



# 2021 SAA Proposal Window to Support NJ OSW

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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 completing initial reliability screening studies for 26 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
- The balance of reliability studies will be completed in July and August for selected scenarios

- 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

- Changes to previously presented scenarios since June TEAC
  - Added the following 8 scenarios
    - Scenario 1.2a
    - Scenario 1.2b
    - Scenario 4a
    - Scenario 16a
    - Scenario 19
    - Scenario 20
    - Scenario 20a
    - Scenario 20b





# POI Scenarios - Option 1b Only

| Scenario ID | Total (MW) | Proposing Entities | Option 1b Proposal IDs                         | Option 2 Proposal IDs | Excess Capacity (MW) | Alt POI                 | Default POI         | Alt POI               | Alt POI                | Default POI           | Alt POI              | Default POI          | Alt POI            |
|-------------|------------|--------------------|--|-----------------------|----------------------|-------------------------|---------------------|-----------------------|------------------------|-----------------------|----------------------|----------------------|--------------------|
|             |            |                    |  |                       |                      | New Freedom 500 kV (MW) | Cardiff 230 kV (MW) | Half Acre 500 kV (MW) | Lighthouse 500 kV (MW) | Smithburg 500 kV (MW) | Atlantic 230 kV (MW) | Larrabee 230 kV (MW) | Werner 230 kV (MW) |
| 2a          | 6258       | AE, JCPL           | 797<br>929.9<br>453.1-18,24,28-29              | None                  | 0                    |                         | 1510<br>1148        |                       |                        | 1200                  | 1200                 | 1200                 |                    |
| 3           | 6458       | AE, RILPOW, JCPL   | 797<br>127.8,9<br>490<br>376<br>453.9-11,16-17 | None                  | 200                  | 1148                    | 1510                | 2200                  |                        |                       |                      | 1200                 | 400                |
| 12          | 6400       | CNTLM              | 781  | None                  | 110                  |                         | 1510                |                       | 4890                   |                       |                      |                      |                    |
| 13          | 6400       | CNTLM              | 629  | None                  | 110                  |                         | 1510                |                       | 4890                   |                       |                      |                      |                    |
| 14          | 6400       | RILPOW, JCPL       | 490<br>171<br>453.18-27,29                     | None                  | 710                  |                         | 1510                | 2400                  |                        | 1690                  |                      |                      | 800                |
| 18          | 6400       | JCPL               | 453  | None                  | 0                    |                         | 1510                |                       |                        | 2490                  | 1200                 | 1200                 |                    |

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 (1 of 2)

| Scenario ID | Total (MW) | Proposing Entities | Option 1b Proposal IDs            | Option 2 Proposal IDs | Excess Capacity (MW) | Default POI         | Alt POI                 | Default POI       | Alt POI                | Default POI           | Alt POI              | Default POI          | Alt POI             |
|-------------|------------|--------------------|-----------------------------------|-----------------------|----------------------|---------------------|-------------------------|-------------------|------------------------|-----------------------|----------------------|----------------------|---------------------|
|             |            |                    |                                   |                       |                      | 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) |
| 1.1         | 6310       | COEDTR, ANBARD     | None                              | 990<br>574<br>831     | 400                  | 1510                |                         | 2400              |                        | 1200                  |                      | 1200                 |                     |
| 1.2         | 6310       | COEDTR, PSEGRT     | None                              | 990<br>613            | 0                    | 1510                |                         | 1200              |                        | 1200<br>1148          |                      | 1200                 |                     |
| 1.2a        | 6400       | COEDTR, ANBARD     | None                              | 990<br>574            | 58                   | 1510                |                         | 1342              |                        | 1200<br>1148          |                      | 1200                 |                     |
| 1.2b        | 6400       | COEDTR, ATLPWR     | None                              | 990<br>210<br>172     | 1058                 | 1510                |                         | 1342              |                        | 1200<br>1148          |                      | 1200                 |                     |
| 2c          | 6258       | AE, JCPL, MAOD     | 797<br>929.9<br>453.1-18,24,28-29 | 551                   | 0                    | 1510<br>1148        |                         |                   |                        | 1200                  | 1200                 | 1200                 |                     |
| 4           | 6010       | NEETMH             | None                              | 461<br>27             | 0                    | 1510                | 3000                    |                   |                        |                       |                      |                      | 1500                |
| 4a          | 6400       | NEETMH             | None                              | 461<br>27             | 758                  | 1510                | 2242                    |                   |                        | 1148                  |                      |                      | 1500                |
| 5           | 6310       | JCPL, MAOD         | 453                               | 321                   | 0                    | 1510                |                         |                   |                        | 2400                  | 1200                 | 1200                 |                     |
| 6           | 6400       | CNTLM              | 781                               | 594                   | 110                  | 1510                |                         |                   | 4890                   |                       |                      |                      |                     |
| 7           | 6400       | CNTLM              | 629                               | 594                   | 110                  | 1510                |                         |                   | 4890                   |                       |                      |                      |                     |

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 (2 of 2)

| Scenario ID | Total (MW) | Proposing Entities | Option 1b Proposal IDs | Option 2 Proposal IDs    | Excess Capacity (MW) | Alt POI           | Default POI         | Alt POI                 | Default POI       | Default POI           | Default POI          | Alt POI             | Alt POI             |
|-------------|------------|--------------------|------------------------|--------------------------|----------------------|-------------------|---------------------|-------------------------|-------------------|-----------------------|----------------------|---------------------|---------------------|
|             |            |                    |                        |                          |                      | Reega 230 kV (MW) | Cardiff 230 kV (MW) | Fresh Ponds 500 kV (MW) | Deans 500 kV (MW) | Smithburg 500 kV (MW) | Larrabee 230 kV (MW) | Neptune 230 kV (MW) | Sewaren 230 kV (MW) |
| 10          | 6400       | ANDBARD            | None                   | 882<br>841<br>921<br>131 | 258                  |                   | 1510                |                         | 2290              |                       | 1200                 |                     | 1400                |
| 11          | 6399       | PSEGRT             | None                   | 683                      | 459                  |                   | 1510                |                         | 1247              | 1148                  | 1247                 |                     | 1247                |
| 15          | 6400       | NEETMH             | None                   | 250                      | 1110                 |                   | 1510                | 4890                    |                   |                       |                      |                     |                     |
| 16          | 6400       | NEETMH             | None                   | 604<br>860               | 758                  | 2658              |                     | 3742                    |                   |                       |                      |                     |                     |
| 16a         | 6400       | NEETMH             | None                   | 860                      | 758                  |                   | 1510                | 3742                    |                   | 1148                  |                      |                     |                     |
| 17          | 6400       | ATLPWR,<br>NEETMH  | None                   | 210<br>172<br>15         | 510                  |                   | 1510                |                         | 1890              |                       |                      | 3000                |                     |
| 19          | 6258       | ATLPWR             | None                   | 210<br>172<br>769        | 0                    |                   | 1510                |                         | 3600              | 1148                  |                      |                     |                     |
| 20          | 6400       | NEETMH             | None                   | 298<br>461               | 1200                 |                   | 1510                | 1342                    |                   | 1148                  |                      | 2400                |                     |
| 20a         | 6400       | NEETMH,<br>ANBARD  | None                   | 298<br>574               | 58                   |                   | 1510                |                         | 1342              | 1148                  |                      | 2400                |                     |
| 20b         | 6400       | NEETMH,<br>ATLPWR  | None                   | 298<br>210<br>172        | 1058                 |                   | 1510                |                         | 1342              | 1148                  |                      | 2400                |                     |

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.

Alt POI = Alternative POI

- Wrap up the following activities
  - Initial reliability analysis screening of 26 injection scenarios/combinations
  - Market Simulation analysis, consistent with the scope described in the Problem Statement FAQ, for the combinations selected for reliability analysis
  - Constructability and independent cost review of the proposals is ongoing for onshore and offshore proposals
  - Cost commitment evaluation of the proposals with cost commitment
- Present results of review of 26 injection scenarios on July 18 at special TEAC session
- Select a short list of injection scenarios for more comprehensive review

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## Reliability Analysis Update



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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 <sup>(1)</sup>      | 1,100              | Q3 2018                | Q4 2018        | Q2 2019    | 2024-25                             |
| 2            | 1,200-2400 <sup>(2)</sup> | 2,658              | Q3 2020                | Q4 2020        | Q2 2021    | 2027-29                             |
| 3            | 1,200                     | N/A                | Q1 2023 <sup>(3)</sup> | 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         |
| <b>TOTAL</b>                       |                     | <b>1100</b>            | <b>7648</b>  | <b>3758</b>         | <b>7648</b>  |

\* 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

| <b>IDs</b>                                 | <b>Brief Description</b>                         | <b>Location</b> | <b>TO Zone</b> | <b>Cost Estimate(\$M)</b> |
|--|--|-----------------|----------------|---------------------------|
| 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

| <b>IDs</b>                       | <b>Brief Description</b>                             | <b>Location</b> | <b>TO Zone</b> | <b>Cost Estimate(\$M)</b> |
|----------------------------------|--|-----------------|----------------|---------------------------|
| 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) |
|-----------------------------|-------------------------------------|--------------|----------|--------------------|
| 11.1-11.4, 11.7-11.12       | 1A-Wiley1                           | PA-MD Border | PECO/BGE | 201.06             |
| 982.1-982.6<br>982.9-982.12 | 1A-Wiley2                           | PA-MD Border | PECO/BGE | 181.92             |
| 587.1,587.2,<br>587.5-587.7 | 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 | 109.68             |
| 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<br>734.4-734.6, 734.11 or<br>929.4-929.6, 929.11 or<br>975.4-975.6, 975.11<br>127.7 or 734.8 or 929.8 or<br>975.8<br>Incumbent TO<br>Incumbent TO | Reconductor Peach Bottom-<br>Conastone 500 kV<br>Reconductor Peach Bottom<br>- Furnace Run 500 kV<br>Replace Furnace Run<br>500/230 kV Transformers 1<br>& 2<br>Reconductor Furnace Run-<br>Conastone 230 kV 1 & 2 | PA-MD Border | PECO/BGE | 164.81             |
| 345.1-345.3  | Second Peach Bottom-<br>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:** 1<sup>st</sup> Ckt – 4Q2029, 2<sup>nd</sup> 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, 2<sup>nd</sup> 1200MW-\$1.6B, 3<sup>rd</sup> 1200MW \$1.5B

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