

**REBUTTAL TESTIMONY
OF
PHILLIP POWELL
ON BEHALF OF
VIRGINIA ELECTRIC AND POWER COMPANY
BEFORE THE
STATE CORPORATION COMMISSION OF VIRGINIA
CASE NO. PUE-2007-00031**

1 **Q. Please state your name and position with Virginia Electric and Power Company**
2 **(“Dominion Virginia Power” or “Company”).**

3 A. My name is Phillip Powell, and I am Director Electric Delivery Customer Growth in the
4 Distribution Planning Department of Dominion Virginia Power located at 701 E. Cary
5 Street in Richmond, Virginia.

6 **Q. Did you pre-file direct testimony on April 19, 2007, in this case?**

7 A. Yes.

8 **Q. What is the purpose of your rebuttal testimony?**

9 A. This Rebuttal Testimony addresses various assertions, concerning the Company’s
10 distribution peak load planning and forecasting, in the Direct Testimony by Dr. Hyde M.
11 Merrill on behalf of the Piedmont Environmental Council.

12 **Q. Have you any comment with respect to Dr. Merrill’s testimony at pages 15 and 16**
13 **that representations given to the Loudoun County Economic Development**
14 **Commission on March 15, 2007, and testimony by Paul D. Koonce to the U.S. House**
15 **of Representatives Subcommittee on Domestic Policy are not accurate?**

16 A. Yes. The first statement questioned by Dr. Merrill is from a presentation given by Mr.
17 Kent Hill of Dominion Virginia Power at the March 15, 2007, Loudoun County
18 Economic Development Commission. Mr. Hill made the following statement: “The
19 highest growth rate during that time is expected in PJM’s Southern Region, which

1 consists of the electric transmission system owned by Dominion.” This statement is
2 based on a January 16, 2007, press release by PJM which is still available on the PJM
3 website as of January 2, 2008. I validated with John M. Reynolds, Senior Engineer, PJM
4 Interconnection, L.L.C. (“PJM”), that the press release is still supported by PJM and that
5 it is based on the 2007 PJM Load Forecast Report available at
6 www.pjm.com/planning/res-adequacy/downloads/2007-load-report.pdf. I have attached
7 the referenced press release taken from the PJM website on January 2, 2008 as Rebuttal
8 Attachment PP-1. The information referred to in the January 16th press release is based
9 on page 27 of the 2007 PJM Load Forecast Report. I have included page 27 of the 2007
10 Load Forecast Report as Rebuttal Attachment PP-2 as a reference to document the
11 regional growth rate quoted in the press release and in Mr. Hill’s presentation. Rebuttal
12 Attachment PP-2 clearly shows that PJM’s Southern Region, which contains only
13 Dominion’s Transmission System, is growing at 1.9% which is well above the growth
14 rate for both the PJM Western Region (1.5%) and the PJM Mid-Atlantic Region (1.5%)
15 as well as the average growth rate in PJM as a whole (1.6%). Therefore, Mr. Hill’s
16 presentation is completely accurate.

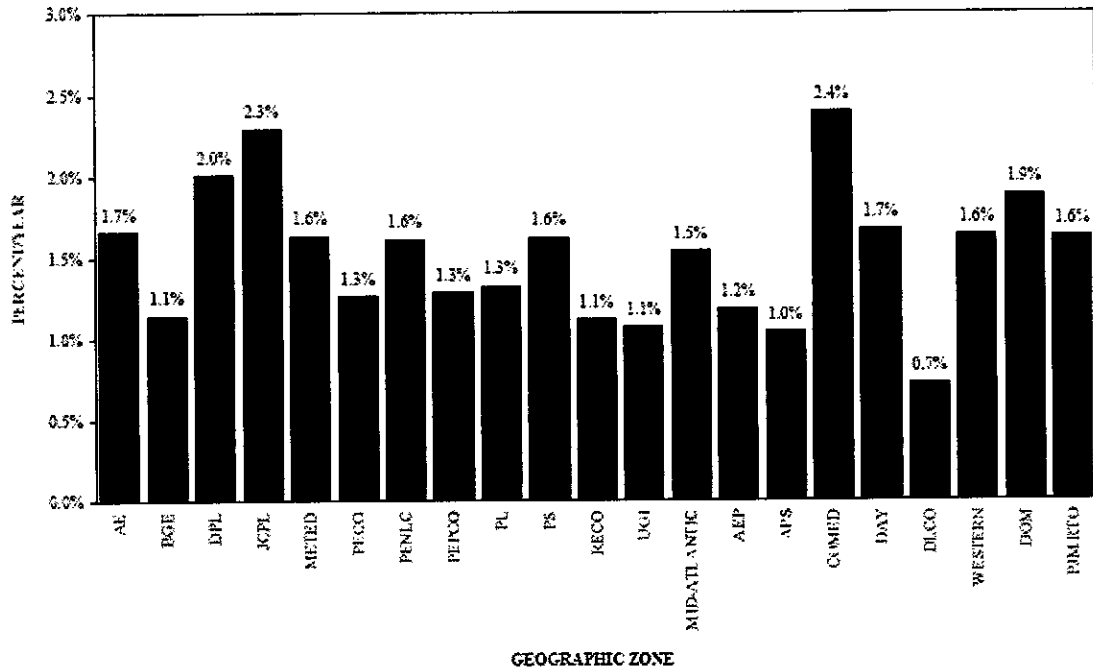
17 The second statement questioned by Dr. Merrill is from a presentation given by Mr. Paul
18 D. Koonce of Dominion Virginia Power on April 25, 2007, when he spoke to the U.S.
19 House of Representatives Subcommittee on Domestic Policy. Mr. Koonce made the
20 following statement, “[i]n the next five years, PJM Interconnection, the regional
21 transmission organization to which Dominion belongs, says the increase in demand on
22 our system would be like adding approximately 1 million new houses. More growth is

1 expected to occur in our load area in the next five years than in any other PJM region.”

2 This statement is validated by the regional growth rates shown from the 2006 PJM Load
3 Forecast Report. In every year from 2007 through 2012, the five years referred to by Mr.
4 Koonce, the Southern Region growth rate is higher than the PJM Western and the PJM
5 Mid-Atlantic Regions. Therefore, Mr. Koonce’s statement is validated and completely
6 accurate.

7 Dr. Merrill uses a graph labeled Figure 7 (page 15) in his testimony as the basis for his
8 statements. His graph is based on data that is a year out of date from the data used by
9 PJM, Mr. Hill, and Mr. Koonce. I have attached a graph from page 2 of the 2006 PJM
10 Load Forecast Report below for comparison. The 2006 PJM Load Forecast Report is also
11 available at www.pjm.com/planning/res-adequacy/downloads/2006-pjm-load-report.pdf.

**PJM SUMMER PEAK LOAD GROWTH RATE
2006-2016**



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The data on the graph is identical to the data presented by Dr. Merrill and referenced in his testimony as PJM’s forecast. The difference is that Dr. Merrill’s graph is labeled “Projected Regional Load Growth in PJM.” The graph above is from PJM’s 2006 Load Forecast Report and is correctly titled “PJM Summer Peak Load Growth Rate 2006 – 2016.” The chart shows PJM Summer peak load growth rate by company and by region and not just the annual rate of growth by region as asserted by Dr. Merrill. Dr. Merrill’s statements refer to the individual company growth rates and not to the Western, Mid-Atlantic, and Southern Region Growth rates referred to by the PJM release, Mr. Hill in his March 15, 2007 presentation and Mr. Koonce in his April 25, 2007 presentation.

1 Based on the information above, Dr. Merrill's statement that representations by Mr. Hill
2 and Mr. Koonce were not accurate is an incorrect and misleading statement. Dr. Merrill's
3 statement that PJM rejected these representations by Mr. Hill and Mr. Koonce is also an
4 incorrect statement.

5 **Q. Have you any comment with respect to Dr. Merrill's testimony at page 35 that**
6 **unreliable load forecast data was found?**

7 A. Yes. Dr. Merrill stated that the 244 MW per year growth in Northern Virginia provided
8 by the customer load data differs too much with the 131 MW per year growth from PJM's
9 shared forecast with Northern Virginia. It was clearly stated in the direct testimony that
10 the 244 MW per year growth rate in Northern Virginia is based on a process of adding all
11 of the known customer connections planned along each distribution circuit. Therefore, it
12 does not take into account a concept called "load diversity" which must be used to draw a
13 comparison between a diversified load such as the 131 MW growth from the PJM
14 forecast shared to Northern Virginia. (The process of sharing the PJM forecast load to
15 Northern Virginia is described in sections 3.1 and 6.0 of the Dominion Transmission
16 Zone Peak Forecast Study provided as Attachment FAM-1 to the Prefiled Direct
17 Testimony of Dr. Frank Monforte).

18 As an example, a circuit may have 10 customers that give projections of 2 MW each. But
19 all ten customers will not use their 2 MW at the same time. Because of this load diversity
20 these ten customers may only use 12 MW of peak load instead of the combined 20 MW
21 of individually forecasted peak loads. Applying a typical load diversity factor of 60% to
22 the 244 MW would result in a peak diversified load of 146 MW which compares more

1 closely with the 131 MW of the shared PJM forecasted growth. This correctly diversified
2 load is about 11% higher on average than the PJM shared forecast growth.

3 **Q. Have you any comment with respect to testimony that the two load forecasts don't**
4 **validate each other?**

5 A. Yes. Dr. Merrill used the example of two scales to argue that if a person steps on one and
6 reads 131 lbs. and the other reads 244 lbs. then the scales are broken. In this case, one
7 scale reads in kilograms and the other reads in pounds. Understanding what the scales are
8 measuring is very important before making an incorrect assumption that both are broken.
9 In this case, understanding the very basic concept of load diversity is required to draw the
10 correct conclusion that the forecasts do validate each other.

11 **Q. Have you any comment with respect to testimony that the forecasts cannot be**
12 **compared or produce very different results means that DVP does not have a reliable**
13 **Northern Virginia load forecast on which to justify a project that it claims is needed**
14 **because of future Northern Virginia load growth?**

15 A. Yes. Dr. Merrill states at page 35 of his testimony that none of the regions in Dr. Frank
16 Monforte's Report coincide with the regions used in the PJM shared forecast and the
17 customer load based forecast. All three forecasts types use the same region definition and
18 correspond to the following Northern Virginia transmission zone areas:
19 Alexandria/Arlington Transmission Zone 181, Fairfax Transmission Zone 182, and
20 Woodbridge Transmission Zone 183. As an example, the PJM shared load for 2006 is
21 shown as 6368 MW in Attachment I.B.3 of the Appendix Document, it is listed as 6368
22 MW on page 5 of my Direct Testimony, and is shown as 6367 MW for the North
23 Transmission Zone in Table 3-3 on page 3-5 in Dr. Frank Monforte's Report. These
24 forecasts provide a consistent view of the Northern Virginia load growth validated by

1 multiple independent forecast methods. Therefore, since these forecasts are consistent
2 and can be compared with each other, Dr. Merrill's statement that the forecast is
3 unreliable is incorrect.

4 **Q. Have you any comment with respect to Dr. Merrill's testimony that DVP's Northern**
5 **Virginia load forecasts are not reliable?**

6 A. Yes. The reliability of the load forecasts were reviewed by the independent consultant for
7 the Virginia SCC Staff, Bates White LLC ("Bates White"). Bates White states the
8 following on page 93 of the conclusions in Appendix BW-1.

9 As detailed in the body of this report, Bates White assessed the
10 reasonableness and consistency of the modeling assumptions and data
11 inputs in the DVP, TrAILCo, and PJM power flow cases, in terms of
12 generation, load, and transmission elements. Bates White found that these
13 elements were consistent with the information known to the applicants at
14 the time of the analyses.

15 Bates White also states on page 85-86 of section V.3.3. of the report in Appendix BW-1:

16 PJM staff produces an independent forecast of monthly and seasonal peak
17 load and load management for each PJM zone, region, the RTO, and
18 selected combinations of zones. The EDCs (DVP and Allegheny) produce
19 their own peak demand forecasts built on long-term system peak forecasts
20 developed by PJM. The PJM staff and the EDC's forecast peak loads
21 without the impact of load management, referred to as unrestricted load.
22 The load forecasts are subsequently adjusted to account for the impact of
23 load management prior to their use in reliability studies. This means that
24 the load forecast in the power flows used by PJM and DVP in contingency
25 analyses had already taken into account the impact of the then extant load
26 management programs.

27 Therefore, PJM, Dominion Virginia Power, and the independent consultant for the
28 Virginia SCC Staff, Bates White, have all reviewed the reasonableness and consistency of
29 the modeling assumptions and data inputs in the power flow cases in terms of load and
30 found them to be both consistent and reasonable. In addition, the load forecast in the

1 power flows used by PJM and DVP in contingency analyses already take into account the
2 impact of existing load management programs.

3 **Q. Does this complete your prepared rebuttal testimony?**

4 **A. Yes, it does.**



**NEWS
RELEASE**

FOR IMMEDIATE RELEASE

**PJM FORECASTS 16.7% GROWTH
IN PEAK ELECTRICITY USE OVER 10 YEARS**

(Valley Forge, Pa. – Jan. 16, 2007) – Consumers will increase their peak demand for electricity by 16.7 percent over the next 10 years, according to PJM Interconnection, the electric power supply system operator for 13 states and the District of Columbia. The highest growth rate during that time is expected in PJM’s Southern Region, which consists of the electric transmission system owned by Dominion.

PJM annually forecasts for its region the highest use of electricity (called peak demand) for future years and annual growth rates. The information is used to plan additions to the electric power supply system.

During the next 10 years, the highest demand for electricity use is expected to grow by 22,861 megawatts, according to PJM’s January 2007 Load Forecast Report. A megawatt is a measure of electricity. It’s enough electricity to power about 800 houses.

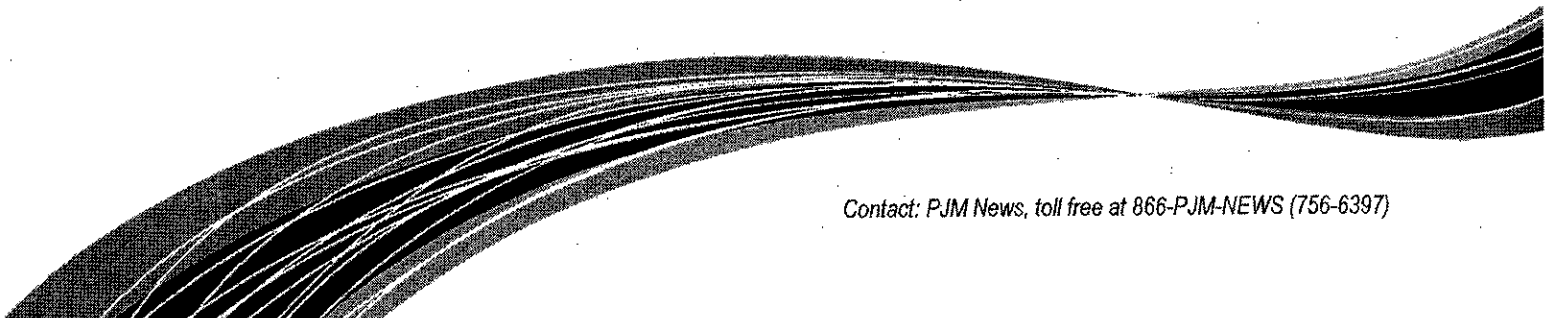
The average annual growth rate in the PJM region is forecast to be 1.6 percent. Though seemingly small, over a 10-year period it’s roughly like adding to the system Chicago and all of northern Illinois.

The growth rate in PJM’s Southern Region (Dominion’s territory) is forecast to be 1.9 percent annually. Annual growth at that rate will result in approximately 4,000 megawatts of additional demand for electricity in 10 years.

“The above average growth in the Southern Region helps drive the need to expand the power supply system there,” said Michael J. Kormos, PJM senior vice president – Reliability Services. “In just five years, peak demand in the Dominion territory is forecast to grow by 1,756 megawatts. That’s like adding more than a million houses to the system.”

In PJM’s Western Region 10-year growth in electricity use is expected to average 1.5 percent annually. The Western Region includes the service territories of American Electric Power, Allegheny Power, Commonwealth Edison, Dayton Power & Light and Duquesne Light.

–MORE–

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Contact: PJM News, toll free at 866-PJM-NEWS (756-6397)

Peak electric use also will grow 1.5 percent annually in PJM's Mid-Atlantic Region. The region includes the service territories of Atlantic City Electric, Baltimore Gas and Electric, Delmarva Power, Jersey Central Power & Light, Metropolitan Edison, PECO, Pennsylvania Electric Company, Pepco, PPL Electric Utilities, Public Service Electric and Gas Company, Rockland Electric Company and UGI Electric Service.

The forecasts are based on "normal" weather, average peak day temperatures as experienced over many years. Unusually hot weather can push electricity demand exceptionally high in one year. PJM forecasters adjust for such yearly variations to see long-term trends. The PJM region uses the greatest amount of electricity in the summer. High temperatures then cause air conditioners to run more and use more electricity.

PJM Interconnection ensures the reliability of the high-voltage electric power system serving 51 million people in all or parts of Delaware, Illinois, Indiana, Kentucky, Maryland, Michigan, New Jersey, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, West Virginia and the District of Columbia. PJM coordinates and directs the operation of the region's transmission grid, which includes 6,038 substations and 56,070 miles of transmission lines; administers the world's largest competitive wholesale electricity market; and plans regional transmission expansion improvements to maintain grid reliability and relieve congestion. Visit PJM at www.pjm.com.

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PJM CONTROL AREA - JANUARY 2007
UNRESTRICTED PEAK FORECAST: SUMMER/WINTER
2007-2017

SUMMER UNRESTRICTED PEAK (MW)		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Annual Growth Rate (10 yr)
		59,720	60,819	61,886	62,896	63,887	64,639	65,627	66,559	67,544	68,492	69,447	1.5%
	%		1.8%	1.8%	1.6%	1.6%	1.2%	1.5%	1.4%	1.5%	1.4%	1.4%	1.5%
		60,881	62,084	63,162	64,149	65,112	65,895	66,923	67,860	68,812	69,700	70,622	1.5%
	%		2.0%	1.7%	1.6%	1.5%	1.2%	1.6%	1.4%	1.4%	1.3%	1.3%	1.5%
		19,167	19,583	19,956	20,347	20,746	21,110	21,519	21,923	22,334	22,769	23,222	1.9%
	%		2.2%	1.9%	2.0%	2.0%	1.8%	1.9%	1.9%	1.9%	1.9%	2.0%	1.9%
		136,961	139,342	141,710	144,082	146,404	148,687	150,866	153,081	155,290	157,450	159,822	1.6%
	%		1.7%	1.7%	1.7%	1.6%	1.6%	1.5%	1.5%	1.4%	1.4%	1.5%	1.6%
WINTER UNRESTRICTED PEAK (MW)		06/07	07/08	08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	Annual Growth Rate (10 yr)
		46,371	46,894	47,354	47,957	48,619	49,191	49,673	50,059	50,602	51,187	51,817	1.1%
	%		1.1%	1.0%	1.3%	1.4%	1.2%	1.0%	0.8%	1.1%	1.2%	1.2%	1.1%
		51,098	51,544	51,964	52,564	53,232	53,786	54,245	54,596	55,112	55,653	56,454	1.0%
	%		0.9%	0.8%	1.2%	1.3%	1.0%	0.9%	0.6%	0.9%	1.0%	1.4%	1.0%
		16,640	16,890	17,101	17,359	17,638	17,885	18,132	18,353	18,594	18,903	19,177	1.4%
	%		1.5%	1.2%	1.5%	1.6%	1.4%	1.4%	1.2%	1.3%	1.7%	1.5%	1.4%
		112,958	114,178	115,484	116,884	118,330	119,703	120,916	122,031	123,342	124,664	126,135	1.1%
	%		1.1%	1.1%	1.2%	1.2%	1.2%	1.0%	0.9%	1.1%	1.1%	1.2%	1.1%

Note:
Projected PJM seasonal peak load under normal peak weather conditions in the absence of any load reductions due to active load management, voltage reductions or voluntary curtailments.