#Q43 – Clinch River 138kV 534 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.

Option #1 – Connection to Clinch River 138kV

Network Impact

The impact of the proposed generation facility on the AEP System was assessed for adherence with applicable reliability criteria. AEP planning criteria requires that the Clinch River area to meet Single Contingency performance criteria, which is consistent with the AEP FERC Form 715. Therefore, this criterion was used to assess the impact of this proposed facility on the AEP System. The St. Paul, Virginia Q43 project was studied as 534 MW gross capacity consistent with the interconnection application. The results are summarized below.

Normal System

No identified problems.

Single Contingency

No identified problems.

Short Circuit Analysis

Sixteen Circuit breakers, all at the Clinch River Station will exceed their fault interrupting capabilities as a result of Dom Va Power new generation connection (See Table 1).

Table 1

Clinch River 138 kV Station Breaker Duties at 1.009 p.u.

138 kV Circuit Breaker	Type	Name Plate Ratings		Base % Asym Rating		With Proposed St Paul Generating Plant % Asym Rating	
		sym kA	asym kA	3 phase kA	l to g kA	3 phase kA	l to g kA
A	FGK-138-10000-3	59.9	35	97%	99%	121%	130%
A1	FGK-138-10000-3	59.9	35	97%	99%	121%	130%
A2	FGK-138-10000-3	59.9	35	95%	97%	119%	127%
B	FGK-138-10000-3	59.9	35	97%	99%	122%	130%
B1	FGK-138-10000-3	59.9	35	97%	99%	122%	130%
B2	FGK-138-10000-3	59.9	35	94%	97%	118%	127%
C	FGK-138-10000-3	59.9	35	96%	98%	120%	129%
C1	FGK-138-10000-3	59.9	35	91%	92%	114%	121%
C2	FGK-138-10000-3	59.9	35	96%	98%	120%	129%
D	FGK-138-10000-3	59.9	35	97%	99%	121%	130%
D1	FGK-138-10000-3	59.9	35	91%	92%	114%	121%
D2	FGK-138-10000-3	59.9	35	97%	99%	121%	130%
E	145-PA-40-20B	40.0	48.0	77%	84%	97%	111%
E1	145-PA-40-20B	40.0	48.0	75%	77%	95%	101%
E2	FX-145-11	41.3	49.5	79%	87%	99%	113%
F2	145-PA-40-30B	40.0	48.0	82%	88%	103%	116%

Stability Analysis

Stability studies were not performed as part of this Feasibility Study and are not typically performed as part of the Feasibility Study effort. The stability assessments are part of the System Impact Study. Therefore, based upon the results of the future System Impact Study assessment, which includes the stability assessment, the extent of system upgrades could be significantly different from those identified in this Feasibility Study.

PJM Transmission System Evaluation

Network Impacts

The #Q43 project was studied as a 534 MW capacity resource at (1) the Clinch River 138 kV substation. Project #Q43 was evaluated for compliance with reliability criteria for summer peak conditions in 2011. Potential network impacts were as follows:

Generator Deliverability

No problems were identified

Multiple Facility Contingency

No problems were identified

Short Circuit

No problems were identified.

Contribution to Previously Identified Overloads

No problems were identified

New System Reinforcements

None

Contribution to Previously Identified System Reinforcements

To be determined at the System Impact Study

Required System Reinforcement (Option #1)

Replace sixteen 138 kV circuit breakers and associated facilities at the Clinch River Station.

Estimated Cost* **$23,000,000**

** The estimates are preliminary in nature, as they were determined without detailed engineering and design studies. Final estimates will require on-site review and coordination with the Interconnection Customer to determine final construction requirements. It will take approximately two years after obtaining the authorization to construct the facilities as outlined above.*

© PJM Interconnection 2006. All rights reserved.

Option #2 – Connection to the Baker-Broadford 765kV line

Local AEP Transmission System Evaluation

Network Impact

The impact of the proposed generation facility on the AEP System was assessed for adherence with applicable reliability criteria. AEP planning criteria requires that the Clinch River area to meet Single Contingency performance criteria, which is consistent with the AEP FERC Form 715. Therefore, this criterion was used to assess the impact of this proposed facility on the AEP System. The St. Paul, Virginia Q43 project was studied as 534 MW gross capacity **c**onsistent with the interconnection application. The results are summarized below.

Normal System
No identified problems.

Single Contingency
No identified problems.

Short Circuit Analysis
No problems identified.

Stability Analysis
Stability studies were not performed as part of this Feasibility Study and are not typically performed as part of the Feasibility Study effort. The stability assessments are part of the System Impact Study. Therefore, based upon the results of the future System Impact Study assessment, which includes the stability assessment, the extent of system upgrades could be significantly different from those identified in this Feasibility Study.

PJM Transmission System Evaluation

Network Impacts
The #Q43 project was studied as a 534 MW capacity resource into a tap of the Broadford-Baker 765 kV line. Project #Q43 was evaluated for compliance with reliability criteria for summer peak conditions in 2011. Potential network impacts were as follows:

Generator Deliverability
No problems were identified

Multiple Facility Contingency
No problems were identified

Short Circuit
No problems identified

© PJM Interconnection 2006. All rights reserved.

Contribution to Previously Identified Overloads

No problems were identified

New System Reinforcements

None

Contribution to Previously Identified System Reinforcements

No problems were identified.

© PJM Interconnection 2006. All rights reserved.