DISCUSSION OF [redacted] ("Customer") GENERATION FEASIBILITY STUDY RESULTS FOR THE PROPOSED GENERATING FACILITY IN SUMMERFIELD, GUILFORD COUNTY, NC. TOTAL SUMMER PEAK OUTPUT IS EXPECTED TO BE 457.5 MW

REPORT DATE: August 28, 2008

Following are the results of the Generation Feasibility Study for the installation of 457.5 MW Summer/541.5 MW Winter of generating capacity in Summerfield, NC. The site is has an estimated Commercial Operation Date of May 1, 2011. The study included both Network Resource Interconnection Service (NRIS) and Energy Resource Interconnection Service (ERIS).

A. Study Assumptions and Methodology

The power flow cases used in the study were developed from the Duke internal year 2012 and 2017 summer peak cases. The results of Duke's annual screening were used as a baseline to identify the impact of the new generation. The 2012 case was used instead of the 2011 case because the 2011 case contains only a partial build-out of planned generation, whereas the 2012 case contains the completed projects. The 2017 case was used to evaluate the impact of additional higher queued generation. All cases were modified to include 457.5 MW of additional generation. The generation addition was evaluated interconnected to the Pleasant Garden (Belews Creek Switching Station-Bobwhite Tap-North Greensboro Tie) 230 kV line and to the Belews Creek (Belews Creek-North Greensboro) 230 kV line. To determine the thermal impact on Duke's transmission system, the new generation was modeled with a single-circuit, direct connection to a new 230 kV bus and the Belews Creek 230 kV double circuit line was folded into the new bus approximately 9 miles from Belews Creek Switching Station. In studying the alternate connection, the new generation was modeled with a single circuit, direct connection to a new 230 kV bus and the Pleasant Garden 230 kV double circuit line was folded into the new bus approximately 9 miles from Belews Creek Switching Station. The economic generation dispatch was also changed by adding the new generation and forcing it on prior to the dispatch of the remaining Duke Balancing Authority Area units. The study cases were re-dispatched, solved and saved for use.

The NRIS thermal study uses the results of Duke Power Delivery's annual internal screening as a baseline to determine the impact of the new generation. The annual internal screening identifies violations of the Duke Power Transmission System Planning Guidelines and this information is used to develop the transmission asset expansion plan. The annual screening provides branch loading for postulated transmission line or transformer contingencies under various generation dispatches. The thermal study results following the inclusion of the new generation were obtained by the same methods, and are therefore comparable to the annual screening. The results are compared to identify significant impacts to the Duke transmission system.

The ERIS thermal study utilizes a model that includes the new generation with higher queued projects and associated known upgrades. The new generation economically displaces Duke Balancing Authority Area units. Transmission capacity is available as long as no transmission element is overloaded under N-1 transmission conditions. The thermal evaluation will only consider the base case under N-1 transmission contingencies to determine the availability of transmission capacity. ERIS is service using transmission capacity on an "as available" basis; adverse generation dispatches that would make the transmission capacity unavailable are not identified. Upgrades to maintain the necessary capacity to allow the full generator output will be identified. The study will also identify the maximum allowable output without requiring additional Network Upgrades at the time the study is performed. No transmission delivery service beyond the point of interconnection is assured and will therefore depend on capacity of the transmission system when that delivery is requested.

Fault studies are performed by modeling the new generator and previously queued generation ahead of the new generator in the interconnection queue. Any significant changes in fault duty resulting from the new generator's installation are identified. Various faults are placed on the system and their impact versus equipment rating is evaluated.

Reactive Capability is evaluated by modeling a facility's generators and step-up transformers (GSUs) at various taps and system voltage conditions. The reactive capability of the facility can be affected by many factors including generator capability limits, excitation limits, and bus voltage limits. The evaluation determines whether sufficient reactive support will be available at the Connection Point.

B. Thermal Study Results

NRIS Evaluation

No network upgrades were identified as being attributable to the studied generating facility, regardless of whether it was connected to the Belews Creek 230 kV or Pleasant Garden 230 kV lines.

ERIS Evaluation

The full 457.5 MW can be delivered to the point of interconnection without any network upgrades.

C. Fault Duty Study Results

The following breakers will need to be replaced:

1. At Greensboro Main, Capacitor Bank 2 Breaker (100 kV)
2. At Pleasant Garden Tie, PCB 26 (230 kV), the breaker connecting the Pleasant Garden White line to the Red Bus.

Total estimated cost for breaker replacements: $295K

Note that PCB 26 at Pleasant Garden Tie may be charged to a higher queued project (Q ID # 39470) and would then not be the Customer's responsibility. This would reduce the estimated cost for breaker replacements to $120K.

D. Interconnection Cost Estimate

Belews Creek 230 kV Connection

Facility Name/Upgrade	Mileage	Estimated Cost	Lead Time (months)
Interconnection cost (new substation, assuming customer provides graded level pad)	n/a	$8.0M	36
Interconnection cost (fold-in of Belews Creek lines to new substation)	n/a	$1.2M	24
CUSTOMER TOTAL COST ESTIMATE		$9.2M	

Pleasant Garden 230 kV Connection

Facility Name/Upgrade	Mileage	Estimated Cost	Lead Time (months)
Interconnection cost (new substation, assuming customer provides graded level pad)	n/a	$8.0M	36
Interconnection cost (fold-in of Pleasant Garden lines to new substation)	n/a	$1.2M	24
CUSTOMER TOTAL COST ESTIMATE		$9.2M	

E. Reactive Capability Study Results

With the proposed generating facility, the level of reactive support supplied by the units has been determined to be acceptable at this time. Evaluation of MVAR flow and voltages in the vicinity of either new interconnection point indicates adequate reactive support exists in the region.

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