



Market Efficiency Analysis Progress Report

PJM Planning Committee
Transmission Expansion Advisory Committee
April 18, 2007

- Energy market simulation analysis of 502 Junction-Loudoun 500 kV line completed for all sensitivity scenarios for 2007, 2010 and 2013.
 - Change in FTR credits by zone and change in production cost by zone compiled for 2007 base run
 - Change in zonal production cost and change in zonal generation revenue compiled for 2007, 2010 and 2013 base case runs
- Energy market simulation analysis completed for 2007, 2010 and 2013 base assumption cases for:
 - Susquehanna-Roseland 500 kV
 - Bossards-Roseland 500 kV
 - Amos-Kempton circuit
 - Kempton-Deans circuit
 - Amos-Kempton-Deans circuit
 - Possum Point-Calvert Cliffs-Indian River-Salem circuit
 - Kammer-Prexy-Conemaugh-TMI circuit
 - South Canton-Keystone-Sunbury circuit



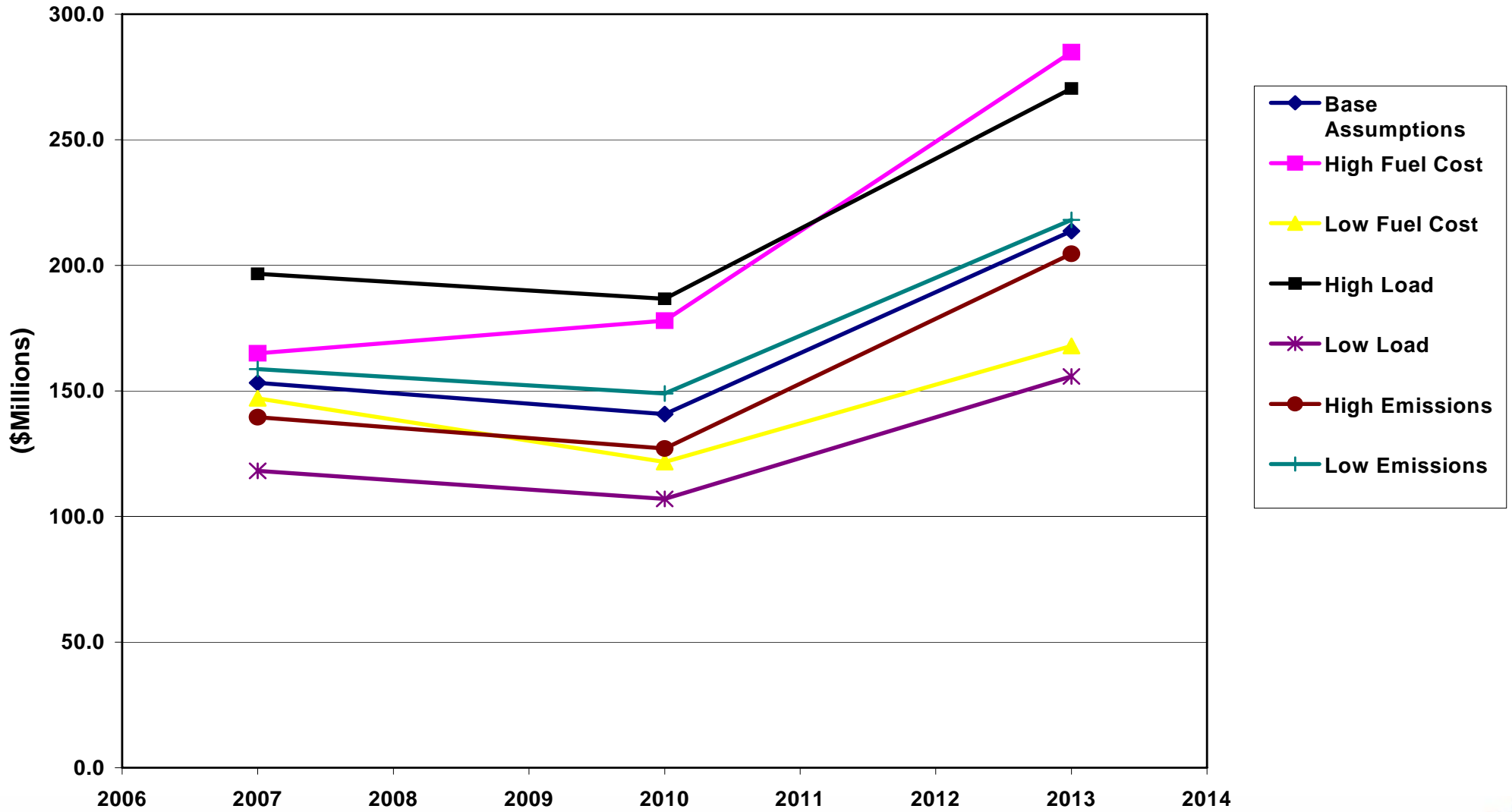
Progress Report of Energy Market Simulation Analysis for 502 Junction-Loudoun 500 kV Line

Sensitivity	Year				
	2007	2010	2013	2016	2021
Base Assumptions	X	X	X	X	X
High Fuel	X	X	X	X	X
Low Fuel	X	X	X	X	X
High Load	X	X	X	X	X
Low Load	X	X	X	X	X
High Emissions	X	X	X	X	X
Low Emission	X	X	X	X	X
High Generation	n/a	n/a	n/a	X	X
Low Generation	n/a	n/a	n/a	X	X
Others ??	X	X	X	X	X

For 502Junc-Mdwbrk-Loudoun 500 kV line, energy market simulation analysis complete for 2007, 2010 and 2013 including all sensitivity scenarios



System Production Cost Savings associated with 502 Junction-Meadowbrook-Loudoun 500 kV Line





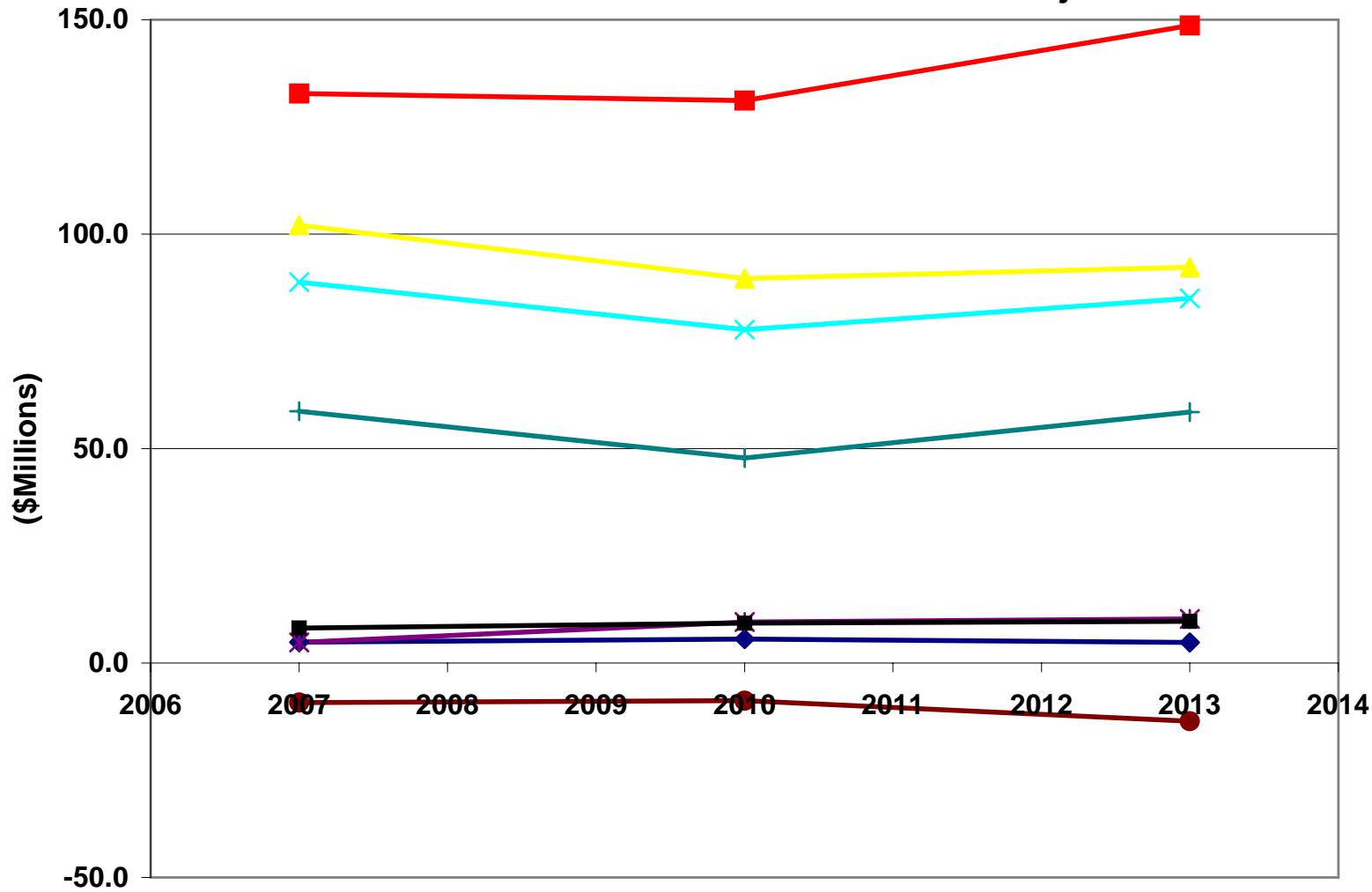
Progress Report of Energy Market Simulation Analysis for Backbone Projects

Sensitivity	Year				
	2007	2010	2013	2016	2021
Base Assumptions	X	X	X	X	X
High Fuel	X	X	X	X	X
Low Fuel	X	X	X	X	X
High Load	X	X	X	X	X
Low Load	X	X	X	X	X
High Emissions	X	X	X	X	X
Low Emission	X	X	X	X	X
High Generation	n/a	n/a	n/a	X	X
Low Generation	n/a	n/a	n/a	X	X
Others ??	X	X	X	X	X

Base case analysis for 2007, 2010 and 2013 complete for following projects:

- Susq-Roseland
- Bossards-Roseland
- Amos-Kempton
- Kempton-Deans
- Amos-Kempton-Deans
- PossPt-CalvCliffs-IR-Salem
- Kammer-Prexy-Conema-TMI
- S.Canton-Keystone-Sunbury

System Production Cost Savings associated with Various Backbone Projects⁽¹⁾



(1) These savings are measured against the 2011 RTEP system including the 502 Junction-Meadowbrook-Loudoun 500 kV line



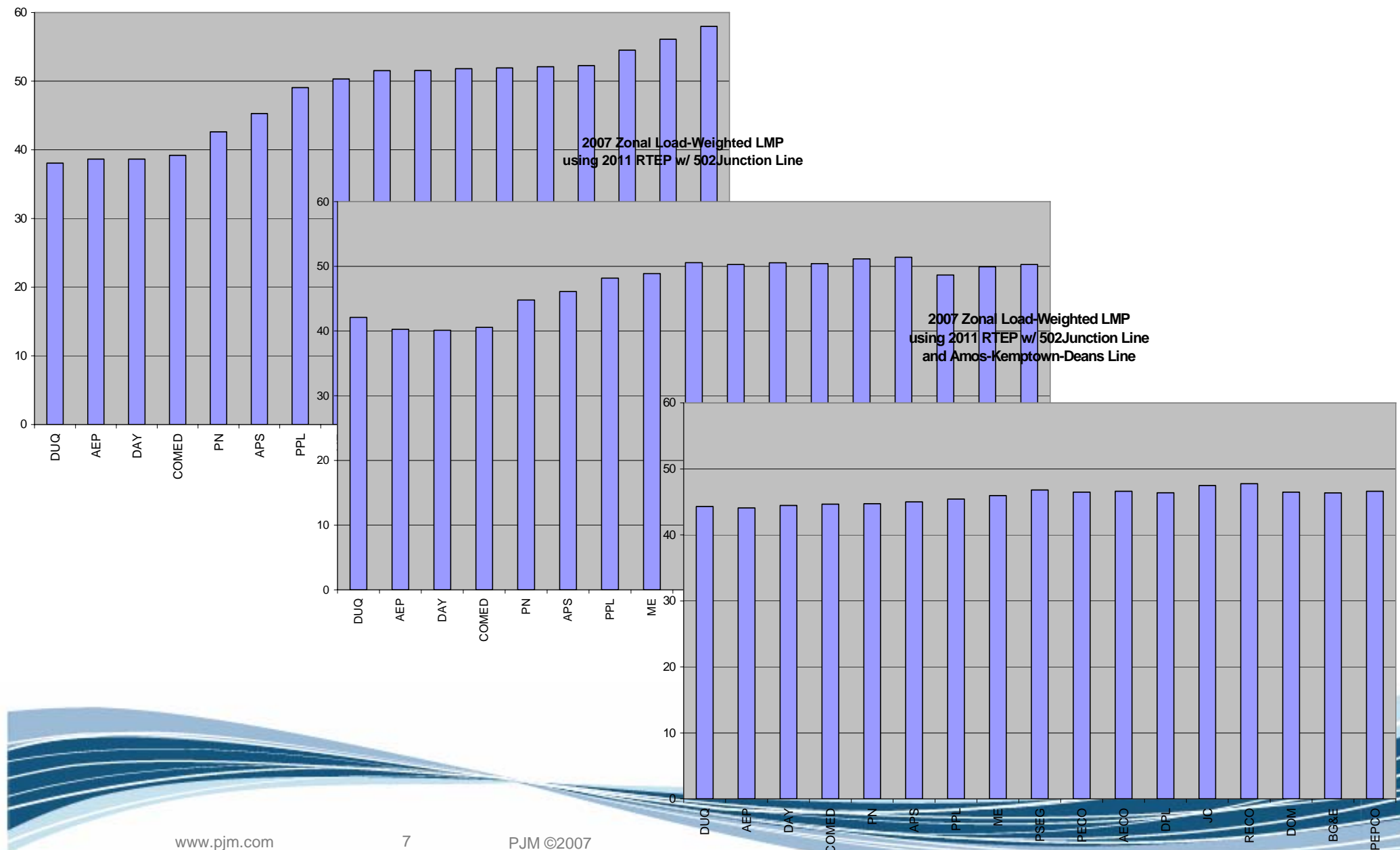


Impact of Increased Transmission Capability on Zonal LMPs

2007 Zonal Load-Weighted LMP
using 2011 RTEP w/o 502Junction Line

2007 Zonal Load-Weighted LMP
using 2011 RTEP w/ 502Junction Line

2007 Zonal Load-Weighted LMP
using 2011 RTEP w/ 502Junction Line
and Amos-Kemptown-Deans Line





Change in Zonal Load Payments & FTR Credits associated with 502 Junction-Loudoun Line

Zone	2007 Base Simulation w/o 502Junc-Loudoun line		2007 Base Simulation w/ 502Junc-Loudoun line		Delta Load Payment		Delta FTR Credit	Delta Load Payment minus Delta FTR Credit	
	Load Payment (\$)	\$/MWh	Load Payment (\$)	\$/MWh	(\$)	\$/MWh	(\$)	(\$)	\$/MWh
ACEC	618,618,364	51.82	603,210,345	50.53	-15,408,019	-1.29	-1,545,577	-13,862,443	-1.16
AEP	5,371,261,726	38.64	5,595,666,290	40.26	224,404,564	1.61	62,015,390	162,389,174	1.17
APS	2,339,348,764	45.29	2,382,018,354	46.11	42,669,590	0.83	-410,427,673	453,097,263	8.77
BG&E	1,978,166,180	56.11	1,760,499,769	49.94	-217,666,411	-6.17	-36,804,827	-180,861,584	-5.13
COED	4,164,080,516	39.18	4,310,488,946	40.56	146,408,430	1.38	-5,349,609	151,758,039	1.43
DOM	5,183,001,308	54.51	4,627,398,244	48.67	-555,603,064	-5.84	-358,988,286	-196,614,778	-2.07
DP&L	724,908,697	38.66	752,371,800	40.12	27,463,104	1.46	-5,745,651	33,208,754	1.77
DPLC	1,027,352,040	51.93	997,157,085	50.40	-30,194,955	-1.53	-5,172,447	-25,022,508	-1.26
DQE	558,563,943	38.06	617,669,745	42.09	59,105,802	4.03	16,292,179	42,813,622	2.92
JC	1,306,051,858	52.09	1,282,434,900	51.15	-23,616,958	-0.94	-10,442,764	-13,174,194	-0.53
ME	793,076,158	50.33	770,322,760	48.89	-22,753,399	-1.44	-16,144,623	-6,608,776	-0.42
PECO	2,139,352,180	51.56	2,086,785,257	50.29	-52,566,923	-1.27	-4,894,038	-47,672,885	-1.15
PEPCO	1,933,019,895	57.97	1,676,834,934	50.29	-256,184,961	-7.68	-17,042,605	-239,142,356	-7.17
PN	771,591,700	42.62	810,742,112	44.79	39,150,412	2.16	-9,748,947	48,899,359	2.70
PPL	2,091,095,307	49.06	2,052,912,311	48.16	-38,182,996	-0.90	-28,820,188	-9,362,808	-0.22
PSEG	2,501,099,258	51.53	2,454,367,529	50.57	-46,731,729	-0.96	-5,518,397	-41,213,332	-0.85
RECO	79,706,373	52.27	78,395,461	51.41	-1,310,912	-0.86	-71,899	-1,239,013	-0.81
Neptune	283,516,438	47.25	278,529,398	46.42	-4,987,040	-0.83	-108,482	-4,878,558	-0.81
Total	33,863,810,704	46.72	33,137,805,238	45.72	-726,005,466	-1.00	-838,518,441	112,512,976	0.16



Change in Zonal Load Payment, FTR Credits & Production Costs associated with 502 Junction-Loudoun Line (2007 Simulation)

Zone	Delta Load Payment			Delta Load Payment - FTR Credit			Delta Production Cost		
	(\$000)	% of Decrease	% of Increase	(\$000)	% of Decrease	% of Increase	(\$000)	% of Decrease	% of Increase
ACEC	-15,408	1.2%		-13,862	1.8%		-7,119	1.6%	
AEP	224,405		41.6%	162,389		18.2%	104,611		35.1%
APS	42,670		7.9%	453,097		50.8%	120,323		40.3%
BG&E	-217,666	17.2%		-180,862	23.2%		-41,354	9.2%	
COED	146,408		27.2%	151,758		17.0%	44,908		15.0%
DOM	-555,603	43.9%		-196,615	25.2%		-233,243	51.6%	
DP&L	27,463		5.1%	33,209		3.7%	11,162		3.7%
DPLC	-30,195	2.4%		-25,023	3.2%		-21,197	4.7%	
DQE	59,106		11.0%	42,814		4.8%	8,855		3.0%
JC	-23,617	1.9%		-13,174	1.7%		2,348		0.8%
ME	-22,753	1.8%		-6,609	0.8%		-10,314	2.3%	
PECO	-52,567	4.2%		-47,673	6.1%		-34,039	7.5%	
PEPCO	-256,185	20.2%		-239,142	30.7%		-73,519	16.3%	
PN	39,150		7.3%	48,899		5.5%	6,250		2.1%
PPL	-38,183	3.0%		-9,363	1.2%		-11,937	2.6%	
PSEG	-46,732	3.7%		-41,213	5.3%		-18,987	4.2%	
RECO	-1,311	0.1%		-1,239	0.2%		0		
Neptune	-4,987	0.4%		-4,879	0.6%		0		
Total	-726,005	100.0%	100.0%	112,513	100.0%	100.0%	-153,254	100.0%	100.0%

Total Decrease -1,265,207
Total Increase 539,202

-779,653
892,166

-451,710
298,456



Change in Zonal Load Payments associated with 502 Junction-Loudoun Line (2007, 2010 & 2013 Simulations)

Zone	2007 Base Case Assumptions				2010 Base Case Assumptions				2013 Base Case Assumptions			
	Delta Load Payment (\$000)	Delta LMP	% of Decrease	% of Increase	Delta Load Payment (\$000)	Delta LMP	% of Decrease	% of Increase	Delta Load Payment (\$000)	Delta LMP	% of Decrease	% of Increase
ACEC	-15,408	-1.29	1.2%		-13,678	-1.08	1.1%		-30,781	-2.30	1.5%	
AEP	224,405	1.61		41.6%	294,082	2.04		45.4%	402,210	2.70		46.9%
APS	42,670	0.83		7.9%	32,554	0.62		5.0%	-9,037	-0.17	0.4%	
BG&E	-217,666	-6.17	17.2%		-226,795	-6.18	17.9%		-325,223	-8.60	16.1%	
COED	146,408	1.38		27.2%	187,511	1.63		29.0%	288,569	2.35		33.7%
DOM	-555,603	-5.84	43.9%		-554,698	-5.52	43.7%		-834,986	-7.88	41.2%	
DP&L	27,463	1.46		5.1%	34,271	1.75		5.3%	52,463	2.57		6.1%
DPLC	-30,195	-1.53	2.4%		-27,015	-1.30	2.1%		-54,018	-2.48	2.7%	
DQE	59,106	4.03		11.0%	59,487	3.93		9.2%	73,087	4.69		8.5%
JC	-23,617	-0.94	1.9%		-20,698	-0.78	1.6%		-55,157	-1.95	2.7%	
ME	-22,753	-1.44	1.8%		-23,055	-1.39	1.8%		-42,368	-2.44	2.1%	
PECO	-52,567	-1.27	4.2%		-47,152	-1.09	3.7%		-98,688	-2.18	4.9%	
PEPCO	-256,185	-7.68	20.2%		-268,997	-7.70	21.2%		-385,216	-10.59	19.0%	
PN	39,150	2.16		7.3%	39,182	2.05		6.1%	40,967	2.04		4.8%
PPL	-38,183	-0.90	3.0%		-37,316	-0.84	2.9%		-76,080	-1.64	3.8%	
PSEG	-46,732	-0.96	3.7%		-40,720	-0.80	3.2%		-99,197	-1.86	4.9%	
RECO	-1,311	-0.86	0.1%		-1,122	-0.74	0.1%		-2,922	-1.92	0.1%	
Neptune	-4,987	-0.83	0.4%		-4,243	-0.71	0.3%		-8,156	-1.36	0.4%	
GE VFT	0	0.00			-2,831	-0.98	0.2%		-3,948	-1.37	0.2%	
Total	-726,005	-1.00	100.0%	100.0%	-621,234	-0.81	100.0%	100.0%	-1,168,480	-1.46	100.0%	100.0%

Total Decrease -1,265,207
Total Increase 539,202

-1,268,321
647,087

-2,025,776
857,296



Change in Zonal Production Costs and Zonal Generator Revenues associated with 502 Junction-Loudoun Line (2007 Simulation)

ZONE	Delta Gen MWh	% of Decrease	% of Increase	Delta Production Cost (\$000)	% of Decrease	% of Increase	Delta Gen Rev (\$000)	% of Decrease	% of Increase
ACEC	-150,806	2.0%		-7,119	1.6%		-13,414	1.1%	
AEP	2,903,906		38.3%	104,611		35.1%	359,640		27.5%
APS	3,203,334		42.2%	120,323		40.3%	506,789		38.8%
BG&E	-909,279	12.0%		-41,354	9.2%		-211,442	17.3%	
COED	760,690		10.0%	44,908		15.0%	190,246		14.6%
DOM	-3,346,975	44.1%		-233,243	51.6%		-467,362	38.2%	
DP&L	199,986		2.6%	11,162		3.7%	36,706		2.8%
DPLC	-424,480	5.6%		-21,197	4.7%		-36,650	3.0%	
DQE	255,751		3.4%	8,855		3.0%	84,204		6.4%
JC	36,768		0.5%	2,348		0.8%	-7,768	0.6%	
ME	-242,491	3.2%		-10,314	2.3%		-29,888	2.4%	
PECO	-580,715	7.7%		-34,039	7.5%		-112,139	9.2%	
PEPCO	-1,104,672	14.6%		-73,519	16.3%		-230,614	18.8%	
PN	223,882		3.0%	6,250		2.1%	129,386		9.9%
PPL	-384,980	5.1%		-11,937	2.6%		-43,542	3.6%	
PSEG	-439,921	5.8%		-18,987	4.2%		-70,762	5.8%	
Total	0	100.0%	100.0%	-153,254	100.0%	100.0%	83,389	100.0%	100.0%

Total Decrease -7,584,317
Total Increase 7,584,317

-451,710
298,456

-1,223,582
1,306,971



Change in Zonal Production Costs and Zonal Generator Revenues associated with 502 Junction-Loudoun Line (2010 Simulation)

ZONE	Delta Gen MWh	% of Decrease	% of Increase	Delta Production Cost (\$000)	% of Decrease	% of Increase	Delta Gen Rev (\$000)	% of Decrease	% of Increase
ACEC	-173,212	2.1%		-8,135	1.7%		-13,279	1.1%	
AEP	3,335,172		39.6%	125,004		36.6%	432,990		30.7%
APS	2,975,915		35.4%	119,469		35.0%	462,719		32.8%
BG&E	-1,074,547	12.8%		-48,754	10.1%		-212,403	17.1%	
COED	1,026,808		12.2%	52,296		15.3%	242,514		17.2%
DOM	-3,534,865	42.0%		-233,339	48.4%		-461,112	37.2%	
DP&L	9,143		0.1%	6,121		1.8%	38,619		2.7%
DPLC	-521,764	6.2%		-27,564	5.7%		-43,682	3.5%	
DQE	552,210		6.6%	20,485		6.0%	93,283		6.6%
JC	48,762		0.6%	1,902		0.6%	-9,170	0.7%	
ME	-262,173	3.1%		-12,600	2.6%		-31,008	2.5%	
PECO	-926,347	11.0%		-48,930	10.1%		-119,770	9.7%	
PEPCO	-1,110,053	13.2%		-71,684	14.9%		-241,499	19.5%	
PN	464,770		5.5%	16,104		4.7%	139,133		9.9%
PPL	-397,594	4.7%		-13,447	2.8%		-45,818	3.7%	
PSEG	-412,226	4.9%		-17,696	3.7%		-62,690	5.1%	
Total	0	100.0%	100.0%	-140,770	100.0%	100.0%	168,827	100.0%	100.0%

Total Decrease -8,412,780

Total Increase 8,412,780

-482,150

341,381

-1,240,431

1,409,258



Change in Zonal Production Costs and Zonal Generator Revenues associated with 502 Junction-Loudoun Line (2013 Simulation)

ZONE	Delta Gen MWh	% of Decrease	% of Increase	Delta Production Cost (\$000)	% of Decrease	% of Increase	Delta Gen Rev (\$000)	% of Decrease	% of Increase
ACEC	-250,700	2.3%		-11,959	2.0%		-26,332	1.3%	
AEP	4,390,033		40.6%	160,868		40.3%	652,119		35.8%
APS	3,202,342		29.6%	113,201		28.4%	512,594		28.2%
BG&E	-1,272,884	11.8%		-57,061	9.3%		-308,401	15.8%	
COED	1,473,114		13.6%	65,950		16.5%	343,439		18.9%
DOM	-4,671,642	43.2%		-286,069	46.7%		-698,286	35.8%	
DP&L	749,248		6.9%	25,145		6.3%	80,713		4.4%
DPLC	-604,345	5.6%		-31,976	5.2%		-69,520	3.6%	
DQE	816,737		7.6%	28,598		7.2%	118,476		6.5%
JC	-24,251	0.2%		-4,148	0.7%		-31,996	1.6%	
ME	-376,121	3.5%		-17,751	2.9%		-55,140	2.8%	
PECO	-1,274,949	11.8%		-65,474	10.7%		-201,530	10.3%	
PEPCO	-1,528,205	14.1%		-106,368	17.4%		-357,588	18.3%	
PN	172,700		1.6%	5,298		1.3%	112,579		6.2%
PPL	-392,553	3.6%		-10,889	1.8%		-82,118	4.2%	
PSEG	-408,523	3.8%		-21,031	3.4%		-121,156	6.2%	
Total	0	100.0%	100.0%	-213,665	100.0%	100.0%	-132,149	100.0%	100.0%

Total Decrease -10,804,173
Total Increase 10,804,173

-612,725
399,060

-1,952,067
1,819,919

- Develop future generation scenarios for 2016 and 2021 and continue sensitivity analysis
- Develop and incorporate carbon emission costs into sensitivity analysis
- Calculate impact of upgrades on RPM metrics
- Provide status updates as analysis progresses