#P08 - Possum Point (600 MW)
Generator Interconnection

The P08 project was studied as an injection of 600 MW at two distinct points of the VAP system. Option 1 considers the injection into Possum Point 230 kV substation. Option 2 considers the injection into Possum Point 500 kV substation.

Option 1:

Interconnection to Possum Point 230 kV substation.

Network Impacts

Network Impacts
The P08 project was studied as an injection of 600 MW into the Possum Point 230 kV substation (Option 1). Project #P08 was evaluated for compliance with reliability criteria for summer peak conditions in 2010. Potential network impacts were as follows:

Generator Deliverability

For option 1:

1. The Possum Point – Woodbridge – Occoquan 230 kV Line 2001 is overloaded at around 109% and 100.7 % of its maximum continuous rating (722 MVA) for the outage of Line 215. The P08 project contributes 162MW to the contingency facility loading.

Multiple Facility Contingency

No problem identified.

Dominion Assessment Results

Dominion Virginia Power performed contingency analysis using their criteria to maximize generation output in the local area to determine possible overloads (maximize generation in the local area and then run studies with and without P08.). Dominion uses a 94% facility loading value as a trigger point for relieving specific transmission facilities through upgrades or new installations. The results of these studies indicated the following:

A. The Possum Point – Dumfries portion of 230 kV Line 2022 is overloaded at around 94.2 % of its maximum continuous rating (633 MVA) for the loss of Line 237. The P08 project contributes 72MW to the contingency facility loading.

Contribution to Previously Identified Overloads
None

Short Circuit
For option 1:

16 Possum Point 230 kV breakers are overdutied due to P08. The following breakers are overdutied:

Bus No	Bus	Breaker	Duty %	Duty Amps	Bkr Capa
688	POSS PT CAP 230.kV	SC192	107.4	45965.4	42800
41	POSSUM POINT 230.kV	202292	101.6	63983.9	63000
41	POSSUM POINT 230.kV	21592	101.4	63851.2	63000
41	POSSUM POINT 230.kV	23792	101.8	64161.2	63000
41	POSSUM POINT 230.kV	25292	100.0	63024.3	63000
41	POSSUM POINT 230.kV	252T2022	101.6	63983.9	63000
41	POSSUM POINT 230.kV	G492	100.0	63024.3	63000
41	POSSUM POINT 230.kV	G592	100.0	63024.3	63000
41	POSSUM POINT 230.kV	G5T215	101.4	63851.2	63000
41	POSSUM POINT 230.kV	G6A92	100.0	63024.3	63000
41	POSSUM POINT 230.kV	G6B92	100.0	63022.4	63000
41	POSSUM POINT 230.kV	G6BTGT	101.7	64043.2	63000
41	POSSUM POINT 230.kV	GT92	101.7	64043.2	63000
41	POSSUM POINT 230.kV	H992	100.0	63024.3	63000
41	POSSUM POINT 230.kV	H9T237	103.9	65460.2	63000
41	POSSUM POINT 230.kV	XT2078	100.0	63024.3	63000

The estimated cost to upgrade these breakers are 5 millions dollars and will require about 18 months.

New System Reinforcements

For option 1:
Network up-grades and proposed fixes:

Line 2001 – Re-conductor with 2 x 636 ACSR and pull to higher tension. Re-conductor cost and several replacements of towers for new tension issues. The existing Conductor is 2 x 721 18/19 6201 ACAR @ 90C Sag – Length: 8.0 Miles Possum Point to Woodbridge and 4.5 Miles Woodbridge to Occoquan.
The estimated cost for these upgrades is $ 3.9 million dollars and will take 30 months to complete.

Line 2022 – Re-conductor with either 2 x 636 ACSR or equivalent capacity single conductor. This could require major structure modifications or change-outs. The existing Conductor

1033.5 ACSR @ 128C Sag – And some 2 X 721 18/19 6201 ACAR @ 90C Sag – Length: 3.6 Miles Possum to Dumfries and 8.3 Miles Dumfries to Lakeridge.

The estimated cost for these upgrades is $ 3.6 million dollars and will take 30 months to complete.

Additional Note for Consideraton:

For Option 1 (230 kV Connection), the additional generation onto the 230 kV bus may cause considerable over-duty of existing equipment. The separation of facilities at this station and creating two separate 230 kV stations may solve this problem. This would require further analysis and potentially additional costs.

Option 2:

Interconnection to Possum Point 500 kV substation.

Network Impacts

The P08 project was studied as an injection of 600 MW into the Possum Point 500 kV substation (Option 2). Project #P08 was evaluated for compliance with reliability criteria for summer peak conditions in 2010. Potential network impacts were as follows:

Generator Deliverability

For option 2:
No problem identified.

Multiple Facility Contingency

No problem identified.

Network up-grades:
None identified.

Contribution to Previously Identified System Reinforcements
None

Short Circuit

For option 2:

There are no new overdutied breakers due to P08.