PJM Generator Interconnection
W1-034 Burches Hill 500 kV
750 MW Capacity & Energy
Feasibility Study

July 2010
DMS#604317v1

General

Queue W1-034 is a request to interconnect a 750 MW Capacity Resource consisting of a 2x1 combined cycle facility to be located north of North Keys Road, in Prince George's County, Maryland. The proposed generating facility property is located adjacent to Potomac Electric Power Company's (PEPCO, Interconnected Transmission Owner (ITO)) Burches Hill – Chalk Point 500 kV circuit. The Interconnection Customer is tentatively scheduling the generating facility to be commercially available by 2Q2015.

Network Impacts

The queue W1-034 project was studied as a 750 MW capacity injection into PEPCO's system. The interconnection point was a tap of the Burches Hill – Chalk Point 500kV line. Project W1-034 was evaluated for compliance with reliability criteria for summer peak conditions in 2014. Potential network impacts were as follows:

Burches Hill – Chalk Point 500 kV

Generator Deliverability

(Single or N-1 contingencies for the Capacity portion only of the interconnection)

No problems identified.

Multiple Facility Contingency

(Double Circuit Tower Line contingencies only for the full energy output. Stuck breaker and bus fault contingencies will be performed for the Impact Study)

No problems identified.

Contribution to Previously Identified Overloads

(This project contributes to the following contingency overloads, i.e. "Network Impacts", identified for earlier generation or transmission interconnection projects in the PJM Queue)

1. The H.RDGE16-HOWARD32 230 kV line (from bus 220941 to bus 220954 ckt 1) loads from 109.43% to 110.6% (DC power flow) of its emergency rating (728 MVA) for the tower line contingency ('WCHPL_BRNDN'). This project contributes approximately 52.54 MW to cause the thermal violation.

2. The BOWIE042-BURT2334 230 kV line (from bus 223977 to bus 223962 ckt 1) loads from 111.47% to 112.46% (DC power flow) of its emergency rating (730 MVA) for the tower line contingency ('7PEPCO_A'). This project contributes approximately 47.65 MW to cause the thermal violation.

3. The OAKGV230-BOWIE042 230 kV line (from bus 223982 to bus 223977 ckt 1) loads from 111.74% to 112.73% (DC power flow) of its emergency rating (730 MVA) for the tower line contingency ('7PEPCO_A'). This project contributes approximately 47.65 MW to cause the thermal violation.

4. The BOWIE045-BURT2314 230 kV line (from bus 223978 to bus 223961 ckt 1) loads from 112.66% to 113.66% (DC power flow) of its emergency rating (730 MVA) for the tower line contingency ('5PEPCO'). This project contributes approximately 47.93 MW to cause the thermal violation.

5. The OAKGV230-BOWIE045 230 kV line (from bus 223982 to bus 223978 ckt 1) loads from 112.78% to 113.78% (DC power flow) of its emergency rating (730 MVA) for the tower line contingency ('5PEPCO'). This project contributes approximately 47.93 MW to cause the thermal violation.

Short Circuit

6. The following is a list of breakers newly over duty in Dominion as a result of W1-034:

BUS_NO	BUS	BREAKER	Rating Type	Duty Percent With Case_With	Duty Percent Without Case_With	Duty Percent Difference	Note
314922	POSSUM POINT 500 kV	560T571	S	100.60%	99.30%	1.30%	New Over-duty
314922	POSSUM POINT 500 kV	568T571	S	100.60%	99.30%	1.30%	New Over-duty
314922	POSSUM POINT 500 kV	H1T560	S	100.60%	99.30%	1.30%	New Over-duty
314922	POSSUM POINT 500 kV	H1T568	S	100.00%	97.40%	2.60%	New Over-duty

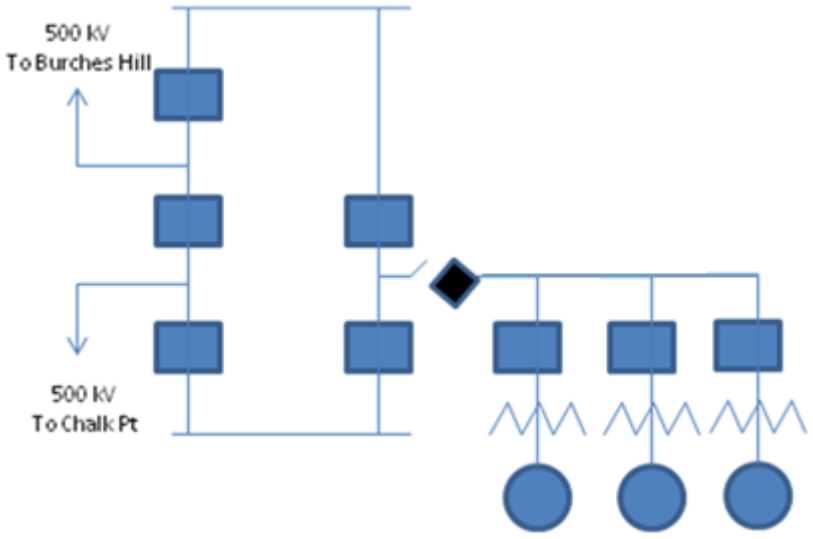

Figure 1 - 500 kV Option

Attachment Facilities

IC is responsible for all Attachment Facilities from the generator to the Point of Interconnection as depicted in Figure 1. ITO estimates the cost for the disconnect switch, deadend structure and tie-in work to be $2M and will be coordinated with the Direct Connection Substation for completion.

Direct Connection Requirements

ITO requires a breaker and a half design for the interconnection substation. The cost for the five breaker substation depicted in Figure 1 is $25M and will take 36 months to complete. This cost includes the loop in and out of the Burches Hill – Chalk Point circuit. The relay and communications cost will be $2.25M.

Non-Direct Connection Requirements

The following list numbering aligns with over load or over duty items previously identified in this report.

1. Upgrade substation wire limitations at Howard. The cost for this Howard work is $100,000 and it will take 6 months to complete. This assumes that the High Ridge baseline work is completed in 2012. The resultant new rating normal & emergency become 670 & 844 MVA respectively.
2. The estimated cost to upgrade the Bowie - Burtonsville 230 kV circuit (23042) is $9.6 M and it will take 36 months to complete. This cost represents the addition of ACCR conductor to circuit 23042 from Bowie to Burtonsville (approximately 8 miles). Must complete both circuits on a tower line.
3. The estimated cost to upgrade the Oak Grove - Bowie 230 kV circuit (23042) is $14.4 M and it will take 36 months to complete. This cost represents the addition of ACCR to circuit 23042 from Oak Grove to Bowie (approximately 11.5 miles).Must complete both circuits on a tower line.
4. The estimated cost to upgrade the Bowie - Burtonsville 230 kV circuit (23045) is $9.6 M and it will take 36 months to complete. This cost represents the addition of ACCR conductor to circuit 23045 from Bowie to Burtonsville (approximately 8 miles). Must complete both circuits on a tower line.
5. The estimated cost to upgrade the Oak Grove - Bowie 230 kV circuit (23045) is $14.4 M and it will take 36 months to complete. This cost represents the addition of ACCR to circuit 23045 from Oak Grove to Bowie (approximately 11.5 miles).Must complete both circuits on a tower line.
6. The four breakers at Possum Point will cost $2.92M and take 16 months to complete (12 months for procurement and four months for installation). Schedule is conditional on obtaining necessary outages.

Project Cost Summary

Attachment Facilities:	$ 2,000,000
Direct Connection Network Upgrades:	$27,250,000
Non-Direct Connection Network Upgrades:	$53,020,000
Project Total:	$82,270,000