Monitoring Analytics

REPORT TO THE VIRGINIA STATE CORPORATION COMMISSION

Congestion in the AEP Service Territory in Virginia:

October 1, 2008 through September 30, 2010

The Independent Market Monitor for PJM

December 31, 2010

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Overview of Congestion Calculations

This report provides details of congestion associated with American Electric Power's (AEP Virginia) service territory within the state of Virginia for the periods October 1, 2008, through September 30, 2009 (2008/2009), and October 1, 2009, through September 30, 2010 (2009/2010). Congestion calculations are for the entire territory and not for any specific organization. Total congestion is the sum of all congestion for the organizations with market activity in the area. The report also includes congestion event hours for the constraints which had the largest impact on congestion charges in AEP Virginia, either positive or negative, and the congestion charges associated with each constraint. [1]

Total congestion costs equal net congestion costs plus explicit congestion costs. Net congestion costs equal load congestion payments minus generation congestion credits.[2] Explicit congestion costs are the net congestion costs associated with point-to-point energy transactions. Each of these categories of congestion costs is comprised of day-ahead and balancing congestion costs. Day-ahead congestion costs are based on day-ahead MWh and day-ahead prices while balancing congestion costs are based on deviations between day-ahead and real-time MWh priced at the congestion price in the Real-Time Energy Market. [3]

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1 Congestion event hours are hours in which a transmission constraint is binding. In day ahead, an interval equals one hour. In real time, an interval equals five minutes. In order to have a consistent metric for day-ahead and real-time congestion frequency, real-time congestion frequency is measured using the convention that an hour is constrained if any one of its component five-minute intervals is constrained.

2 Prior to June 1, 2007, PJM Congestion Accounting methods included implicit congestion costs, spot congestion costs, and explicit congestion costs. After June 1, 2007, PJM no longer calculates spot congestion costs. Implicit congestion costs are now equal to the difference between load congestion payments and generation congestion credits, i.e. net congestion. Explicit congestion costs remained the same after June 1, 2007.

3 See Table 11, "Congestion Definitions," for a summary of relevant definitions.

Table 1 and Table 2 provide a summary of the total congestion charges in the Virginia portion of AEP.

Table 1 shows a summary of the congestion costs associated with the Virginia portion of the AEP service territory starting October 2008.

Table 1 Total AEP Virginia congestion costs (Dollars (Millions)): October 1, 2008 through September 30, 2010

	Congestion Costs	Percent Change
2008/2009	($9.2)	NA
2009/2010	($11.0)	(19%)
Total	($20.2)	

Table 2 shows a monthly breakdown of congestion costs. January 2010 had the largest positive congestion cost of all the months during the 2 year period from October 2008 through September 2010. This large positive congestion cost was driven by the AEP-DOM interface constraint. During January 2010, the AEP-DOM interface was binding for 315 hours in day ahead and 39 hours in real time. The AEP-DOM interface accounted for $12.4 million or 97 percent of total congestion costs in the month of January. Table 3 shows a breakdown of the monthly congestion costs and congestion event hours from the AEP-DOM interface from October 1, 2008 through September 30, 2010.

Table 2 Monthly AEP Virginia congestion costs (Dollars (Millions)): October 1, 2008 through September 30, 2010

	Total Congestion Costs		
	2008	2009	2010
Jan		($5.3)	$12.8
Feb		$1.6	($0.4)
Mar		$2.5	$0.2
Apr		($0.7)	($1.6)
May		$0.1	($2.7)
Jun		$0.8	($3.9)
Jul		($0.8)	($8.9)
Aug		($1.4)	($1.4)
Sep		($0.4)	($4.0)
Oct	($2.2)	($1.8)	
Nov	($2.4)	$0.1	
Dec	($1.0)	$0.7	

Table 3 Monthly AEP Virginia congestion costs from the AEP-DOM interface (Dollars (Millions)): October 1, 2008 through September 30, 2010

Congestion Costs (Millions)												
		Day Ahead				Balancing					Event Hours	
		Load	Generation			Load	Generation			Grand	Day	Real
Year	Month	Payments	Credits	Explicit	Total	Payments	Credits	Explicit	Total	Total	Ahead	Time
2008	Oct	$0.0	$0.0	$0.0	$0.0	($0.1)	$0.0	($0.1)	($0.2)	($0.2)	0	43
	Nov	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	0	0
	Dec	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	0	0
2009	Jan	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	0	0
	Feb	$0.2	($0.0)	$0.0	$0.2	$0.0	$0.0	($0.1)	($0.0)	$0.2	18	15
	Mar	$0.6	($0.0)	$0.1	$0.8	($0.1)	$0.0	($0.1)	($0.3)	$0.5	78	41
	Apr	$0.0	$0.0	$0.0	$0.0	($0.0)	$0.0	($0.0)	($0.0)	($0.0)	0	1
	May	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	0	0
	Jun	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	5	0
	Jul	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	0	0
	Aug	$0.1	$0.0	$0.0	$0.1	$0.0	$0.0	$0.0	$0.0	$0.1	12	0
	Sep	$0.0	$0.0	$0.0	$0.0	($0.0)	$0.0	($0.0)	($0.0)	$0.0	13	7
	Oct	$0.1	($0.0)	$0.0	$0.1	($0.0)	$0.0	($0.0)	($0.0)	$0.1	23	9
	Nov	$0.0	($0.0)	$0.0	$0.0	($0.0)	$0.0	($0.0)	($0.0)	$0.0	21	6
	Dec	$1.1	$0.0	$0.2	$1.2	($0.0)	($0.1)	($0.0)	($0.0)	$1.2	155	57
2010	Jan	$11.1	$0.8	$1.5	$11.9	$0.3	($0.3)	($0.0)	$0.5	$12.4	315	39
	Feb	$0.7	$0.0	$0.2	$0.9	($0.0)	($0.0)	($0.0)	($0.0)	$0.8	105	21
	Mar	$0.1	$0.0	$0.0	$0.2	($0.0)	($0.0)	($0.1)	($0.1)	$0.1	32	16
	Apr	$0.0	$0.0	$0.0	$0.1	($0.0)	($0.1)	($0.3)	($0.3)	($0.2)	19	5
	May	$0.0	$0.0	$0.0	$0.0	($0.0)	($0.0)	$0.0	$0.0	$0.0	0	1
	Jun	$0.0	$0.0	$0.0	$0.0	($0.0)	($0.0)	($0.0)	($0.0)	($0.0)	0	2
	Jul	$0.0	$0.0	$0.0	$0.0	($0.0)	($0.0)	($0.0)	$0.0	$0.0	0	2
	Aug	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	0	0
	Sep	$0.0	$0.0	$0.0	$0.0	($0.0)	($0.0)	$0.0	$0.0	$0.0	0	3

Congestion charges can be both positive and negative. When a constraint binds, the price effects of that constraint vary. The system marginal price (SMP) is uniform for all areas, while the congestion components of Locational Marginal Price (LMP) will either be positive or negative in a specific area, meaning that actual LMPs are above or below the SMP.[4] Generally, an area affected by a constraint will have increased prices and the unconstrained area will have lower prices. An area located downstream from a constrained element will experience higher prices, due to congestion, than an area located upstream from the constrained element.

[4] The SMP is the price of the distributed load reference bus. The price at the reference bus is equivalent to the five minute real-time or hourly day-ahead load weighted PJM LMP.

Day-ahead congestion charges and credits are based on MWh and LMP in the Day-Ahead Energy Market. Balancing congestion charges and credits are based on load or generation deviations between the Day-Ahead and Real-Time Energy Markets and LMP in the Real-Time Energy Market. If a participant has real-time generation or load that is greater than its day-ahead generation or load then the deviation will be positive. If there is a positive load deviation at a bus where real-time LMP has a positive congestion component, positive balancing congestion costs will result. Similarly, if there is a positive load deviation at a bus where real-time LMP has a negative congestion component, negative balancing congestion costs will result. If a participant has real-time generation or load that is less than its day-ahead generation or load then the deviation will be negative. If there is a negative load deviation at a bus where real-time LMP has a positive congestion component, negative balancing congestion costs will result. Similarly, if there is a negative load deviation at a bus where real-time LMP has a positive congestion component, negative balancing congestion costs will result.

In order to provide a more detailed explanation of the congestion calculations from which the total congestion charges are derived, each category of congestion is defined and a table of the congestion charges or credits associated with each category is provided.

Net Congestion Bill

The net congestion bill is defined by PJM settlements. The net congestion bill is calculated by subtracting generating congestion credits from load congestion payments. The logic is that increased congestion payments by load are offset by increased congestion revenues to generation for the area analyzed. Whether the net congestion bill is an appropriate measure of congestion for load depends on who pays the load congestion payments and who receives the generation congestion credits. The net congestion bill is an appropriate measure of congestion for a utility that charges load congestion payments to load and credits generation congestion credits to load. The net congestion bill is not an appropriate measure of congestion in situations where load pays the load congestion payments but does not receive the generation credits as an offset.

Load congestion payments are netted against generation congestion credits on an hourly basis, by participant, and then summed for the given period. Generation credits result either from the direct ownership of generation or from the purchase of supply from another entity via a bilateral transaction.

Day-ahead and balancing load congestion payments and generation congestion credits are calculated.

- **Day-ahead Load Congestion Payments.** Day-ahead load congestion payments are calculated for all cleared demand, decrement bids, and day-ahead energy sale

transactions. (Decrement bids and energy sales can be thought of as scheduled load.) Day-ahead load congestion payments are calculated using load MWh and the congestion component of LMP (CLMP) for the load bus, decrement bid location, or the source of the sale transaction, as applicable.

- **Day-ahead Generation Congestion Credits.** Day-ahead generation congestion credits are calculated for all cleared generation, increment offers and day-ahead energy purchase transactions. (Increment offers and energy purchases can be thought of as scheduled generation.) Day-ahead generation congestion credits are calculated using generation MWh and the CLMP for the generator bus, increment offer location, or the sink of the purchase transaction, as applicable.

- **Balancing Load Congestion Payments.** Balancing load congestion payments are calculated for all deviations between a PJM participant's real-time load and energy sale transactions and their day ahead cleared demand, decrement bids, and energy sale transactions. Balancing load congestion payments are calculated using MWh deviations and the real-time CLMP for each bus where a deviation from a member's day ahead scheduled load exists.

- **Balancing Generation Congestion Credits.** Balancing generation congestion credits are calculated for all deviations between a PJM participant's real-time generation and energy purchase transactions and the day-ahead cleared generation, increment offers and energy purchase transactions. Balancing generation congestion credits are calculated using MWh deviations and the real-time CLMP for each bus where a deviation from a member's day-ahead scheduled generation exists.

Explicit Congestion Costs

Explicit congestion costs are the congestion costs associated with moving energy from one specific point to another across the transmission system. Such point-to-point transactions may be either internal to PJM or be import or export transactions.

- **Internal Purchases.** For internal purchases the explicit congestion costs equal the difference in CLMPs between the sink bus and source bus of the purchase multiplied by the transacted MWh. The buyer pays the congestion costs associated with internal purchases.

- **Import and Export Transactions.** For point-to-point and network secondary transmission customers, the explicit congestion costs equal the difference in CLMPs between the sink bus and source bus multiplied by the transacted MWh. The transmission customer pays the congestion costs associated with an import or export transaction.

The explicit congestion costs calculated for the Virginia portion of AEP represent the costs associated with point to point transactions that sink in the Virginia portion of AEP. For example, if a transaction is sourced in Pennsylvania and sinks in AEP Virginia, the charges would be based on the MWh of the transaction multiplied by the difference between the sink CLMP and the source CLMP. The resulting congestion costs are allocated to the zone and state of the sink location, in this case AEP Virginia. The sink location is the buyer's location and reflects the cost to the buyer of the internal purchase or external transaction.

Table 4 shows the combined day-ahead and balancing load congestion payments, generation congestion credits, and explicit congestion costs for the AEP Virginia service territory for the 24-month period from October 1, 2008 through September 30, 2010. Table 5 shows the congestion cost categories separated by day-ahead and balancing to show the contributions from both the Day-Ahead and Real-Time Markets.

Table 4 Total AEP Virginia congestion costs by category: October 1, 2008 through September 30, 2010

Congestion Costs (Millions)					
	Load Payments	Generation Credits	Net Congestion Bill	Explicit	Grand Total
2008/2009	($13.8)	($0.5)	($13.3)	$4.1	($9.2)
2009/2010	($17.5)	($2.3)	($15.2)	$4.2	($11.0)

Table 5 Total day-ahead and balancing AEP Virginia congestion costs by category: October 1, 2008 through September 30, 2010

Congestion Costs (Millions)									
	Day Ahead				Balancing				
	Load Payments	Generation Credits	Explicit	Total	Load Payments	Generation Credits	Explicit	Total	Grand Total
2008/2009	($13.8)	($2.0)	$4.2	($7.6)	($0.0)	$1.5	($0.1)	($1.6)	($9.2)
2009/2010	($17.8)	($2.0)	$4.9	($10.8)	$0.3	($0.3)	($0.7)	($0.1)	($11.0)

Table 6 lists the top 15 constraints affecting AEP Virginia congestion costs for the period from October 1, 2009 through September 30, 2010. Table 6 provides the type of constraint (Line, Transformer, or Interface), the location of the constraint and the congestion event hours for the period analyzed.

Table 6 Top 15 constraints affecting AEP Virginia congestion costs: October 1, 2009 through September 30, 2010

No.	Constraint	Type	Location	Event Hours Day Ahead	Event Hours Real Time
1	AEP-DOM	Interface	500	670	161
2	AP South	Interface	500	4,454	1,432
3	Cloverdale - Lexington	Line	AEP	1,307	719
4	Danville - East Danville	Line	Dominion	1,428	140
5	5004/5005 Interface	Interface	500	1,512	614
6	Doubs	Transformer	AP	1,151	647
7	West	Interface	500	272	60
8	East Frankfort - Crete	Line	ComEd	2,886	1,183
9	Brandon Shores - Riverside	Line	BGE	468	164
10	Clover	Transformer	Dominion	464	246
11	Cloverdale - Ivy Hill	Line	AEP	0	111
12	Millville - Sleepy Hollow	Line	Dominion	0	0
13	Millville - Old Chapel	Line	AP	179	123
14	Tiltonsville - Windsor	Line	AP	2,145	484
15	Baker - Broadford	Line	AEP	10	74

Table 7 shows the congestion cost details of the top 15 constraints affecting AEP Virginia for the period from October 1, 2009 through September 30, 2010. The AEP-DOM interface had the largest impact on congestion costs with a total of $14.4 million or -131 percent of total congestion costs. In January, the AEP-DOM interface accounted for $12.4 million or 97 percent of total congestion costs.

Table 7 Congestion cost details for the top 15 constraints affecting AEP Virginia: October 1, 2009 through September 30, 2010

	Congestion Costs (Millions)								
	Day Ahead				Balancing				
Constraint	Load Payments	Generation Credits	Explicit	Total	Load Payments	Generation Credits	Explicit	Total	Grand Total
AEP-DOM	$13.1	$0.8	$2.0	$14.3	$0.1	($0.4)	($0.5)	$0.1	$14.4
AP South	$4.5	($1.0)	$2.4	$7.9	($0.7)	($0.0)	$0.1	($0.5)	$7.4
Cloverdale - Lexington	($6.3)	($0.3)	($0.3)	($6.3)	$0.1	$0.6	$0.2	($0.2)	($6.5)
Danville - East Danville	($4.1)	$0.0	($0.8)	($4.9)	($0.2)	$0.1	$0.1	($0.2)	($5.2)
5004/5005 Interface	($5.9)	($0.2)	$0.1	($5.6)	$0.6	$0.1	$0.1	$0.6	($5.0)
Doubs	($4.9)	($0.3)	$0.0	($4.6)	$0.2	$0.0	$0.1	$0.3	($4.3)
West	($2.3)	($0.1)	$0.0	($2.1)	$0.1	($0.0)	$0.0	$0.1	($2.0)
East Frankfort - Crete	$1.8	$0.1	$0.0	$1.7	($0.1)	($0.1)	($0.0)	($0.0)	$1.7
Brandon Shores - Riverside	($1.6)	($0.1)	($0.1)	($1.5)	$0.1	($0.0)	$0.0	$0.1	($1.4)
Clover	($1.9)	($0.1)	($0.2)	($2.0)	$0.6	($0.1)	($0.0)	$0.7	($1.3)
Cloverdale - Ivy Hill	$0.0	$0.0	$0.0	$0.0	($1.1)	$0.0	($0.0)	($1.1)	($1.1)
Millville - Sleepy Hollow	($1.1)	($0.0)	$0.0	($1.1)	$0.0	$0.0	$0.0	$0.0	($1.1)
Millville - Old Chapel	($1.1)	($0.0)	($0.0)	($1.0)	$0.0	$0.0	$0.1	$0.0	($1.0)
Tiltonsville - Windsor	($1.2)	($0.1)	$0.1	($1.0)	$0.1	($0.0)	$0.0	$0.2	($0.8)
Baker - Broadford	$0.1	$0.0	$0.0	$0.1	($0.4)	($0.4)	($0.9)	($0.9)	($0.8)

Table 8 lists the top 15 constraints affecting AEP Virginia congestion costs for the period beginning October 1, 2008 and ending September 30, 2009. Table 8 provides the type of constraint (Line, Transformer, or Interface), the location of the constraint and the congestion event hours for the period analyzed.

Table 8 Top 15 constraints affecting AEP Virginia congestion costs: October 1, 2008 through September 30, 2009

				Event Hours	
No.	Constraint	Type	Location	Day Ahead	Real Time
1	Cloverdale - Lexington	Line	AEP	1,341	642
2	West	Interface	500	884	103
3	AP South	Interface	500	3,949	651
4	Kammer	Transformer	500	4,492	1,696
5	5004/5005 Interface	Interface	500	953	325
6	Mount Storm - Pruntytown	Line	AP	1,538	173
7	Ruth - Turner	Line	AEP	704	288
8	Kanawha River	Transformer	AEP	261	73
9	Dunes Acres - Michigan City	Flowgate	Midwest ISO	3,266	1,079
10	Dickerson - Pleasant View	Line	Pepco	416	107
11	Kanawha River - Bradley	Line	AEP	48	15
12	East Frankfort - Crete	Line	ComEd	1,962	352
13	Wylie Ridge	Transformer	AP	359	404
14	Sammis - Wylie Ridge	Line	AP	1,840	609
15	Kanawha - Kincaid	Line	AEP	291	0

Table 9 shows the congestion cost details of the top 15 constraints affecting AEP Virginia for the period beginning October 1, 2008 and ending September 30, 2009. The Cloverdale – Lexington line had the largest impact on congestion costs with a total of negative $6.0 million or 65 percent of total congestion costs. The AP South interface had the largest positive contribution to congestion costs with positive $4.4 million. The Ruth – Turner line, located in AEP, was the second largest constraint with a positive contribution to congestion costs with positive $1.8 million.

Table 9 Congestion cost details for the top 15 constraints affecting AEP Virginia: October 1, 2008 through September 30, 2009

	Congestion Costs (Millions)								
	Day Ahead				Balancing				
	Load	Generation			Load	Generation			Grand
Constraint	Payments	Credits	Explicit	Total	Payments	Credits	Explicit	Total	Total
Cloverdale - Lexington	($6.2)	($0.3)	($0.2)	($6.2)	$0.6	$0.5	$0.1	$0.2	($6.0)
West	($4.8)	($0.2)	$0.0	($4.6)	$0.1	$0.1	$0.0	($0.0)	($4.6)
AP South	$2.2	($1.1)	$1.7	$5.1	($0.5)	$0.1	($0.1)	($0.7)	$4.4
Kammer	($5.1)	($0.2)	$0.8	($4.0)	$0.0	$0.1	($0.0)	($0.1)	($4.1)
5004/5005 Interface	($3.1)	($0.1)	$0.1	($2.8)	$0.3	$0.1	$0.0	$0.2	($2.6)
Mount Storm - Pruntytown	$1.0	($0.4)	$0.7	$2.2	($0.1)	($0.0)	($0.0)	($0.1)	$2.1
Ruth - Turner	$2.1	$0.3	$0.3	$2.0	($0.2)	($0.0)	($0.1)	($0.3)	$1.8
Kanawha River	$1.7	$0.3	$0.2	$1.6	$0.1	$0.0	($0.0)	$0.0	$1.6
Dunes Acres - Michigan City	$2.1	$0.1	($0.8)	$1.2	($0.1)	($0.1)	$0.4	$0.4	$1.6
Dickerson - Pleasant View	($1.6)	($0.1)	($0.1)	($1.6)	$0.1	$0.0	$0.0	$0.1	($1.5)
Kanawha River - Bradley	$1.3	$0.1	$0.1	$1.3	($0.0)	$0.0	($0.0)	($0.0)	$1.3
East Frankfort - Crete	$1.1	$0.0	($0.0)	$1.0	($0.1)	($0.0)	($0.0)	($0.1)	$1.0
Wylie Ridge	($0.9)	($0.1)	$0.2	($0.6)	($0.1)	$0.1	($0.0)	($0.3)	($0.9)
Sammis - Wylie Ridge	($1.0)	($0.1)	$0.2	($0.7)	($0.1)	$0.0	($0.0)	($0.1)	($0.9)
Kanawha - Kincaid	$0.8	$0.0	$0.1	$0.9	$0.0	$0.0	$0.0	$0.0	$0.9

Table 10 shows the largest deltas (differences) by constraint for the period ending September 30, 2010 compared to the period ending September 30, 2009. Congestion costs for the AEP-DOM interface increased from the 2008/2009 period to the 2009/2010 period by $13.8 million. The majority of this increase came during January 2010, where the AEP-DOM interface accounted for $12.4 million in congestion costs or 90 percent of the $13.8 million total change in congestion costs from 2008/2009 to 2009/2010.

Table 10 Top 15 constraint congestion cost deltas from the prior period: October 1, 2009 through September 30, 2010 minus October 1, 2008 through September 30, 2009

	Congestion Cost Deltas (Millions)								
	Day Ahead				Balancing				
Constraint	Load Payments	Generation Credits	Explicit	Total	Load Payments	Generation Credits	Explicit	Total	Grand Total
AEP-DOM	$12.2	$0.8	$1.8	$13.2	$0.4	($0.5)	($0.2)	$0.6	$13.8
Danville - East Danville	($3.8)	$0.0	($0.7)	($4.5)	($0.2)	$0.1	$0.1	($0.2)	($4.7)
Kammer	$5.1	$0.2	($0.8)	$4.0	($0.0)	($0.1)	$0.0	$0.1	$4.1
Doubs	($4.7)	($0.3)	$0.0	($4.4)	$0.2	$0.0	$0.1	$0.3	($4.1)
AP South	$2.3	$0.1	$0.7	$2.8	($0.2)	($0.1)	$0.2	$0.2	$3.0
West	$2.6	$0.1	($0.0)	$2.5	$0.1	($0.1)	$0.0	$0.1	$2.6
5004/5005 Interface	($2.9)	($0.1)	$0.0	($2.8)	$0.3	($0.0)	$0.0	$0.4	($2.4)
Mount Storm - Pruntytown	($0.7)	$0.3	($0.5)	($1.5)	($0.1)	($0.1)	($0.0)	($0.1)	($1.6)
Ruth - Turner	($1.9)	($0.3)	($0.2)	($1.8)	$0.2	$0.0	$0.1	$0.3	($1.6)
Dickerson - Pleasant View	$1.6	$0.1	$0.1	$1.6	($0.1)	$0.0	($0.0)	($0.1)	$1.5
Dunes Acres - Michigan City	($1.9)	($0.1)	$0.8	($1.1)	$0.1	$0.1	($0.4)	($0.4)	($1.4)
Brandon Shores - Riverside	($1.5)	($0.1)	($0.1)	($1.5)	$0.1	($0.0)	$0.0	$0.1	($1.4)
Clover	($1.9)	($0.1)	($0.2)	($2.0)	$0.6	($0.1)	($0.0)	$0.7	($1.3)
Kanawha River - Bradley	($1.3)	($0.1)	($0.1)	($1.3)	$0.0	($0.0)	$0.0	$0.0	($1.3)
Cloverdale - Ivy Hill	$0.0	$0.0	$0.0	$0.0	($1.1)	$0.0	($0.0)	($1.1)	($1.1)

Conclusion

Congestion costs in the AEP service territory of Virginia decreased from 2008/2009 to 2009/2010 by $1.8 million or 19 percent. Load congestion payments decreased by $3.6 million from 2008/2009 to 2009/2010, generation congestion credits decreased by $1.8 million from 2008/2009 to 2009/2010 and explicit congestion costs increased by $0.1 million from 2008/2009 to 2009/2010. Congestion costs ranged from -$8.9 million in July 2010 to $12.8 million in January 2010. Excluding January, monthly congestion costs were generally negative in the AEP service territory of Virginia but were slightly positive in a few months during the 2009/2010 period. The large positive congestion costs in January 2010, resulted from the AEP-DOM interface, which accounted for 97 percent of the total congestion costs in January. The day-ahead congestion costs from the AEP-DOM interface were $11.9 million and accounted for 93 percent of the total congestion costs in January.

Congestion Definitions

Table 11 Congestion Definitions

Congestion Category	Calculation
Day-Ahead Load Congestion Payments	Day-Ahead Demand MWh * Day-Ahead CLMP
Day-Ahead Generation Congestion Credits	Day-Ahead Supply MWh * Day-Ahead CLMP
Day-Ahead Net Congestion Bill	Day-Ahead Load Congestion Payments - Day-Ahead Generation Congestion Credits
Day-Ahead Explicit Congestion Costs	Day-Ahead Transaction MW * (Day-Ahead Sink CLMP - Day-Ahead Source CLMP)
Day-Ahead Total Congestion Costs	Day-Ahead Load Congestion Payments - Day-Ahead Generation Congestion Credits + Day-Ahead Explicit Congestion Costs
Balancing Load Congestion Payments	Balancing Demand MWh * Real-Time CLMP
Balancing Generation Congestion Credits	Balancing Supply MWh * Real-Time CLMP
Balancing Net Congestion Bill	Balancing Load Congestion Payments - Balancing Generation Congestion Credits
Balancing Explicit Congestion Costs	Balancing Transaction MW * (Real-Time Sink CLMP - Real-Time Source CLMP)
Balancing Total Congestion Costs	Balancing Load Congestion Payments - Balancing Generation Congestion Credits + Balancing Explicit Congestion Costs
Total Congestion Costs	Day-Ahead Total Congestion Costs + Balancing Total Congestion Costs

MWh Category	Definition
Day-Ahead Demand MWh	Cleared Demand, Decrement Bids, Energy Sale Transactions
Day-Ahead Supply MWh	Cleared Generation, Increment Bids, Energy Purchase Transactions
Real-Time Demand MWh	Load and Energy Sale Transactions
Real-Time Supply MWh	Generation and Energy Purchase Transactions
Balancing Demand MWh	Real-Time Demand MWh - Day-Ahead Demand MWh
Balancing Supply MWh	Real-Time Supply MWh - Day-Ahead Supply MWh