#H16 Edgemoor 565 MW

Generation Interconnection

This analysis was completed to assess the reliability impact for a new generator interconnecting to the PJM system as a Capacity resource.

Network Impacts - 565 MW Capacity Injection

Capacity injection of 565 MW into the Edgemoor 230kV bus (250 MW), Edgemoor 138kV bus (125 MW), and Red Lion 500kV bus (190 MW) was evaluated to determine Network Impacts. The following potential network upgrade requirements were determined.

Generator Deliverability

1. Both the Chichester – A21 230kV circuits are contingency overloaded at **115%** of the emergency rating (872 MVA) for the outage of the other Chichester – A21 230kV circuit. The H16 project contributes approximately **225MW** to the loading on this circuit.
2. The Edgemoor – Christina 138kV circuit is contingency overloaded at **103%** of the emergency rating (313 MVA) for the outage of the Carrcroft - Edge Moor 138kV line. The H16 project contributes approximately **179MW** to the loading on this circuit.
3. The Christina – New Castle 138kV circuit is contingency overloaded at **100%** of the emergency rating (266 MVA) for the outage of the Carrcroft - Edge Moor 138kV line. The H16 project contributes approximately **179MW** to the loading on this circuit.
4. The Edgemoor – Carrcroft 138kV circuit is contingency overloaded at **105%** of the emergency (342 MVA) for the outage of the Edgemoor - Christina 138kV. The H16 project contributes approximately **157MW** to the loading on this circuit.

Multiple Facility Contingency – Tower Line Outages (MAAC Criteria IIC)

5. The Edgemoor – Harmony 230kV circuit is contingency overloaded at **113%** of the emergency rating (746 MVA) for the Chichester – A21 230kV tower line outage that will also drop the A21 #1 and 2 units. The H16 project contributes approximately **237MW** to the loading on this circuit.

Short Circuit

A short circuit screening analysis indicates that (8) 230kV circuit breakers and (7) 138kV circuit breakers at Edgemoor may require replacement. A complete short circuit analysis was not performed.

New System Reinforcements

- Overload # 1 can be relieved by reconductoring both circuits from the A21 Project – Chichester 230kV. The cost is estimated at **$5.6 million** and it is expected to take **2 years** to complete.
- Overload # 2 and #3 can be relieved by replacing the entire 138kV line from Edgemoor – Christina – New Castle (3.42 miles). The cost is estimated at **$0.935 million** and it is expected to take **2 years** to complete.
- Overload #4 can be relieved by replacing the 3.66 miles 138kV line from Edgemoor – Carrcroft, upgrading two disconnect switches, and minor bus work. The cost is estimated at **$1.05 million** and it is expected to take **2 years** to complete.
- Overload #5 can be relieved by replacing a terminal equipment and reconductoring the Edgemoor – Harmony 230kV circuit. The cost is estimated at **$5.2 million** and it is expected to take **2 years** to complete.

The total estimated cost of New System Reinforcement requirements is **$12.785 million**.

Note: **All cost estimates include CIAC Tax Gross-up.**

Contribution to Previously Identified System Reinforcements

The H16 project will contribute to the cost of the following previously identified network reinforcements:

1. Reconductor the 230kV circuit from Grays Ferry – Parrish **(PJM Upgrade Number 19)**. The project contributes approximately **108MW**. The cost is estimated at **$3.7 million** and is expected **to be completed in March 2004**.
2. Replace the Morton Tap 230kV disconnect switch **(PJM Upgrade Number 21)**. The project contributes approximately 62MW. The cost is estimated at **$0.036 million** and is expected **to be completed in Fall of 2003.**
3. Build a second 230kV circuit from Mickleton to Monroe **(PJM Upgrade Number 28)**. The project contributes approximately 17MW. The cost is estimated at **$11.5 million** and is expected **to be completed in November 2002.**
4. Install a new 500 kV circuit breaker at Conastone substation **(PJM Upgrade Number 22)**. The project contributes approximately 19 MW. The total cost is estimated at **$1.4 million** and it is expected **to be completed by Spring 2003.**