



POWERGEM

Power Grid Engineering & Markets



Leesburg Generation Study

Prepared for

**Jordan Dimoff
Green Energy Partners / Stonewall LLC**

Submitted by

**Scott Gass
Principal Consultant**

Date – 7/7/09



POWERGEM

Power Grid Engineering & Markets

Purpose of Study

A study was completed to determine the benefits to the local transmission system for the addition of a 980 MW (at ISO) generator located at the proposed Green Energy Partners / Stonewall power park in Leesburg, VA. The generator will interconnect to the Dominion Virginia Power system through a new six breaker 230 kV ring bus located about 1 mile south of the existing Pleasant View 230 kV substation. Diagram 1 shows the proposed new substation interconnection as of the 2012 PJM RTEP.

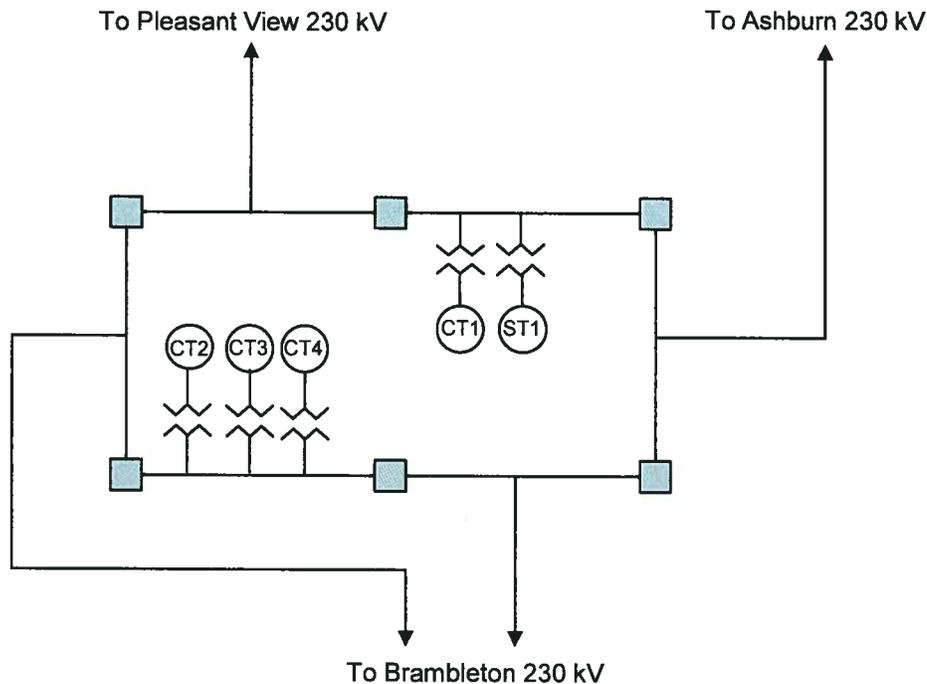


Diagram 1

System Model and Analysis Description

The PJM RTEP 2012 basecase and associated contingency files were used for this study. The starting 2012 model contained both the proposed TrAIL and PATH lines but did not include the MAPP project. A sensitivity analysis was completed with the PATH project removed from the model.

When the new 980 MW generator was modeled, two different generation displacement scenarios were studied. Scenario 1 assumed a reduction in Mt. Storm generation (baseload coal) by 300 MW, Remington generation (CT peaker) by 150 MW, Chesterfield generation (baseload coal) by 200 MW, Possum Pt. generation (baseload coal) by 150 MW, Chalk Point generation (coal) by 130 MW and Dickerson generation (baseload coal) by 50 MW. Scenario 2 assumed a uniform reduction of all generators over 75 MW's in BG&E, Dominion, PEPCO and APS.

Summary of Results

Local Benefits

The three major sources of power into Loudoun County are the Loudoun 500/230 kV #1 and #2 transformers, the Pleasant View 500/230 kV transformer and the Gainesville – Loudoun 230 kV circuit. These three sources/substations combined supply over 2400 MW of power into Loudoun County in the PJM peak summer 2012 model. The addition of the 980 MW generator resulted in a significant reduction in the flows on all three major sources of power into Loudoun County as shown in Exhibit 1. Notice that the local benefit was similar for either generation displacement scenario 1 or 2.

Key Transmission Facilities	2012 System Without 980 MW Generator	New Generator Displacement Scenario 1	% Change	New Generator Displacement Scenario 2	% Change
Loudoun 500/230 kV 1 & 2	1187 MW	991 MW	-17%	978 MW	-18%
Pleasant View 500/230 kV	763 MW	572 MW	-25%	564 MW	-26%
Gainesville - Loudoun 230 kV	454 MW	347 MW	-24%	362 MW	-20%
Totals	2404 MW	1910 MW	-21%	1904 MW	-21%

Exhibit 1 – 2012 Model with TrAIL and PATH

A sensitivity analysis was performed by removing the proposed PATH circuit from the PJM 2012 RTEP model. The results are shown in Exhibit 2. The benefits provided by the new 980 MW generator are similar both with and without the PATH project.

Key Transmission Facilities	2012 System Without 980 MW Generator	New Generator Displacement Scenario 1	% Change	New Generator Displacement Scenario 2	% Change
Loudoun 500/230 kV 1 & 2	1201 MW	1014 MW	-16%	1001 MW	-17%
Pleasant View 500/230 kV	745 MW	551 MW	-26%	543 MW	-27%
Gainesville - Loudoun 230 kV	519 MW	413 MW	-20%	427 MW	-18%
Totals	2465 MW	1978 MW	-20%	1971 MW	-20%

Exhibit 2 – 2012 Model with Trail (PATH Project Removed)

The addition of a 980 MW generator was also modeled in the PJM 2013 RTEP basecase. The 2013 model contained the proposed TrAIL, PATH and MAPP projects. Similar local benefits (see Exhibit 3) were obtained with both the 2012 and 2013 model.



Key Transmission Facilities	2013 System Without 980 MW Generator	New Generator Displacement Scenario 1		New Generator Displacement Scenario 2	
			% Change		% Change
Loudoun 500/230 kV 1 & 2	1233 MW	1044 MW	-15%	1030 MW	-17%
Pleasant View 500/230 kV	791 MW	627 MW	-21%	620 MW	-22%
Gainesville - Loudoun 230 kV	480 MW	377 MW	-22%	392 MW	-18%
Totals	2504 MW	2048 MW	-18%	2042 MW	-18%

Exhibit 3 – 2013 Model with TrAIL, PATH and MAPP

In all of the system models that were studied the Green Energy Partners / Stonewall proposed 980 MW generator resulted in a large reduction (between 18% and 21%) in reliance on external power to be delivered through the transmission system to serve the load in the Loudoun County and Leesburg area.

Regional Benefits

There are also some regional benefits, in addition to the local benefits, provided by the proposed 980 MW generator. The three 500 kV circuits shown in Exhibit 4 were selected to illustrate the larger regional benefit provided by the new 980 MW generator. The Pruntytown – Mt. Storm 500 kV and Mt. Storm – Doubs 500 kV circuits have been key indicators for determining the need for the TrAIL and PATH projects. The Meadowbrook – Loudoun 500 kV circuit is the eastern most section of the proposed TrAIL project. In general, the results indicate a 4% to 6% reduction of flows on these key 500 kV facilities. The one exception was the flows on Pruntytown – Mt. Storm 500 kV for the generation displacement scenario 1. The increase in flows for this case are directly attributable to the 300 MW reduction in generation at Mt. Storm.

Key Transmission Facilities	2012 System Without 980 MW Generator	New Generator Displacement Scenario 1		New Generator Displacement Scenario 2	
			% Change		% Change
Mt. Storm - Doubs 500 kV	1618 MW	1541 MW	-5%	1556 MW	-4%
Pruntytown - Mt. Storm 500 kV	1594 MW	1635 MW	3%	1536 MW	-4%
Meadowbrook - Loudoun 500 kV	1210 MW	1133 MW	-6%	1133 MW	-6%
Totals	4422 MW	4309 MW	-3%	4225 MW	-5%

Exhibit 4 – 2012 Model with TrAIL and PATH

