DISCUSSION OF [redacted] ("Customer") GENERATION FEASIBILITY STUDY RESULTS FOR THE PROPOSED GENERATING FACILITY NEAR WOODLEAF SWITCHING STATION. TOTAL SUMMER PEAK OUTPUT IS EXPECTED TO BE 711 MW

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Following are the results of the Generation Feasibility Study for the installation of 711 MW Summer/748 MW Winter of generating capacity in Salisbury, NC. The site is located near Woodleaf Switching Station and has an estimated Commercial Operation Date of June 1, 2012. 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 summer peak case. The results of Duke's annual screening were used as a baseline to identify the impact of the new generation. All cases were modified to include 711 MW of additional generation at Woodleaf Switching Station. To determine the thermal impact on Duke's transmission system, the new generation was modeled with a single-circuit, direct connection to the 500 kV bus at Woodleaf 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

The following network upgrades were identified as being attributable to the studied generating facility:

Facility Name/Upgrade	Existing Size/Type	Proposed Size/Type	Mileage	Estimated Cost	Lead Time (months)
1. Add new 500/230 kV transformer at the intersection of the Guardian 500 kV and Dooley 230 kV lines (includes new 500/230 kV station) (needed by 2013)	N/A	1680 MVA	N/A	$53M	24
2. Dooley 230 kV (Winecoff to new 500/230 kV tie station) upgrade (needed by 2013)	1272 ACSR	B1272 ACSR	11.2	$12.3M	42
3. Hopewell 100 kV (Winecoff to Eastfield Rd retail) upgrade	477 ACSR	1272 ACSR	7.9	$5.1M	24
5. Winecoff 230/100 kV transformer upgrade	200 MVA	400 MVA	n/a	$5.2M	30
6. Odell 100 kV (Winecoff to Westfork) upgrade	477 ACSR	B477 ACSR	11.3	$7.3M	42
7. Batte 100 kV (Concord Main to Concord City del 1) upgrade (needed by 2017)	336 ACSR	B336 ACSR	1.6	$1.1M	15
8. Interconnection cost at Woodleaf Switching Station (terminal)				$2.3	12
CUSTOMER TOTAL COST ESTIMATE				$86.3M	

Note: The upgrade identified in 7 may not be necessary if a higher queued generation project is not built.

ERIS Evaluation

The full 711 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 Marshall Steam Station the following seven 230 kV breakers : PCB 9,12,16,18,19,21 and 24
2. At Pleasant Garden, PCB 26 (525 kV)
3. At Winecoff Tie, the Dooley Black and White 230 kV breakers (2 total)
4. At Poplar Tent Retail, the Bank 1 100 kV breaker
5. At West Fork Switching Station, the Cabarrus Black and White breakers (2 total)
6. At Winecoff Tie all 100 kV line breakers (11) and Capacitor Bank 1 and 2 100 kV breakers

Total estimated cost for breaker replacements: $4.7M

D. Reactive Capability Study Results

With the proposed generating facility, the level of reactive support supplied by the units as an aggregate has been determined to be acceptable at this time. Evaluation of MVAR flow and voltages in the vicinity of Woodleaf Switching Station indicates adequate reactive support exists in the region. While the reactive support from the combustion turbine generators appears acceptable, the customer may want to reevaluate the generator step-up transformer being proposed for the steam turbine generator. Due to the high impedance of the transformer a large change in generator terminal voltage will be required to acheive the full range of reactive support. This could cause problems with auxiliary voltage limits unless a load tap changing transformer is installed.

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