



Synapse
Energy Economics, Inc.

Proposal for Energy Efficiency Resources in RPM

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FERC Requirement to Integrate EE as a capacity resource

Section II.P of the RPM Settlement commits PJM to “establish an additional process . . . for pursuing and supporting demand response and incorporating energy efficiency applications”

Paragraph 133 RPM Order (Dec 22, 2006)

Clarification and Rehearing Requests

“ . . .we agree with the New Jersey Commission that RPM does not treat investment in energy efficiency as a type of resource eligible to participate in the capacity market . . .energy efficiency solutions should be able to compete on an equal footing with demand response, generation, and transmission solutions.”

Paragraph 202, RPM Order (June 25, 2007)

EE as a capacity resource

- Allow energy efficiency resources to fully participate in BRA as a capacity resource
- Determine capacity value (MW) and Measure Life (yrs) of demand resources based on rigorous M&V
- Pay demand resources the capacity clearing price for duration of Measure Life
- “Add back” total BRA megawatts from EE to future Reliability Requirements, but not to individual loads for cost allocation. Instead, calculate PLC tickets based on metered 5CP loads.

Payment for Measure Life

- Very few customers will participate individually
 - Barriers of knowledge, tools, capital, and time
- Majority of demand resources will be aggregated by utility programs or energy service companies
- Investment by demand resource provider similar to that of developers of generation
- Provider should receive capacity payment for duration of capacity delivery

“Add Back” Impedes Market Progress

- “Add Back” is unnecessary and impedes market efficiency
- Administratively difficult
- Produces conflicting incentives between customers and providers
- Overall benefits of “no add back” outweigh potential cost shifts
- Competition to serve load as efficiently as possible

“No Add Back” Approach

- Reliability Requirement for Base Residual Auction is the forecast peak load, reserves, and demand resources from prior auctions
- BRA clears at “price times quantity” to create a total bill for the Delivery Year
- In Delivery Year (three years after BRA), capacity costs are allocated based on load ratio share from prior summer peak load determination (5CP)
- No “add back” of customer specific demand resources to peak load ratio share

Assumptions for Three Examples

- All Examples
 - Demonstrate cost allocation in June 2011-May 2012
 - Reliability Requirement of approximately 170,000 MW (forecast 2011 peak load plus reserves)
 - Illustrative clearing price of \$100/MW-day
- Lower Price (#2)
 - EE reduces clearing price by \$2/MW-day
- Even Lower Price (#3)
 - EE reduces clearing price by \$8/MW-day
 - Commensurate with our illustrative 400+ MW of EE

Illustrative Example 1

Base Case

Total Cost of Capacity (\$m)

\$ 6,205

LDA	Summer 2010 Peak			Load with Add-Back		Metered Load		Delta		
	Load (MW)	% EE	EE (MW)	Peak Load Ratio Share	Capacity Cost (\$m)	Peak Load Ratio Share	Capacity Cost (\$m)	Peak Load Ratio Share	Capacity Cost (\$m)	Capacity Cost (%)
PS	11,100	0.7%	77.7	7.67%	475.84	7.64%	473.86	-0.03%	(1.98)	-0.42%
PE	8,900	0.5%	44.5	6.14%	380.77	6.12%	379.94	-0.01%	(0.83)	-0.22%
PLCO	7,500	0.5%	37.5	5.17%	320.88	5.16%	320.18	-0.01%	(0.70)	-0.22%
UGI	200	0.5%	1.0	0.14%	8.56	0.14%	8.54	0.00%	(0.02)	-0.22%
BC	7,200	0.5%	36.0	4.96%	308.04	4.95%	307.37	-0.01%	(0.67)	-0.22%
JC	6,700	0.7%	46.9	4.63%	287.22	4.61%	286.02	-0.02%	(1.20)	-0.42%
ME	3,000	0.4%	12.0	2.07%	128.22	2.06%	128.07	0.00%	(0.15)	-0.12%
PN	3,000	0.4%	12.0	2.07%	128.22	2.06%	128.07	0.00%	(0.15)	-0.12%
PEP	7,000	0.4%	28.0	4.82%	299.19	4.82%	298.83	-0.01%	(0.35)	-0.12%
AE	3,000	0.7%	21.0	2.07%	128.61	2.06%	128.07	-0.01%	(0.54)	-0.42%
DPL	4,300	0.2%	8.6	2.96%	183.42	2.96%	183.57	0.00%	0.15	0.08%
RECO	450	0.3%	1.4	0.31%	19.21	0.31%	19.21	0.00%	(0.00)	-0.02%
AP	8,700	0.3%	26.1	5.99%	371.47	5.99%	371.40	0.00%	(0.07)	-0.02%
CE	23,600	0.1%	23.6	16.21%	1,005.67	16.24%	1,007.49	0.03%	1.82	0.18%
AEP	24,600	0.1%	24.6	16.89%	1,048.28	16.92%	1,050.18	0.03%	1.89	0.18%
DAY	3,700	0.2%	7.4	2.54%	157.83	2.55%	157.95	0.00%	0.13	0.08%
DUQ	3,000	0.0%	0.0	2.06%	127.71	2.06%	128.07	0.01%	0.36	0.28%
DOM	19,400	0.0%	0.0	13.31%	825.87	13.35%	828.19	0.04%	2.32	0.28%
Totals	145,350		408	100%	6,205	100%	6,205	0%	0.00	

Illustrative Example 2

\$2 impact

Total Cost of Capacity (\$m)

\$ 6,205 without EE

\$ 6,081 with EE

LDA	Summer 2010 Peak			Load with Add-Back Peak Load		Metered Load Peak Load		Delta		Two Dollar Impact	
	Load (MW)	% EE	EE (MW)	Ratio Share	Capacity Cost (\$m)	Ratio Share	Capacity Cost (\$m)	Capacity Cost (\$m)	Capacity Cost (%)	Capacity Cost (\$m)	Capacity Cost (%)
PS	11,100	0.7%	77.7	7.67%	475.84	7.64%	473.86	(1.98)	-0.42%	(9.48)	-2.00%
PE	8,900	0.5%	44.5	6.14%	380.77	6.12%	379.94	(0.83)	-0.22%	(7.60)	-2.00%
PLCO	7,500	0.5%	37.5	5.17%	320.88	5.16%	320.18	(0.70)	-0.22%	(6.40)	-2.00%
UGI	200	0.5%	1.0	0.14%	8.56	0.14%	8.54	(0.02)	-0.22%	(0.17)	-2.00%
BC	7,200	0.5%	36.0	4.96%	308.04	4.95%	307.37	(0.67)	-0.22%	(6.15)	-2.00%
JC	6,700	0.7%	46.9	4.63%	287.22	4.61%	286.02	(1.20)	-0.42%	(5.72)	-2.00%
ME	3,000	0.4%	12.0	2.07%	128.22	2.06%	128.07	(0.15)	-0.12%	(2.56)	-2.00%
PN	3,000	0.4%	12.0	2.07%	128.22	2.06%	128.07	(0.15)	-0.12%	(2.56)	-2.00%
PEP	7,000	0.4%	28.0	4.82%	299.19	4.82%	298.83	(0.35)	-0.12%	(5.98)	-2.00%
AE	3,000	0.7%	21.0	2.07%	128.61	2.06%	128.07	(0.54)	-0.42%	(2.56)	-2.00%
DPL	4,300	0.2%	8.6	2.96%	183.42	2.96%	183.57	0.15	0.08%	(3.67)	-2.00%
RECO	450	0.3%	1.4	0.31%	19.21	0.31%	19.21	(0.00)	-0.02%	(0.38)	-2.00%
AP	8,700	0.3%	26.1	5.99%	371.47	5.99%	371.40	(0.07)	-0.02%	(7.43)	-2.00%
CE	23,600	0.1%	23.6	16.21%	1,005.67	16.24%	1,007.49	1.82	0.18%	(20.15)	-2.00%
AEP	24,600	0.1%	24.6	16.89%	1,048.28	16.92%	1,050.18	1.89	0.18%	(21.00)	-2.00%
DAY	3,700	0.2%	7.4	2.54%	157.83	2.55%	157.95	0.13	0.08%	(3.16)	-2.00%
DUQ	3,000	0.0%	0.0	2.06%	127.71	2.06%	128.07	0.36	0.28%	(2.56)	-2.00%
DOM	19,400	0.0%	0.0	13.31%	825.87	13.35%	828.19	2.32	0.28%	(16.56)	-2.00%
Totals	145,350		408	100%	6,205	100%	6,205	(0.00)		(124.10)	

Illustrative Example 3

\$8 impact

Total Cost of Capacity (\$m)

\$ 6,205 without EE

\$ 5,709 with EE

LDA	Summer 2010 Peak			Load with Add-Back		Metered Load		Delta		Eight Dollar Impact	
	Load (MW)	% EE	EE (MW)	Peak Load Ratio Share	Capacity Cost (\$m)	Peak Load Ratio Share	Capacity Cost (\$m)	Capacity Cost (\$m)	Capacity Cost (%)	Capacity Cost (\$m)	Capacity Cost (%)
PS	11,100	0.7%	77.7	7.67%	475.84	7.64%	473.86	(1.98)	-0.42%	(37.91)	-8.00%
PE	8,900	0.5%	44.5	6.14%	380.77	6.12%	379.94	(0.83)	-0.22%	(30.40)	-8.00%
PLCO	7,500	0.5%	37.5	5.17%	320.88	5.16%	320.18	(0.70)	-0.22%	(25.61)	-8.00%
UGI	200	0.5%	1.0	0.14%	8.56	0.14%	8.54	(0.02)	-0.22%	(0.68)	-8.00%
BC	7,200	0.5%	36.0	4.96%	308.04	4.95%	307.37	(0.67)	-0.22%	(24.59)	-8.00%
JC	6,700	0.7%	46.9	4.63%	287.22	4.61%	286.02	(1.20)	-0.42%	(22.88)	-8.00%
ME	3,000	0.4%	12.0	2.07%	128.22	2.06%	128.07	(0.15)	-0.12%	(10.25)	-8.00%
PN	3,000	0.4%	12.0	2.07%	128.22	2.06%	128.07	(0.15)	-0.12%	(10.25)	-8.00%
PEP	7,000	0.4%	28.0	4.82%	299.19	4.82%	298.83	(0.35)	-0.12%	(23.91)	-8.00%
AE	3,000	0.7%	21.0	2.07%	128.61	2.06%	128.07	(0.54)	-0.42%	(10.25)	-8.00%
DPL	4,300	0.2%	8.6	2.96%	183.42	2.96%	183.57	0.15	0.08%	(14.69)	-8.00%
RECO	450	0.3%	1.4	0.31%	19.21	0.31%	19.21	(0.00)	-0.02%	(1.54)	-8.00%
AP	8,700	0.3%	26.1	5.99%	371.47	5.99%	371.40	(0.07)	-0.02%	(29.71)	-8.00%
CE	23,600	0.1%	23.6	16.21%	1,005.67	16.24%	1,007.49	1.82	0.18%	(80.60)	-8.00%
AEP	24,600	0.1%	24.6	16.89%	1,048.28	16.92%	1,050.18	1.89	0.18%	(84.01)	-8.00%
DAY	3,700	0.2%	7.4	2.54%	157.83	2.55%	157.95	0.13	0.08%	(12.64)	-8.00%
DUQ	3,000	0.0%	0.0	2.06%	127.71	2.06%	128.07	0.36	0.28%	(10.25)	-8.00%
DOM	19,400	0.0%	0.0	13.31%	825.87	13.35%	828.19	2.32	0.28%	(66.25)	-8.00%
Totals	145,350		408	100%	6,205	100%	6,205	(0.00)		(496.40)	

Further Design Details

- Must qualify with a valid M&V plan
- Once qualified, can participate in either BRA as a demand resource, or as ILR resource
- Specific performance measurement hours to calculate capacity value
- Adjust capacity values for savings (reserves and losses)
- Penalty for non-delivery comparable to other capacity resources, but specifics may differ
- Fully transferable with other capacity resources through bilateral contracts

PJM Committee process

- Proposal currently under review at RPM WG
- RPM WG reports to Markets Implementation Committee (MIC)
- Policy issues can go to DR Policy WG
- DR Policy WG reports to Markets and Reliability Committee (MRC) or directs WG to proceed
- Eventually, MRC must approve design and send to Members Committee (MC)
- MC approval would lead to tariff changes (if needed), Business Rules, and Manuals

Next RPM WG meeting, March 20

- Ask WG to approve request to:
 - have PJM propose performance hours for determination of capacity benefits of demand resources
 - have PJM develop and M&V manual for demand resources
- Develop M&V manual
- Continue discussion of other elements
 - payment for measure life of demand resource
 - “no add back” approach in Delivery Year

QUESTIONS?

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