	JCPL	3.13
17.1, 17.2, 17.3, 17.12, 17.13, 17.21	Upgrade Oyster Creek-Manitou 230 kV 1 & 2	Central NJ	JCPL	46.06



Option 1a Proposals: Central NJ Cluster

IDs	Brief Description	Location	TO Zone	Cost Estimate(\$M)
793.3, 793.4	Upgrade Oyster Creek-Manitou 230 kV 1 & 2	Central NJ	JCPL	10
17.7	Upgrade Smithburg-Deans 500 kV	Central NJ	JCPL	13.24
21	Werner 230 kV BESS	Central NJ	JCPL	167.94
158.1 or 651.3	Reconductor Gilbert-Springfield 230 kV	Central NJ	JCPL/PPL	15.53
330	Reconductor Gilbert-Springfield 230 kV	Central NJ	JCPL/PPL	0.38
315.2 or 331.6 or 651.2 or 878.2	Reconductor Windsor-Clarksville 230 kV	Central NJ	JCPL/PSEG	10.09
17.14, 17.15	Upgrade Windsor-Clarksville 230 kV	Central NJ	JCPL/PSEG	3.81
180.5, 180.6	Windsor to Clarksville Subproject	Central NJ	JCPL/PSEG	5.77



Option 1a Proposals: Central NJ Cluster

IDs	Brief Description	Location	TO Zone	Cost Estimate(\$M)
180.1, 180.2	Brunswick to Deans & Deans Subprojects	Central NJ	PSEG	50.54
651.5	Increase Deans 500/230 kV #3 rating	Central NJ	PSEG	8.36
17.16	Reconductor Clarksville-Lawrence 230 kV	Central NJ	PSEG	32.10
44.1 or 315.1 or 651.1	Reconductor Deans-Brunswick 230 kV	Central NJ	PSEG	4.68
103	New Old York 500/230 kV substation	Central NJ	JCPL/PSEG	75.63
331.13, 331.14 or 520.2, 520.3 or 878.5, 878.6	Add PAR Red Oak-Raritan River 230 kV 1 & 2	Central NJ	PSEG/JCPL	30
17.19, 17.20	Upgrade Lake Nelson I-Middlesex 230 kV	Central NJ	PSEG/JCPL	5.09



Option 1a Proposals: Southern NJ Cluster

IDs	Brief Description	Location	TO Zone	Cost Estimate(\$M)
793.7, 793.10	Add PAR on Cardiff-Cedar 230 kV at Cardiff	Southern NJ	AE	19.03
127.8 or 734.9 or 929.9 or 975.9	Rebuild Cardiff 230 kV substation	Southern NJ	AE	70.10
793.1, 793.2	Reconductor Cardiff-Lewis 138 kV 1 & 2	Southern NJ	AE	5.27
793.8	Replace Cardiff 230/138 kV	Southern NJ	AE	10
793.9	Replace Cardiff 230/69 kV	Southern NJ	AE	10
127.1 or 734.1 or 929.1 or 975.1	Upgrade Cardiff-Lewis 138 kV	Southern NJ	AE	0.1
127.2 or 734.2 or 929.2 or 975.2	Upgrade Lewis No. 2-Lewis No. 1 138 kV	Southern NJ	AE	0.5
929.12	Upgrade Orchard 500/230 kV substation	Southern NJ	AE	38.22



Option 1a Proposals: Southern NJ Cluster

IDs	Brief Description	Location	TO Zone	Cost Estimate(\$M)
793.5, 793.6	Add PAR on New Freedom-Hilltop 230 kV at New Freedom	Southern NJ	PSEG	15
127.9 or 734.10 or 929.9	Rebuild Cardiff-New Freedom 230 kV as DCTL	Southern NJ	PSEG/AE	154.66
127.3 or 734.3 or 929.3 or 975.3	Upgrade Cardiff-New Freedom 230 kV	Southern NJ	PSEG/AE	0.3



Option 1a Proposals: Southern NJ Border Cluster

IDs	Brief Description	Location	TO Zone	Cost Estimate(\$M)
158.3	Red Lion 500 kV substation upgrade	Southern NJ Border	DPL	5
734.7 or 929.7 or 975.7	Install Smart Wire on Richmond-Waneeta 230 kV	Southern NJ Border	PECO	4.7
127.10 or 929.10	Reconductor Richmond-Waneeta 230 kV	Southern NJ Border	PECO	16
158.2	Reconductor Richmond-Waneeta 230 kV	Southern NJ Border	PECO	4.15
11.11, 11.12 or 793.11, 793.12	Add two PARs at Hope Creek 230 kV	Southern NJ Border	PSEG/SRE	30
419	New Bridgeport-Claymont 230 kV DE river crossing	Southern NJ Border	PSEG/SRE	193.07
894	One additional Hope Creek-Silver Run 230 kV submarine cable	Southern NJ Border	PSEG/SRE	71.92
229	One additional Hope Creek-Silver Run 230 kV submarine cables and rerate plus upgrade line	Southern NJ Border	PSEG/SRE	61.20



Option 1a Proposals: PA-MD Border Cluster

IDs	Brief Description	Location	TO Zone	Cost Estimate(\$M)
11.1-11.10	1A-Wiley1	PA-MD Border	PECO/BGE	179.58
982.1-982.10	1A-Wiley2	PA-MD Border	PECO/BGE	181.92
587.1-587.5	1A-Wiley3	PA-MD Border	PECO/BGE	96.44
203	Broad Creek to Robinson Run Project	PA-MD Border	PECO/BGE	104.18
63	North Delta Option A	PA-MD Border	PECO/BGE	109.75
296	North Delta Option B	PA-MD Border	PECO/BGE	87.02



Option 1a Proposals: PA-MD Border Cluster

IDs	Brief Description	Location	TO Zone	Cost Estimate(\$M)
127.4-127.6, 127.11 or 734.4-734.6, 734.11 or 929.4-929.6, 929.11 or 975.4-975.6, 975.11 127.7 or 734.8 or 929.8 or 975.8 Incumbent TO Incumbent TO	Reconductor Peach Bottom- Conastone 500 kV Reconductor Peach Bottom - Furnace Run 500 kV Replace Furnace Run 500/230 kV Transformers 1 & 2 Reconductor Furnace Run- Conastone 230 kV 1 & 2	PA-MD Border	PECO/BGE	88.10
345.1-345.3	Second Peach Bottom- Conastone 500 kV	PA-MD Border	PECO/BGE	104.29

Options 1b/2 and 3 Proposals

- **Proposal Description:**

3 proposals to bring 2400, 3600 or 4800 MW via Larrabee converter station. Four offshore 1200MW +/-320kV HVDC submarine cables to four offshore platforms, includes normally open ties between platforms, includes the converter station platforms

- **Points of Injection:** Larrabee, Smithburg, Atlantic

- **Project Cost:** 2400MW-\$3B, 3600MW \$4.41B, 4800MW \$5.72B

- **Project In Service Date:** 1st Ckt – 4Q2029, 2nd CKT 4Q2030, 4th Ckt 4Q3032

- **Landfall location:** Sea Girt

- **Offshore Lease Areas targeted:** NY Bight Hudson South, OW2/AS1

- **Interactions with other proposals:** NA

- **Cost commitment:** Yes

Capping Capital Cost

Exceptions: Taxes, AFUDC, Escalation, Force Majeure, Scope change

- **Proposal Description:**
Multiple options ranging from 1200MW up to 4200MW,
320 kV HVDC or 400kV HVDC
with interlinks, normally closed for multiple platforms
- **Points of Injection:** Sewaren (1200/1400MW), Larrabee (1200/1400MW), Deans (1400MW)
- **Project Cost:** \$2.5-9B
- **Project In Service Date:** 4Q2029-4Q2032
- **Landfall location:** Sea Girt, Key Port
- **Offshore Lease Areas targeted:** NY Bight Hudson South, OW2/AS1
- **Interactions with other proposals:** NA
- **Cost commitment:** Yes
Capping project cost, ROE, equity percentage
Exceptions: Debt, Taxes, AFUDC, Escalation, Force Majeure, SOW change

#841, 831, 574, 944, 802, 183, 921, 802, 131, 145, 882, 568

- **Proposal Description (include AC/DC, Voltage, MW Capability)**
 - 8 options to inject power into Deans, Sewaren and Larrabee
 - 1400MW per ckt, +/-400kV HVDC for Solicitation #3-5
 - Circuits for Solicitation #2 OSW projects sized to meet award amount
- **Points of Injection:** Deans, Sewaren, Larrabee
- **Project Cost:** \$2B - \$10B+
- **Project In Service Date:** 3Q2027-1Q2033
- **Landfall location:** Keyport (Deans), Bay Head (Larrabee), Perth Amboy (Sewaren)
- **Offshore Lease Areas targeted:** NY Bight Hudson South, OW2/AS1
- **Interactions with other proposals:** 428, 889, 748, 896, 243, 258, 137
- **Cost commitment:** Yes
 - Capping Project cost, ROE, Equity
 - Exceptions: Taxes, AFUDC, Escalation, Force Majeure, Scope change

- **Proposal Description:**

- 7 options for HVDC Platform Interlinks
 - 700MW capacity, +/-400kV HVDC

- **Points of Injection:** NA

- **Project Cost:** \$66-105M (for a single interlink)

- **Project In Service Date:** 2033

- **Landfall location:** NA

- **Offshore Lease Areas targeted:** NY Bight Hudson South, OW2/AS1

- **Interactions with other proposals:** 841, 831, 574, 944, 802, 183, 921, 802, 131, 145, 882, 568

- **Cost commitment:** Yes

- Capping project cost, ROE, Equity percentage,

- Exceptions: Taxes, AFUDC, Escalation, Force Majeure, Scope change

- **Proposal Description:**

 - Multiple Scenarios onshore to accommodate injections up to 6000MWs

 - 500 kV HVAC OH/UG cable, 4 new 500kV substations, multiple transmission line cut-ins

 - 450 Mvar dynamic reactive control

- **Points of Injection:** Alternate POI that extends to Deans-Windsor, Larrabee and/or Smithburg, Windsor

- **Project Cost:** \$1.7-2.2B

- **Project In Service Date:** 1Q2028-1Q2030

- **Landfall location:** Sea Girt

- **Offshore Lease Areas targeted:** NY Bight Hudson South, OW2/AS1

- **Interactions with other proposals:** #594

- **Cost commitment:** Yes

 - Capping project cost, transmission revenue, ROE, Equity Percentage

 - Exceptions: Force Majeure, Scope change

- **Proposal Description:**

- 2-platforms each with 4-345 kV AC cables to shore, expandable to 6 cables.
4,000 MW (option for 6,000 MW)

- **Points of Injection:** NA

- **Project Cost:** \$2.5B

- **Project In Service Date:** 2Q2029

- **Landfall location:** NA

- **Offshore Lease Areas targeted:** NY Bight Hudson South, OW2/AS1

- **Interactions with other proposals:** #781, 294, 629, 72, 627

- **Cost commitment:** Yes

- Capping project cost, transmission revenue, ROE, Equity Percentage

- Exceptions: Force Majeure, Scope change

- **Proposal Description:**
- 7 options to inject power into Deans, Oceanview and Cardiff
- 1500MW +/-400kV HVDC circuits
 - Offshore 1500 MW VSC Converter Station and Supporting Platform
 - Onshore/offshore 1500 MW VSC Converter Stations
- **Points of Injection:** Deans (3000, 4500, 6000MW), Oceanview (1500, 2400, 3000MW), Cardiff (2700MW)
- **Project Cost:** \$1.5-7.1B
- **Project In Service Date:** 4Q2027-2Q2029
- **Landfall location:** Raritan Bay, Asbury Park, Absecon Beach
- **Offshore Lease Areas targeted:** NY Bight Hudson South, OW2/AS1
- **Interactions with other proposals:** 359
- **Cost commitment:** Yes
 - Capping project cost, ROE, Equity percentage, O&M
 - Exceptions: AFUDC, Force Majeure, Scope change

- **Proposal Description:**
- 4 Options for 800 MVA 230kV AC Platform links

- **Points of Injection:** NA
- **Project Cost:** \$7-356M
- **Project In Service Date:**
- **Landfall location:** NA
- **Offshore Lease Areas targeted:** NA
- **Interactions with other proposals:** 461, 860, 250, 44, 315,651, 27, 298, 15, 520, 878, 331, 604, 793
- **Cost commitment:** Yes
 - Capping project cost, ROE, Equity percentage, O&M
 - Exceptions: AFUDC, Force Majeure, Scope change

- **Proposal Description:**

- Base case – 2-1200 MW 320kV HVDC lines, 1 circuit to Larrabee and 1 circuit to Smithburg

- Ability to extend to Deans.

- Ability to connect platforms via AC cables

- **Points of Injection:** Larrabee(1200MW), Smithburg (1200MW) and Deans optional (1200MW)

- **Project Cost:** \$1.3B-\$5.2B

- **Project In Service Date:** 2Q2028

- **Landfall location:** Sea Girt

- **Offshore Lease Areas targeted:** NY Bight Hudson South, OW2/AS1

- **Interactions with other proposals:** NA

- **Cost commitment:** Yes

- Capping project cost (Soft cap)

- Exceptions: Cost of Debt, ROW, Force Majeure, Scope change

- **Proposal Description:**

- First, Second, Third submarine circuits, 1,200 MW, +/-320kV HVDC

- Offshore 1235MW Converter Station and Supporting Platform

- Onshore 1200 MW Converter Station

- Onshore Transmission - UG construction shore to converter station

- **Points of Injection:** Deans 500kV - 1200, 2400 or 3600MW

- **Project Cost Project Cost:** 1st 1200MW-\$2B, 2nd 1200MW-\$1.6B, 3rd 1200MW \$1.5B

- **Project In Service Date:** 1st 1Q2030, 2nd 1Q2031, 3rd, 1Q2031

- **Landfall location:** Raritan Bay near existing retired generating power station

- **Offshore Lease Areas targeted:** NY Bight Hudson South/North, OW2/AS1

- **Interactions with other proposals:** 210 is base proposal, 172 and 769 options can be combined with base

- **Cost commitment:** Yes

- Fixed Revenue Requirement, Cost cap subject to initial adjustment for change based on foreign exchange rates and commodity price fluctuations

- Exceptions:, Force Majeure, Scope/cable length change

Option 1b Only Proposals

- **Proposal Description:**

- One or two 1200 MW 320kV HVDC lines from Werner to new converter station
- Tie into existing Deans-East Windsor line and shore station and battery
- Option to inject up to 400 or 800 MW 275kV AC direct at Werner

- **Upgrade/Greenfield: Greenfield**

- **Points of Injection:** Werner, Tie into Deans-East Windsor

- **Project Cost:** \$1b-1.8B

- **Project In Service Date:** 1Q2028

- **Landfall location:** Werner, Raritan Bay

- **Interactions with other proposals:** NA

- **Cost commitment:** Yes

- Capping partial project costs, ROE, Equity percentage

- Exceptions: Taxes, AFUDC, Escalation, Force Majeure, Scope change

- **Proposal Description:**

Build new transition vault connecting 275 kV offshore cables (1200MW) and 275 kV onshore cables, build new 275 kV transmission lines between transition vault and new 275-230 kV substation near Cardiff, and build new 275-230 kV substation near Cardiff connected to existing substation at Cardiff

- **Upgrade/Greenfield:** Greenfield
- **Points of Injection:** Cardiff (1200MW)
- **Project Cost:** \$243M
- **Project In Service Date:** 2Q2028
- **Landfall location:** Great Egg Harbor
- **Interactions with other proposals:** #127, 929, 975
- **Cost commitment:** No

- **Proposal Description:**

- Upgrade/Expansion of Smithburg Substation and East Windsor Substation

- Upgrades to East Windsor – Smithburg 500 kV Line

- New Larrabee Converter – Smithburg 500kV Lines - 2 Circuits

- **Upgrade/Greenfield:** Upgrade and Greenfield components

- **Points of Injection:** Smithburg (1342MW), Larrabee (1200MW), Atlantic (1200MW)

- **Project Cost:** \$660M

- **Project In Service Date:** 2027- 2032, work phased to solicitation schedule

- **Landfall location:** NA

- **Interactions with other proposals:** 431, 551, 321

- **Cost commitment:** No