

2015 Demand Response Operations Markets Activity Report: August 2015

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PJM Demand Side Response Operations

August 13, 2015



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Figure 1: Delivery Year 15/16 Active Participants in PJM Economic and Load Management DR Programs

State	Zone	EDC	Economic Program		Load Management DR		Unique	
			Locations	MW	Locations	MW	Locations	MW
DC	PEPCO	PEPCO	17	20.8	265	112.6	270	113.7
DE	DPL	DEMEC	2	5.2	26	14.4	26	14.4
DE	DPL	DOVDE			8	3.3	8	3.3
DE	DPL	DPL	8	142.3	263	210.5	263	210.5
DE	DPL	ODEC			8	1.1	8	1.1
IL	COMED	BATAV			1	1.0	1	1.0
IL	COMED	COMED	1,620	443.3	2,426	1,635.1	4,002	1,937.4
IL	COMED	IMEAA1			2	49.6	2	49.6
IN	AEP	AEPIMP			127	345.1	127	345.1
IN	AEP	HEREC	1	39.0	1	26.7	1	26.7
IN	AEP	WVPA			68	2.0	68	2.0
IN	AEP	WVSDI			1	55.6	1	55.6
KY	DEOK	DEK			68	35.0	68	35.0
KY	EKPC	EKPC			11	135.8	11	135.8
MD	APS	AETSAP	50	20.5	192	113.6	192	113.6
MD	APS	AETSHG			5	0.8	5	0.8
MD	APS	AETSTH			3	0.3	3	0.3
MD	APS	AETSWP			1	0.1	1	0.1
MD	BGE	BC	66	1,236.1	880	801.1	892	1,503.1
MD	DPL	DPL	1	26.5	206	76.5	206	76.5
MD	DPL	EASTON			8	2.2	8	2.2
MD	DPL	ODEC	1	1.5	19	14.4	19	14.4
MD	PEPCO	PEPCO	7	279.5	405	427.7	406	427.8
MD	PEPCO	SMECO	6	1.7	109	54.7	109	54.7
NJ	AECO	AE	11	54.9	277	132.2	277	132.2
NJ	AECO	VMEU			25	5.8	25	5.8
NJ	JCPL	AECI			1	0.2	1	0.2
NJ	JCPL	BSHNJ	1	3.0	1	2.2	1	2.2
NJ	JCPL	JCBGS	14	58.7	494	180.1	497	230.3
NJ	PSEG	PSEG	18	49.3	1,146	392.0	1,150	413.1
NJ	RECO	RECO			21	7.2	21	7.2
NY	PENELEC	PaElec			2	1.5	2	1.5
OH	AEP	AEPOPT	13	153.8	975	705.8	975	705.8
OH	AEP	AMPO			47	110.1	47	110.1
OH	AEP	BUCK			2	20.2	2	20.2
OH	ATSI	AMPO			35	165.6	35	165.6
OH	ATSI	BUCK			2	5.5	2	5.5
OH	ATSI	CPP	1	0.9	18	42.4	18	42.4
OH	ATSI	OEEDC	19	82.2	1,186	825.6	1,190	840.3
OH	DAY	AMPO			16	37.1	16	37.1
OH	DAY	BUCK			2	4.1	2	4.1
OH	DAY	DAYEDC	6	6.8	231	152.2	231	152.2
OH	DEOK	AMPO			5	7.7	5	7.7
OH	DEOK	BUCK			2	2.0	2	2.0
OH	DEOK	DEOHIO	20	41.9	456	280.7	456	280.7
PA	APS	AECI			4	0.3	4	0.3
PA	APS	AETSAP	8	120.5	673	425.1	675	432.5



State	Zone	EDC	Economic Program		Load Management DR		Unique	
			Locations	MW	Locations	MW	Locations	MW
PA	APS	CHBDTE			5	2.7	5	2.7
PA	ATSI	PAPWR	2	0.6	99	77.2	99	77.2
PA	DUQ	DLCO	4	17.2	378	184.3	379	199.3
PA	METED	AECI			1	1.6	1	1.6
PA	METED	MetEd	33	41.2	535	281.7	536	284.7
PA	PECO	PE	123	80.4	1,474	492.9	1,481	504.7
PA	PENELEC	AECI			28	14.3	28	14.3
PA	PENELEC	PaElec	4	11.9	624	282.9	625	289.9
PA	PENELEC	WELLSB			1	1.5	1	1.5
PA	PPL	AMPO			11	2.4	11	2.4
PA	PPL	CTZECL			5	1.7	5	1.7
PA	PPL	PPL	255	172.3	1,521	796.3	1,539	880.5
PA	PPL	UGI-UI			14	7.5	14	7.5
TN	AEP	AEPAPT	1	30.0	10	3.1	11	33.1
VA	AEP	AEPAPT	1	0.1	243	233.0	243	233.0
VA	AEP	AMPO			18	14.3	18	14.3
VA	AEP	RADFRD			1	2.0	1	2.0
VA	AEP	SALEM			1	0.1	1	0.1
VA	AEP	VATECH			1	6.3	1	6.3
VA	APS	ODEC			42	35.2	42	35.2
VA	DOM	CVEC			6	4.5	6	4.5
VA	DOM	DOMEDC	28	38.9	1,134	780.7	1,134	780.7
VA	DOM	DOMVME			22	95.6	22	95.6
VA	DOM	NVEC	2	14.6	57	35.8	59	50.4
VA	DOM	ODEC	2	50.2	44	63.1	44	63.1
VA	DPL	ODEC			14	8.6	14	8.6
WV	AEP	AEPAPT	2	4.3	363	364.9	363	364.9
WV	AEP	APWVP			4	0.3	4	0.3
WV	APS	AETSAP	115	49.3	341	221.8	342	231.8
Total			2,462	3,299	17,721	11,641	19,360	12,916

Note:

- 1) Data as of 8/6/2015.
- 2) Emergency MW are in ICAP.
- 3) Economic MW are CSP reported Load Reduction values.
- 4) Residential Direct Load Control (DLC) reported as one location not total number of end use customers in that program.
- 5) Unique MW: represents total estimated demand reduction assuming full DR compliance and economic reductions.
- 6) As of August 6, 2015, DY15/16 RPM Committed value is 10,928 MW.

Figure 2: Delivery Year 15/16 MWs in PJM Load Management DR by Resource, Product, and Lead Times

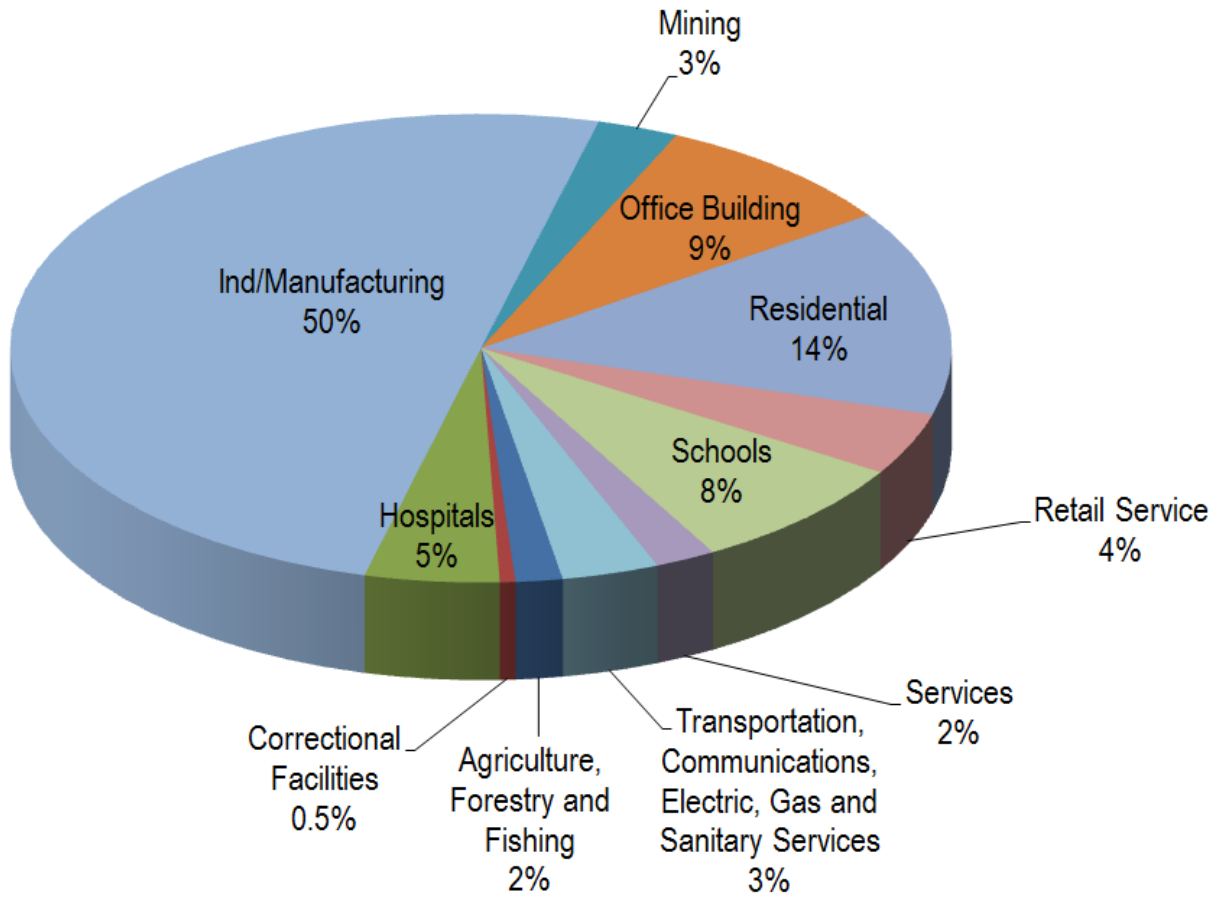
Zone		DR Product			Lead Times (Minutes)			Total DR MW
		Limited	Extended	Annual	30	60	120	
AECO								
	Pre-Emergency	59.5	77.5	0.0	122.5	6.2	8.3	137.0
	Emergency	1.0	0.0	0.0	1.0	0.0	0.0	1.0
	Total	60.4	77.5	0.0	123.5	6.2	8.3	138.0
AEP								
	Pre-Emergency	1,526.6	62.4	82.4	959.8	41.1	670.5	1,671.5
	Emergency	195.7	22.5	0.0	148.6	9.3	60.2	218.1
	Total	1,722.3	84.9	82.4	1,108.4	50.5	730.8	1,889.6
APS								
	Pre-Emergency	512.1	180.4	12.7	311.9	20.4	372.9	705.2
	Emergency	88.5	6.2	0.0	71.8	0.4	22.5	94.7
	Total	600.6	186.6	12.7	383.7	20.8	395.4	799.9
ATSI								
	Pre-Emergency	509.9	308.8	45.4	397.9	53.1	413.2	864.2
	Emergency	58.2	185.2	8.8	168.3	11.5	72.3	252.1
	Total	568.1	494.1	54.2	566.2	64.6	485.5	1,116.4
BGE								
	Pre-Emergency	648.0	44.8	3.8	650.3	10.2	36.0	696.5
	Emergency	81.6	20.5	2.5	60.4	2.9	41.4	104.6
	Total	729.6	65.2	6.3	710.6	13.1	77.4	801.1
COMED								
	Pre-Emergency	821.1	426.7	16.0	972.1	31.8	259.8	1,263.7
	Emergency	307.8	114.2	0.0	274.9	14.8	132.3	422.0
	Total	1,128.9	540.9	16.0	1,247.1	46.7	392.0	1,685.8
DAY								
	Pre-Emergency	139.1	13.5	16.6	114.2	0.5	54.4	169.1
	Emergency	23.2	1.1	0.0	20.1	0.0	4.2	24.3
	Total	162.3	14.5	16.6	134.3	0.5	58.6	193.4
DEOK								
	Pre-Emergency	171.4	99.0	0.0	86.4	76.0	108.1	270.5
	Emergency	53.5	1.6	0.0	30.6	7.5	17.0	55.1
	Total	224.9	100.6	0.0	116.9	83.5	125.1	325.5
DOM								
	Pre-Emergency	492.5	29.6	56.8	332.9	35.8	210.2	579.0
	Emergency	337.7	63.0	0.0	240.3	63.7	96.8	400.8
	Total	830.2	92.7	56.8	573.2	99.5	307.0	979.7
DPL								
	Pre-Emergency	200.1	105.1	0.0	188.4	1.3	115.4	305.2
	Emergency	21.7	4.2	0.0	14.5	2.9	8.5	25.9
	Total	221.7	109.3	0.0	202.9	4.2	123.9	331.1
DUQ								
	Pre-Emergency	127.0	32.5	1.1	71.3	7.2	82.2	160.6
	Emergency	21.4	2.2	0.0	11.9	0.0	11.7	23.6
	Total	148.5	34.7	1.1	83.1	7.2	93.9	184.3
EKPC								
	Pre-Emergency	133.3	0.0	0.0	19.1	6.1	108.1	133.3
	Emergency	2.5	0.0	0.0	2.5	0.0	0.0	2.5
	Total	135.8	0.0	0.0	21.6	6.1	108.1	135.8



Zone		DR Product			Lead Times (Minutes)			Total DR MW
		Limited	Extended	Annual	30	60	120	
JCPL								
	Pre-Emergency	121.6	47.2	0.0	118.4	18.3	32.1	168.7
	Emergency	11.0	2.8	0.0	13.6	0.0	0.2	13.8
	Total	132.6	50.0	0.0	132.0	18.3	32.3	182.5
METED								
	Pre-Emergency	157.4	73.9	0.0	135.6	19.7	75.9	231.3
	Emergency	40.5	11.6	0.0	30.6	10.1	11.3	52.0
	Total	197.8	85.4	0.0	166.2	29.8	87.3	283.3
PECO								
	Pre-Emergency	233.1	127.1	0.0	257.8	58.5	44.0	360.3
	Emergency	96.8	35.8	0.0	87.5	7.7	37.5	132.6
	Total	329.9	163.0	0.0	345.2	66.1	81.5	492.9
PENELEC								
	Pre-Emergency	185.5	62.1	0.0	117.9	8.1	121.6	247.6
	Emergency	50.5	2.1	0.0	23.3	0.4	28.9	52.6
	Total	236.0	64.2	0.0	141.1	8.6	150.5	300.2
PEPCO								
	Pre-Emergency	326.0	219.8	0.0	370.0	0.6	175.2	545.7
	Emergency	45.4	3.9	0.0	26.6	7.2	15.5	49.3
	Total	371.4	223.7	0.0	396.6	7.8	190.7	595.1
PPL								
	Pre-Emergency	459.4	245.2	0.2	436.5	32.0	236.2	704.7
	Emergency	92.4	10.8	0.0	63.6	6.7	32.8	103.2
	Total	551.8	256.0	0.2	500.1	38.8	269.1	807.9
PSEG								
	Pre-Emergency	233.9	109.5	8.3	303.7	9.6	38.3	351.6
	Emergency	12.5	6.3	21.6	31.1	4.0	5.2	40.4
	Total	246.4	115.8	29.8	334.8	13.7	43.5	392.0
RECO								
	Pre-Emergency	6.5	0.1	0.0	6.3	0.0	0.3	6.6
	Emergency	0.6	0.0	0.0	0.6	0.0	0.0	0.6
	Total	7.1	0.1	0.0	6.9	0.0	0.3	7.2
TOTAL								
	Pre-Emergency	7,063.8	2,265.2	243.3	5,973.0	436.6	3,162.7	9,572.3
	Emergency	1,542.5	494.0	32.8	1,321.5	149.3	598.5	2,069.3
	Total	8,606.3	2,759.2	276.1	7,294.5	585.9	3,761.1	11,641.6

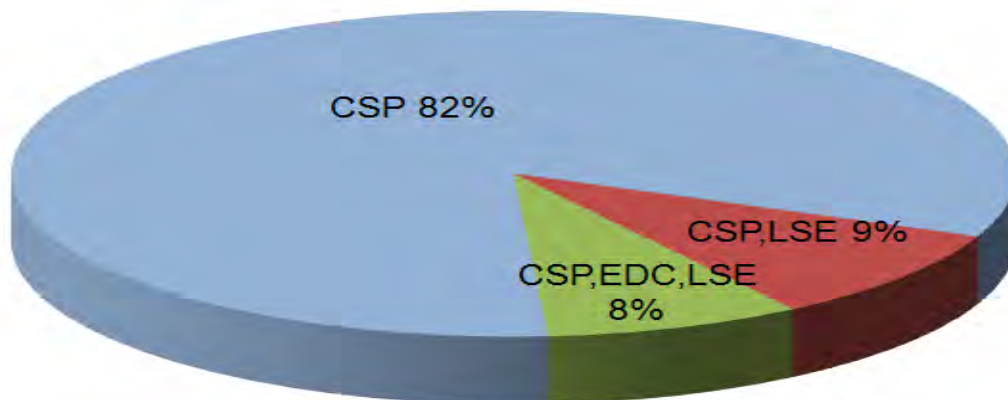
Note: MWs are Nominated Capacity (MWs)

Figure 3: DY 15/16 Confirmed Load Management DR Registrations Business Segments



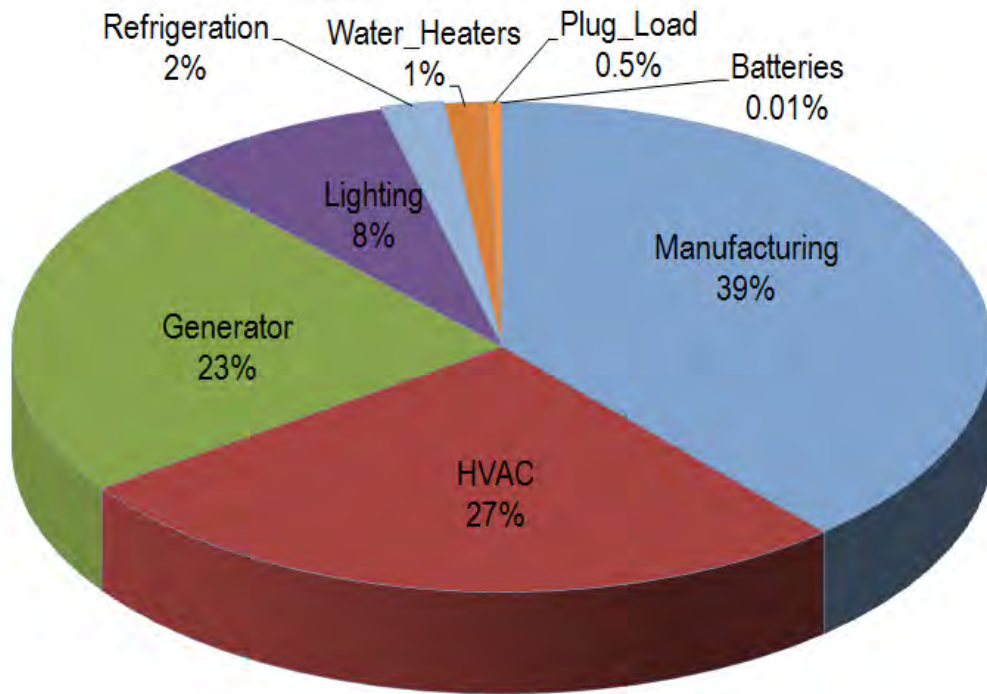
Note: Percent of Nominated Capacity (MWs)

Figure 4: DY 15/16 Confirmed Load Management DR Registrations Owner/Company Type



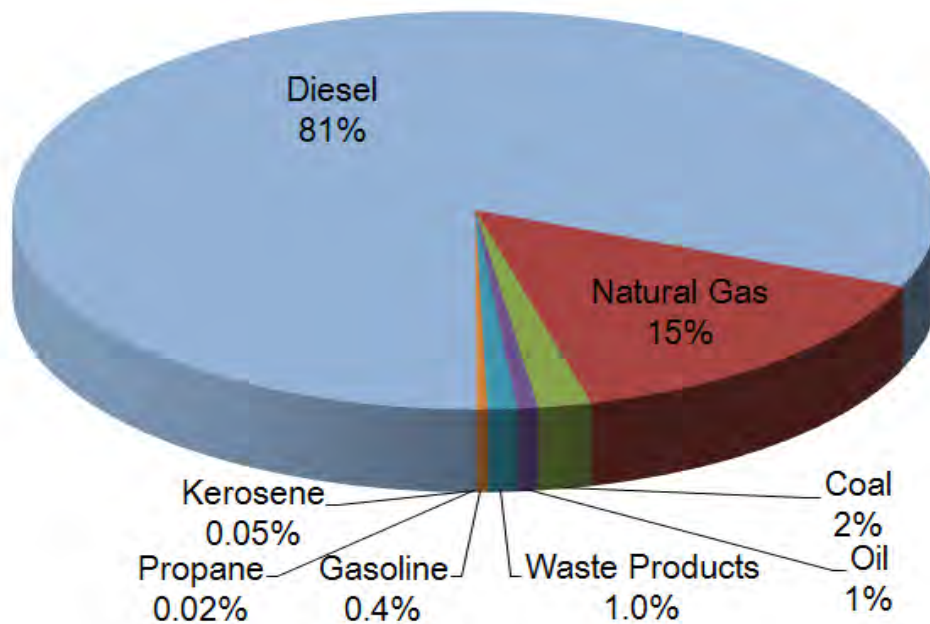
Note: Percent of Nominated Capacity (MWs)

Figure 5: DY 15/16 Confirmed Load Management DR Registrations Customer Load Reduction Methods



Note: Percent of Nominated Capacity (MWs)

Figure 6: DY 15/16 Confirmed Load Management DR Registrations Fuel Mix with Behind the Meter Generation



Note: Percent of Nominated Capacity (MWs)

Figure 7: DY 15/16 Confirmed Load Management DR Registrations Generator and Permit Type

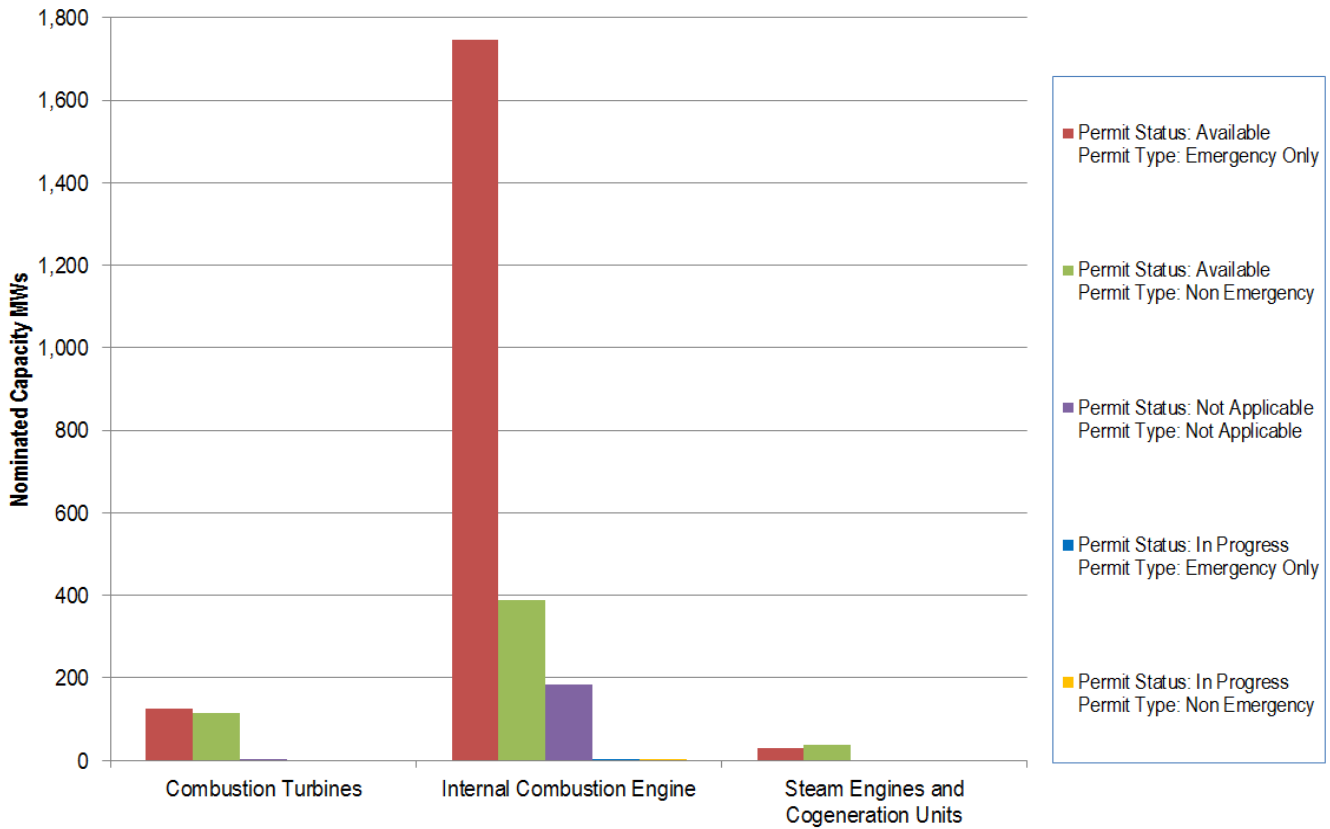


Figure 8: DY 15/16 Confirmed Load Management DR Registrations Fuel Mix with Behind the Meter Generation

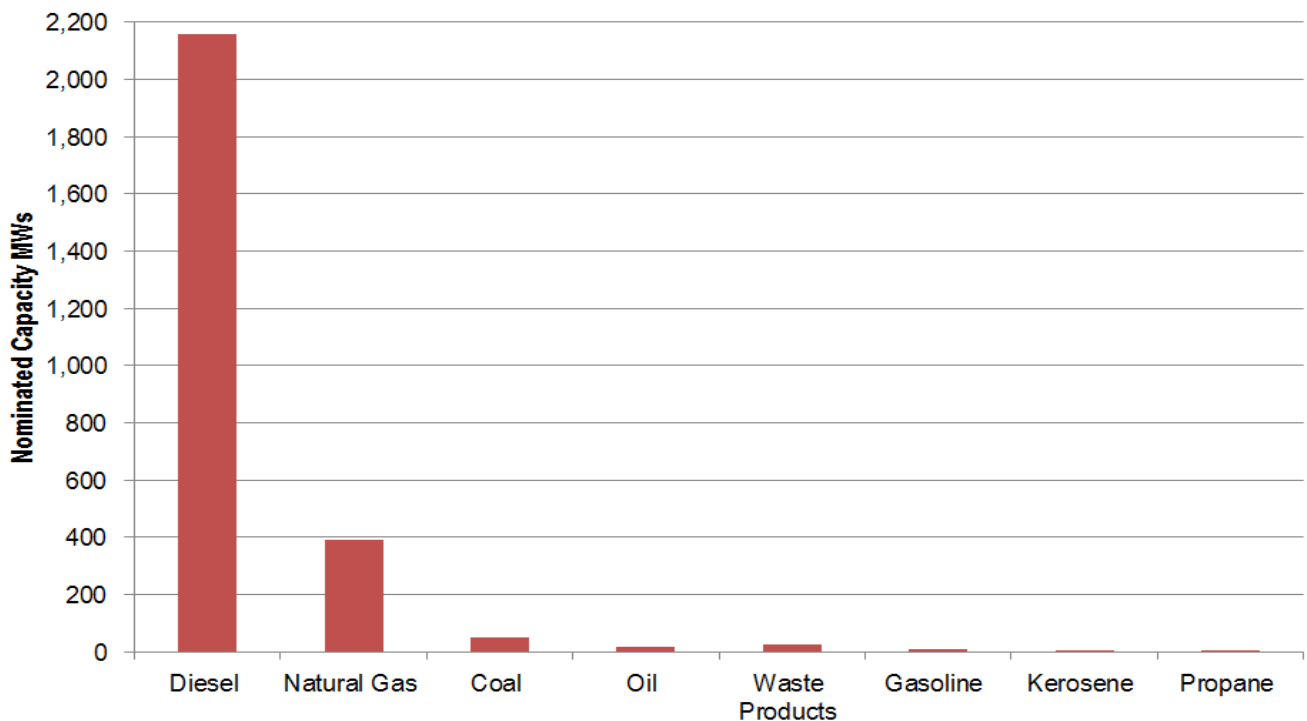
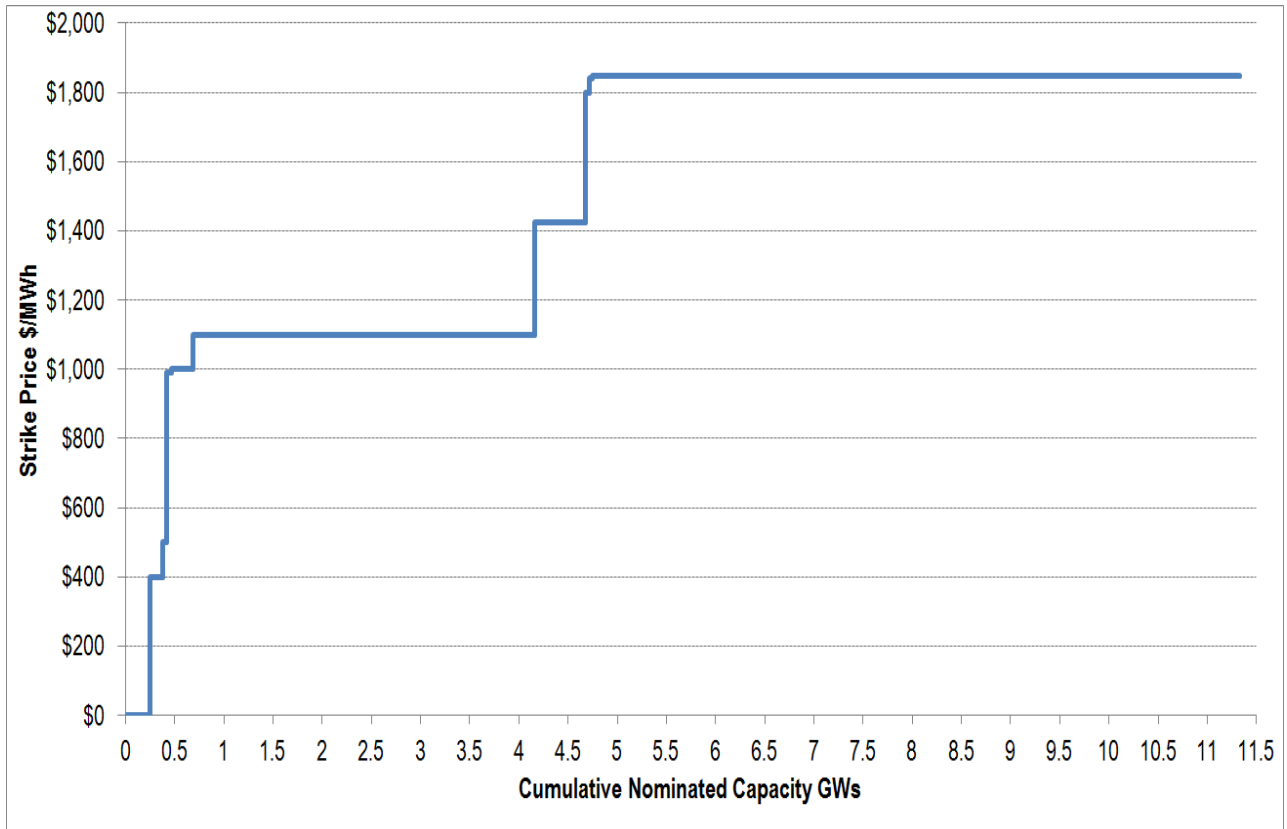


Figure 9: DY 15/16 Confirmed Load Management Full DR Registrations Energy Supply Curve:



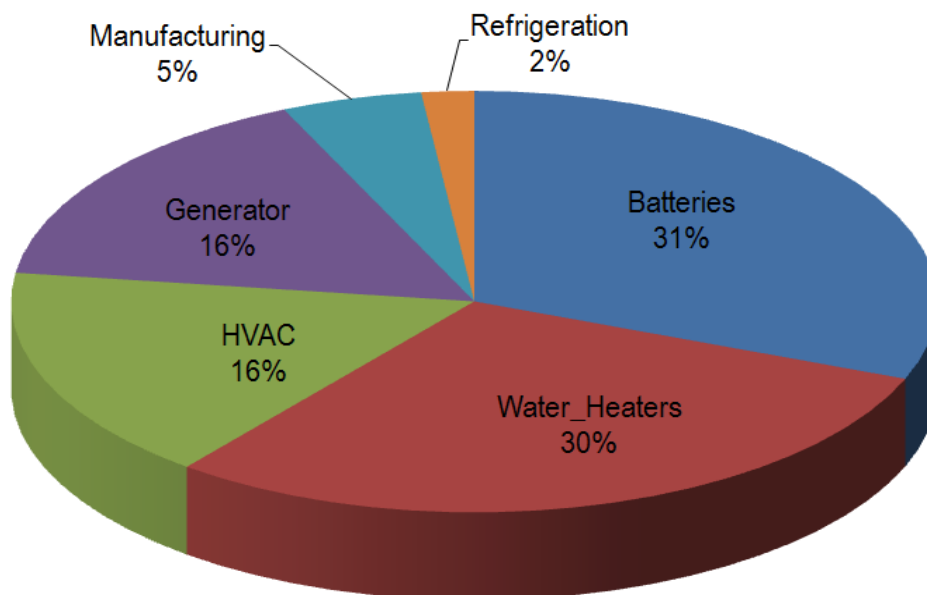
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Figure 10: PJM Economic Demand Response Capability in Ancillary Service Markets (2015):

Synch Reserves	Zone	Jan	Feb	Mar	Apr	May	June	July
Locations	MAD	138	141	142	143	142	119	122
	Non-MAD	2	2	3	3	3	7	7
RTO		140	143	145	146	145	126	129
Average Number of Unique Participating Locations per Month:					139			
MWs	MAD	331	332	338	351	351	355	357
	Non-MAD	14	14	24	24	24	70	70
RTO		345	345	361	375	374	424	427
Average MWs per Month:					379			
Regulation	Zone	Jan	Feb	Mar	Apr	May	June	July
Locations	RTO	274	274	274	297	298	299	302
Average Number of Unique Participating Locations per Month:					288			
MWs	RTO	12	12	12	12	13	15	16
Average MWs per Month:					13			

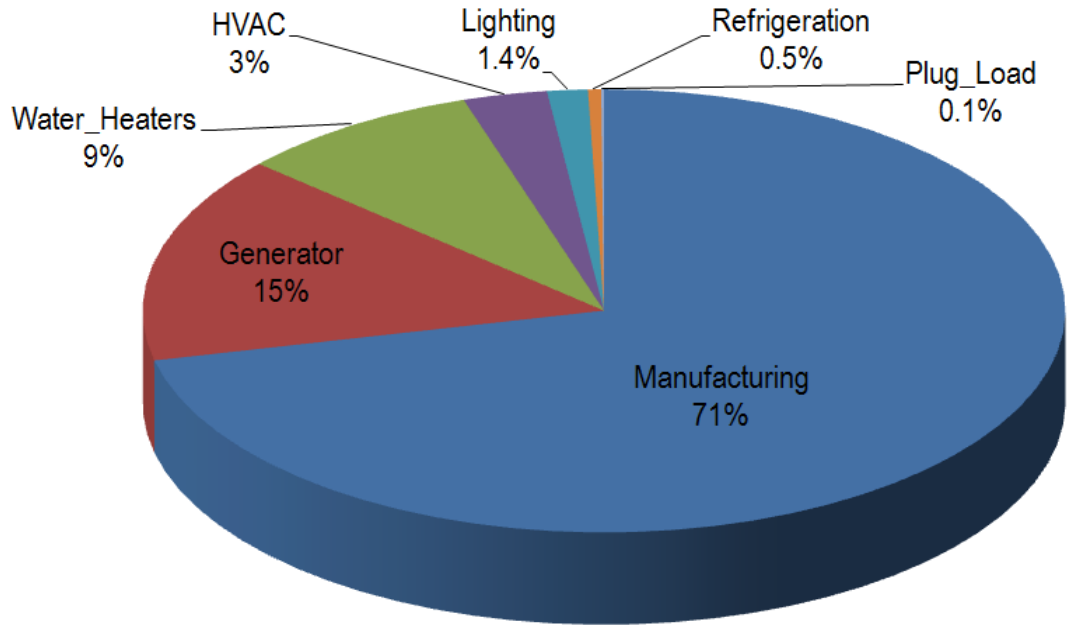
Capability represents total amount that may be offered. Actual offered and cleared volume may be significantly lower and is represented in subsequent figures/tables in report

Figure 11: PJM Demand Response Confirmed Regulation Registrations Load Reduction Methods



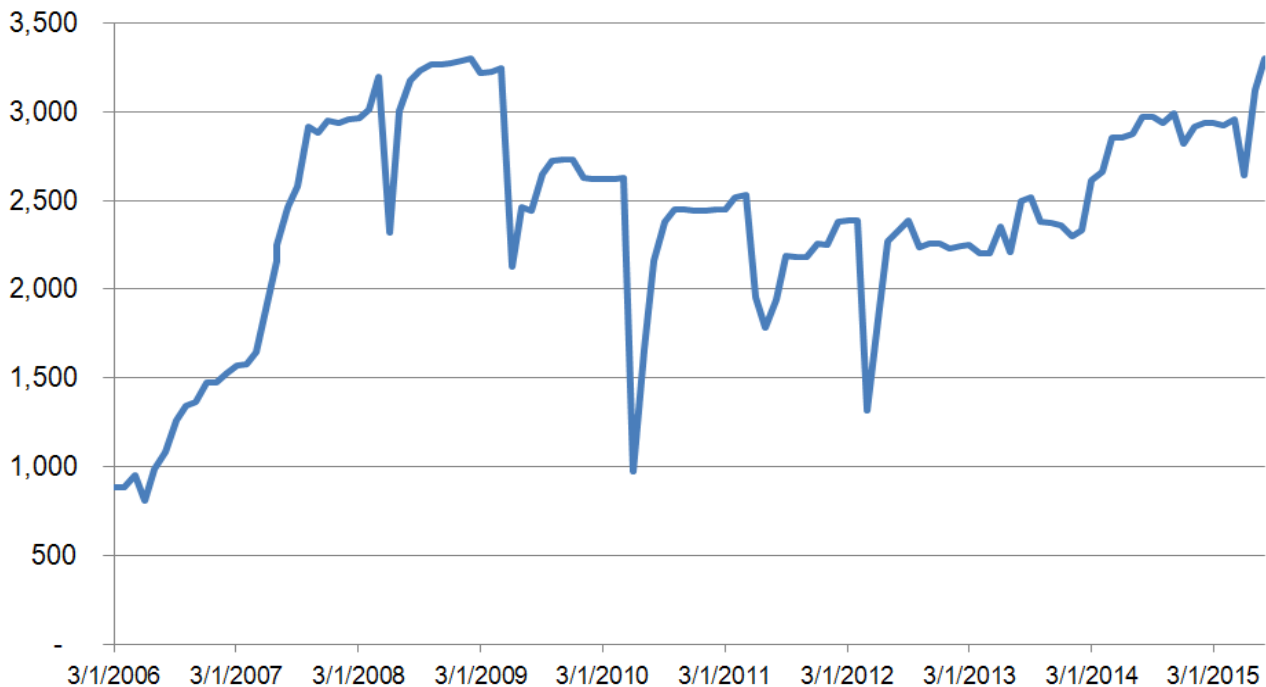
Note: Percent of CSP Reported Load Reduction MWs

Figure 12: PJM Demand Response Confirmed Synch Reserve Registrations Load Reduction Methods



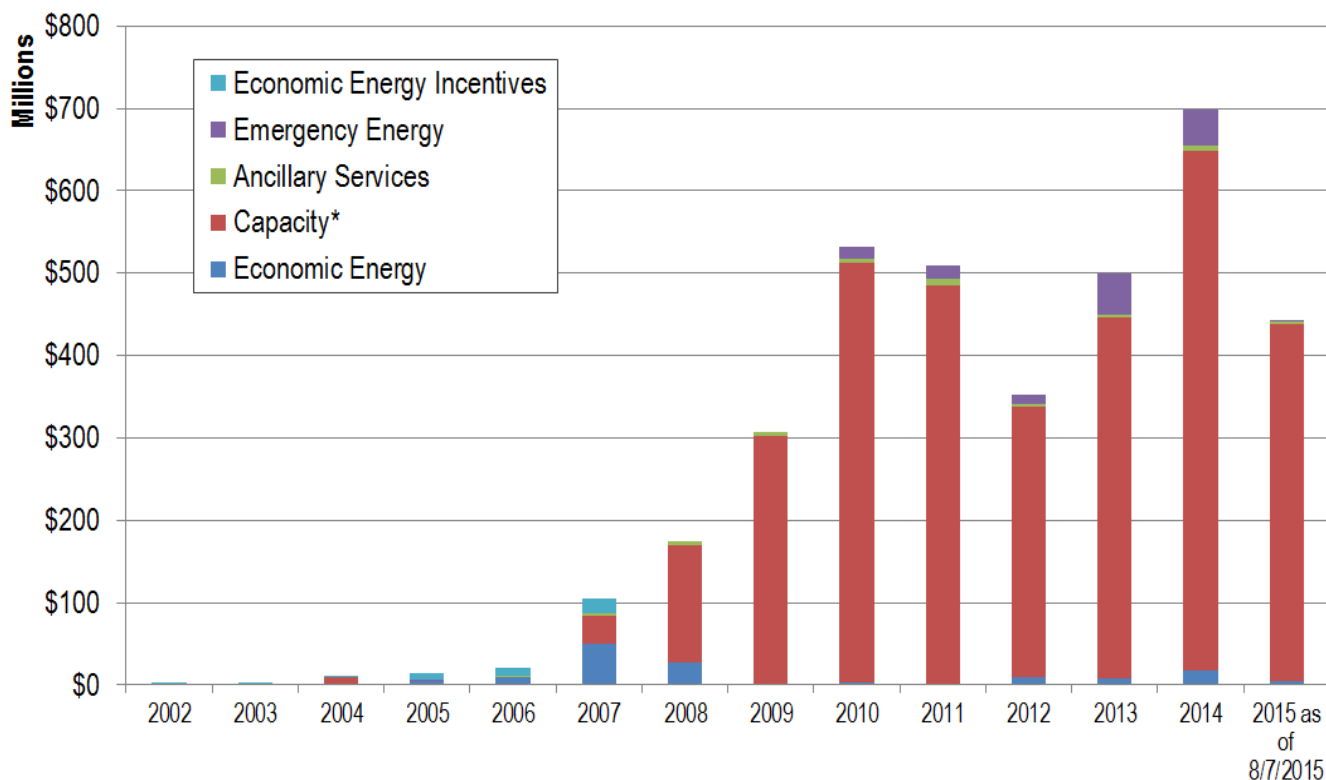
Note: Percent of CSP Reported Load Reduction MWs

Figure 13: PJM Economic Demand Response Capability in Energy Market (3/1/2006-8/7/2015)



Capability represents total amount that may be offered. Actual offered and cleared volume may be significantly lower and is represented in subsequent figures/tables in report.

Figure 14: PJM Estimated Revenue for Economic and Load Management DR Markets



*Capacity Net Revenue inclusive of Capacity Credits and Charges.

Figure 15: 2015 Economic Demand Response Monthly Registration Participation

State	Zone	Jan	Feb	Mar	Apr	May	June	July
IL	COMED	3	7	6	3	4	4	2
MD	BGE	1	5	2			3	
	PEPCO		1					
NJ	AECO		1					
	JCPL	1	5	1				
	PSEG	7	6	6	6	5	1	
OH	AEP		2			1	1	
	ATSI		2	1		1		
PA	APS		1					
	METED		1	2	1			
	PECO	3	3	3	2	2	4	
	PENELEC	2	3	2	2	1	3	
	PPL	2	2	1			2	
VA	DOM	6	12	3	2	5		
WV	APS	1	2	1	1	1		
Total		26	53	28	17	20	18	2

Average Unique Participating Registrations per Month: 23

Figure 16: 2015 Economic Demand Response Monthly Registration Participation Day-Ahead Activity

State	Zone	Jan	Feb	Mar	Apr	May	June	July
IL	COMED			1				
MD	BGE	1	1	1				
	PEPCO							
NJ	AECO							
	JCPL	1	1	1				
	PSEG	4	3	3	3	4	1	
OH	AEP		1			1		
	ATSI		1					
PA	APS		1					
	METED							
	PECO							
	PENELEC	1	1	1	1	1	1	
	PPL	2	1	1			1	
VA	DOM	1	3	1	1	2		
WV	APS		1					
Total		10	14	9	5	8	3	0

Average Unique Participating Registrations per Month (Day-Ahead): 7

Figure 17: 2015 Economic Demand Response Monthly Registration Participation Real-Time Activity

State	Zone	Jan	Feb	Mar	Apr	May	June	July
IL	COMED	3	7	5	3	4	4	2
MD	BGE		4	1			3	
	PEPCO		1					
NJ	AECO		1					
	JCPL		4					
	PSEG	3	3	3	3	1		
OH	AEP		1				1	
	ATSI		1	1		1		
PA	APS							
	METED		1	2	1			
	PECO	3	3	3	2	2	4	
	PENELEC	1	2	1	1		2	
	PPL		1				1	
VA	DOM	5	9	2	1	3		
WV	APS	1	1	1	1	1		
Total		16	39	19	12	12	15	2

Average Unique Participating Registrations per Month (Real-Time): 16

Figure 18: 2015 Economic Demand Response Monthly MWh Reductions

State	Zone	Jan	Feb	Mar	Apr	May	June	July
IL	COMED	221	1,578	1,257	687	874	465	126
MD	BGE	20	155	20			2,228	
	PEPCO		0					
NJ	AECO		0					
	JCPL		1,047	478				
	PSEG	1,891	1,465	1,343	1,213	1,346	11	
OH	AEP		6			0	7	
	ATSI		202	0				
PA	APS		189					
	METED		3	17				
	PECO	16	9	9	33	11	15	
	PENELEC	1,030	1,019	145	803	527	450	
	PPL	540	449	279			11	
VA	DOM	5,960	13,377	5,366	2,407	4,333		
WV	APS	93	150	310	115	84		
Total		9,771	19,649	9,224	5,258	7,173	3,187	126

Total MWh: 54,388

Figure 19: 2015 Economic Demand Response Monthly MWh Reductions Day-Ahead Activity

State	Zone	Jan	Feb	Mar	Apr	May	June	July
IL	COMED			54				
MD	BGE	20	31	16				
	PEPCO							
NJ	AECO							
	JCPL		1,042	478				
	PSEG	1,617	1,074	816	1,027	1,346	11	
OH	AEP		6			0		
	ATSI		116					
PA	APS		189					
	METED							
	PECO							
	PENELEC	792	459		605	527	364	
	PPL	540	448	279			15	
VA	DOM	2	1,220	2	5	2,205		
WV	APS		46					
Total		2,972	4,629	1,646	1,637	4,077	391	0

Total Day-Ahead MWh: 15,351

Figure 20: 2015 Economic Demand Response Monthly MWh Reductions Real-Time Activity

State	Zone	Jan	Feb	Mar	Apr	May	June	July
IL	COMED	221	1,578	1,204	687	874	465	126
MD	BGE		124	3			2,228	
	PEPCO		0					
NJ	AECO		0					
	JCPL		5					
	PSEG	274	391	527	186			
OH	AEP		0				7	
	ATSI		87	0				
PA	APS							
	METED		3	17				
	PECO	16	9	9	33	11	15	
	PENELEC	238	560	145	198		85	
	PPL		0				-4	
VA	DOM	5,957	12,158	5,364	2,402	2,128		
WV	APS	93	104	310	115	84		
Total		6,800	15,020	7,578	3,620	3,096	2,796	126

Total Real-Time MWh: 39,037

Figure 21: Economic Demand Response Monthly Energy Market Revenue (2015)

State	Zone	Jan	Feb	Mar	Apr	May	June	July
IL	COMED	\$7,427	\$104,411	\$53,013	\$18,571	\$28,200	\$17,464	\$3,745
MD	BGE	\$1,234	\$60,999	\$2,390			\$113,994	
	PEPCO		\$18					
NJ	AECO		\$13					
	JCPL	(\$7,267)	\$268,892	\$66,534				
	PSEG	\$122,649	\$184,354	\$72,647	\$45,415	\$65,022	\$604	
OH	AEP		\$945			(\$21)		
	ATSI		\$20,918	\$42				
PA	APS		\$41,790					
	METED		\$508	\$2,467				
	PECO	\$1,772	\$1,082	\$875	\$975	\$421	\$618	
	PENELEC	\$45,423	\$65,691	\$5,511	\$26,617	\$23,564	\$20,285	
	PPL	\$47,561	\$94,484	\$32,384			\$599	
VA	DOM	\$470,144	\$1,945,669	\$421,571	\$98,387	\$326,926		
WV	APS	\$9,292	\$19,338	\$10,333	\$4,304	\$2,801		
Total		\$698,233	\$2,809,114	\$667,768	\$194,270	\$446,913	\$153,565	\$3,745

Total CSP Credits: \$4,973,607

Figure 22: Economic Demand Response Monthly Energy Market Revenue Day-Ahead Activity (2015)

State	Zone	Jan	Feb	Mar	Apr	May	June	July
IL	COMED			\$1,363				
MD	BGE	\$1,234	\$7,665	\$2,049				
	PEPCO							
NJ	AECO							
	JCPL	(\$7,267)	\$268,303	\$66,534				
	PSEG	\$101,862	\$152,053	\$49,986	\$36,021	\$65,022	\$604	
OH	AEP		\$928			(\$21)		
	ATSI		\$10,271					
PA	APS		\$41,790					
	METED							
	PECO							
	PENELEC	\$33,890	\$21,994	\$163	\$19,048	\$23,564	\$17,521	
	PPL	\$47,561	\$94,413	\$32,384			\$786	
VA	DOM	\$111	\$89,572	\$110	\$213	\$181,718		
WV	APS		\$17,055					
Total		\$177,389	\$704,043	\$152,590	\$55,282	\$270,283	\$18,912	\$0

Total Day-Ahead CSP Credits: \$1,378,499

Figure 23: Economic Demand Response Monthly Energy Market Revenue Real-Time Activity (2015)

State	Zone	Jan	Feb	Mar	Apr	May	June	July
IL	COMED	\$7,427	\$104,411	\$51,650	\$18,571	\$28,200	\$17,464	\$3,745
MD	BGE		\$53,334	\$341			\$113,994	
	PEPCO		\$18					
NJ	AECO		\$13					
	JCPL		\$589					
	PSEG	\$20,787	\$32,301	\$22,660	\$9,394			
OH	AEP		\$17					
	ATSI		\$10,647	\$42				
PA	APS							
	METED		\$508	\$2,467				
	PECO	\$1,772	\$1,082	\$875	\$975	\$421	\$618	
	PENELEC	\$11,533	\$43,697	\$5,348	\$7,569		\$2,764	
	PPL		\$72				(\$187)	
VA	DOM	\$470,033	\$1,856,098	\$421,460	\$98,173	\$145,208		
WV	APS	\$9,292	\$2,283	\$10,333	\$4,304	\$2,801		
Total		\$520,844	\$2,105,071	\$515,178	\$138,987	\$176,630	\$134,653	\$3,745

Total Real-Time CSP Credits: \$3,595,108

Figure 24: Economic Demand Response Energy Market Cost Allocation by Zone (2015)

Zone	Jan	Feb	Mar	Apr	May	June	July
AECO	\$8,144	\$32,233	\$7,885	\$1,675	\$6,616	\$2,281	\$43
AEP	\$110,175	\$460,039	\$108,168	\$35,842	\$72,041	\$23,686	\$630
APS	\$46,313	\$186,348	\$43,950	\$14,169	\$28,086	\$8,842	\$237
ATSI	\$53,788	\$218,608	\$55,824	\$19,925	\$38,295	\$12,312	\$338
BGE	\$31,720	\$124,739	\$28,379	\$8,934	\$19,607	\$6,967	\$182
COMED	\$58,545	\$275,905	\$69,202	\$18,046	\$41,958	\$17,432	\$506
DAY	\$14,864	\$56,946	\$14,135	\$4,813	\$9,766	\$3,325	\$87
DEOK	\$20,275	\$89,027	\$21,328	\$6,816	\$15,867	\$5,592	\$146
DOM	\$93,812	\$388,679	\$84,586	\$26,191	\$58,781	\$21,378	\$533
DPL	\$18,319	\$75,492	\$16,560	\$3,070	\$10,424	\$3,893	\$72
DUQ	\$9,970	\$35,023	\$11,012	\$3,864	\$9,042	\$2,805	\$74
EKPC	\$11,403	\$54,120	\$11,522	\$2,788	\$6,373	\$2,386	\$62
JCPL	\$18,592	\$72,039	\$17,775	\$4,136	\$13,391	\$5,573	\$89
METED	\$13,736	\$53,971	\$13,034	\$2,642	\$8,469	\$2,246	\$33
PECO	\$34,695	\$137,349	\$32,562	\$6,487	\$22,784	\$6,665	\$120
PENELEC	\$15,541	\$60,547	\$15,391	\$4,838	\$9,408	\$2,849	\$66
PEPCO	\$29,008	\$114,217	\$26,061	\$8,609	\$19,672	\$6,939	\$173
PPL	\$38,227	\$153,234	\$36,723	\$6,891	\$21,723	\$5,373	\$89
PSEG	\$36,731	\$133,282	\$33,547	\$8,416	\$24,227	\$9,509	\$161
RECO	\$1,231	\$4,301	\$1,110	\$291	\$1,053	\$360	\$7
Exports	\$33,144	\$83,014	\$19,015	\$5,828	\$9,331	\$3,151	\$97
TOTAL	\$698,233	\$2,809,114	\$667,768	\$194,270	\$446,913	\$153,565	\$3,745

Total Zonal Charges: \$4,973,607
Figure 25: Economic Demand Response Day-Ahead Energy Market Cost Allocation by Zone (2015)

Zone	Jan	Feb	Mar	Apr	May	June	July
AECO	\$2,473	\$7,304	\$1,683	\$534	\$3,854	\$162	\$0
AEP	\$30,054	\$106,712	\$22,259	\$10,345	\$40,490	\$1,957	\$0
APS	\$13,466	\$42,933	\$9,166	\$4,123	\$15,730	\$744	\$0
ATSI	\$15,274	\$52,178	\$11,554	\$5,881	\$21,418	\$1,036	\$0
BGE	\$9,518	\$28,084	\$5,966	\$2,599	\$11,329	\$555	\$0
COMED	\$15,659	\$65,793	\$15,172	\$5,516	\$27,004	\$1,128	\$0
DAY	\$4,193	\$13,307	\$2,877	\$1,391	\$5,415	\$276	\$0
DEOK	\$5,455	\$20,566	\$4,411	\$1,985	\$8,656	\$457	\$0
DOM	\$26,498	\$86,221	\$18,055	\$7,686	\$34,458	\$1,620	\$0
DPL	\$5,419	\$16,923	\$3,536	\$958	\$6,162	\$276	\$0
DUQ	\$2,802	\$8,746	\$2,240	\$1,182	\$4,938	\$250	\$0
EKPC	\$3,086	\$12,256	\$2,517	\$784	\$3,446	\$178	\$0
JCPL	\$5,529	\$16,342	\$3,702	\$1,303	\$7,739	\$390	\$0
METED	\$4,077	\$12,108	\$2,691	\$858	\$4,920	\$218	\$0
PECO	\$10,475	\$30,963	\$6,946	\$2,178	\$13,283	\$620	\$0
PENELEC	\$4,747	\$14,461	\$3,167	\$1,454	\$5,378	\$248	\$0
PEPCO	\$8,605	\$26,026	\$5,518	\$2,546	\$11,416	\$527	\$0
PPL	\$11,237	\$34,163	\$7,645	\$2,265	\$12,520	\$511	\$0
PSEG	\$12,133	\$31,951	\$7,066	\$2,649	\$13,955	\$691	\$0
RECO	\$409	\$1,049	\$233	\$93	\$603	\$27	\$0
Exports	\$10,930	\$19,481	\$3,905	\$1,706	\$6,058	\$225	\$0
TOTAL	\$202,040	\$647,566	\$140,310	\$58,036	\$258,773	\$12,097	\$0

Total Day-Ahead Zonal Charges: \$1,318,823

Figure 26: Economic Demand Response Real-Time Energy Market Cost Allocation by Zone (2015)

Zone	Jan	Feb	Mar	Apr	May	June	July
AECO	\$5,671	\$24,929	\$6,202	\$1,141	\$2,762	\$2,119	\$43
AEP	\$80,121	\$353,327	\$85,908	\$25,498	\$31,550	\$21,729	\$630
APS	\$32,847	\$143,415	\$34,784	\$10,046	\$12,355	\$8,098	\$237
ATSI	\$38,514	\$166,430	\$44,269	\$14,043	\$16,877	\$11,276	\$338
BGE	\$22,202	\$96,656	\$22,413	\$6,335	\$8,278	\$6,412	\$182
COMED	\$42,887	\$210,112	\$54,030	\$12,530	\$14,954	\$16,305	\$506
DAY	\$10,671	\$43,639	\$11,258	\$3,423	\$4,351	\$3,049	\$87
DEOK	\$14,821	\$68,461	\$16,917	\$4,831	\$7,210	\$5,135	\$146
DOM	\$67,314	\$302,458	\$66,531	\$18,505	\$24,323	\$19,758	\$533
DPL	\$12,900	\$58,569	\$13,024	\$2,111	\$4,262	\$3,617	\$72
DUQ	\$7,168	\$26,277	\$8,772	\$2,681	\$4,104	\$2,556	\$74
EKPC	\$8,316	\$41,864	\$9,005	\$2,004	\$2,927	\$2,208	\$62
JCPL	\$13,062	\$55,698	\$14,073	\$2,834	\$5,651	\$5,183	\$89
METED	\$9,659	\$41,863	\$10,342	\$1,784	\$3,549	\$2,028	\$33
PECO	\$24,220	\$106,387	\$25,616	\$4,309	\$9,501	\$6,044	\$120
PENELEC	\$10,794	\$46,086	\$12,224	\$3,385	\$4,031	\$2,600	\$66
PEPCO	\$20,403	\$88,191	\$20,543	\$6,062	\$8,255	\$6,412	\$173
PPL	\$26,989	\$119,072	\$29,078	\$4,626	\$9,203	\$4,862	\$89
PSEG	\$24,598	\$101,331	\$26,482	\$5,767	\$10,272	\$8,818	\$161
RECO	\$822	\$3,253	\$877	\$198	\$450	\$333	\$7
Exports	\$22,215	\$63,534	\$15,110	\$4,122	\$3,274	\$2,926	\$97
TOTAL	\$496,193	\$2,161,548	\$527,458	\$136,234	\$188,139	\$141,468	\$3,745

Total Real-Time Zonal Charges: \$3,654,785

Figure 27: Load Management Demand Response Monthly Capacity Revenue from RPM (2015)

Zone	Jan	Feb	Mar	Apr	May	June	July
AECO	\$832,282	\$751,739	\$832,282	\$805,435	\$832,282	\$985,380	\$1,018,226
AEP	\$6,399,998	\$5,780,644	\$6,399,998	\$6,193,547	\$6,399,998	\$6,612,928	\$6,833,359
APS	\$3,492,803	\$3,154,790	\$3,492,803	\$3,380,132	\$3,492,803	\$3,174,034	\$3,279,835
ATSI	\$3,841,060	\$3,469,344	\$3,841,060	\$3,717,155	\$3,841,060	\$18,481,726	\$19,097,783
BGE	\$5,311,878	\$4,797,825	\$5,311,878	\$5,140,527	\$5,311,878	\$5,367,246	\$5,546,155
COMED	\$6,041,237	\$5,456,601	\$6,041,237	\$5,846,358	\$6,041,237	\$6,463,717	\$6,679,174
DAY	\$902,087	\$814,788	\$902,087	\$872,987	\$902,087	\$736,289	\$760,832
DEOK	\$341,676	\$308,610	\$341,676	\$330,654	\$341,676	\$1,277,237	\$1,319,812
DOM	\$5,338,145	\$4,821,550	\$5,338,145	\$5,165,946	\$5,338,145	\$5,066,825	\$5,235,719
DPL	\$1,593,999	\$1,439,741	\$1,593,999	\$1,542,580	\$1,593,999	\$2,130,080	\$2,201,083
DUQ	\$868,800	\$784,722	\$868,800	\$840,774	\$868,800	\$849,964	\$878,296
EKPC	\$10,230	\$9,240	\$10,230	\$9,900	\$10,230	\$46,245	\$47,787
JCPL	\$1,766,944	\$1,595,949	\$1,766,944	\$1,709,946	\$1,766,944	\$1,665,010	\$1,720,510
METED	\$1,610,323	\$1,454,485	\$1,610,323	\$1,558,377	\$1,610,323	\$1,613,449	\$1,667,231
PECO	\$3,358,207	\$3,033,220	\$3,358,207	\$3,249,878	\$3,358,207	\$3,700,859	\$3,824,221
PENELEC	\$1,730,838	\$1,563,337	\$1,730,838	\$1,675,004	\$1,730,838	\$2,540,797	\$2,625,490
PEPCO	\$3,583,429	\$3,236,645	\$3,583,429	\$3,467,834	\$3,583,429	\$4,096,205	\$4,232,745
PPL	\$5,389,586	\$4,868,013	\$5,389,586	\$5,215,729	\$5,389,586	\$5,411,083	\$5,591,452
PSEG	\$5,642,193	\$5,096,174	\$5,642,193	\$5,460,187	\$5,642,193	\$3,738,271	\$3,862,880
RECO	\$122,927	\$111,031	\$122,927	\$118,962	\$122,927	\$99,707	\$103,031
Total	\$58,178,643	\$52,548,452	\$58,178,643	\$56,301,913	\$58,178,643	\$74,057,052	\$76,525,620

Total Capacity Credits: \$433,968,966

Figure 28: Economic Demand Response Dispatched vs Settled Real-Time Energy Market Summary (2015)

Time		CSPs		Zone		Registrations			MWh		Registration Hours			
Year	Month	Dispatched	Settled	Dispatched	Settled	Dispatched	Settled	%	Dispatched	Settled	%	Dispatched	Settled	%
2015	1	4	4	6	6	16	16	100%	7,109	6,800	96%	696	696	100%
2015	2	8	8	14	14	39	39	100%	12,940	15,020	116%	1,581	1,581	100%
2015	3	6	6	9	9	19	19	100%	6,069	7,578	125%	892	892	100%
2015	4	4	4	7	7	12	12	100%	3,087	3,620	117%	587	587	100%
2015	5	4	4	6	6	13	12	92%	2,752	3,096	112%	743	579	78%
2015	6	7	4	12	6	35	15	43%	6,745	2,796	41%	1,114	465	42%
2015	7	12	1	14	1	47	2	4%	13,696	126	1%	1,945	64	3%
2015	8	5		9		22			1,777			343		
2015	9													
2015	10													
2015	11													
2015	12													
YTD Totals						203	115	57%	54,175	39,037	72%	7,901	4,864	62%
YTD Average		6	4	10	7									

Figure 29: Economic Demand Response Cleared vs Settled Day-Ahead Energy Market Summary (2015)

Time		CSPs		Zone		Registrations			MWh		Registration Hours			
Year	Month	Cleared	Settled	Cleared	Settled	Cleared	Settled	%	Cleared	Settled	%	Cleared	Settled	%
2015	1	6	6	6	6	10	10	100%	2,982	2,972	100%	923	923	100%
2015	2	8	8	9	9	14	14	100%	4,329	4,629	107%	712	712	100%
2015	3	6	6	7	7	9	9	100%	1,576	1,646	104%	397	397	100%
2015	4	2	2	3	3	5	5	100%	1,747	1,637	94%	572	572	100%
2015	5	3	3	4	4	9	8	89%	4,122	4,077	99%	545	506	93%
2015	6	4	2	6	3	10	3	30%	5,811	391	7%	885	72	8%
2015	7	6		8		19			4,565			1,141		
2015	8	1		2		4			112			51		
2015	9													
2015	10													
2015	11													
2015	12													
YTD Totals						80	49	61%	25,245	15,351	61%	5,226	3,182	61%
YTD Average		5	5	6	5									

Note: For Figures 28 and 29 above, Settlement information is submitted up to 60 days after the event. Therefore, YTD performance reflected in these reports for the current 2 months is artificially low due to incomplete information at the time of report preparation.

Figure 30: Economic Demand Response Regulation Market Participation (2015)

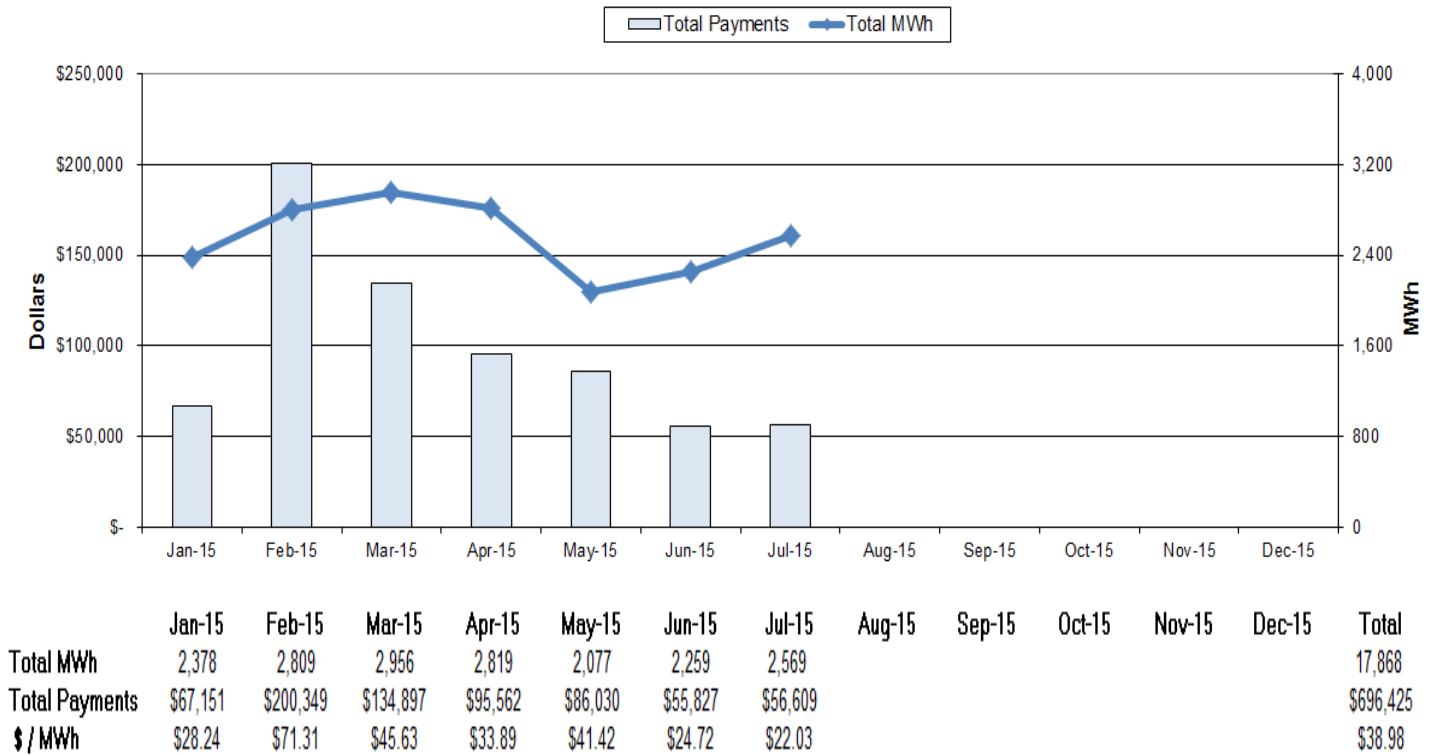
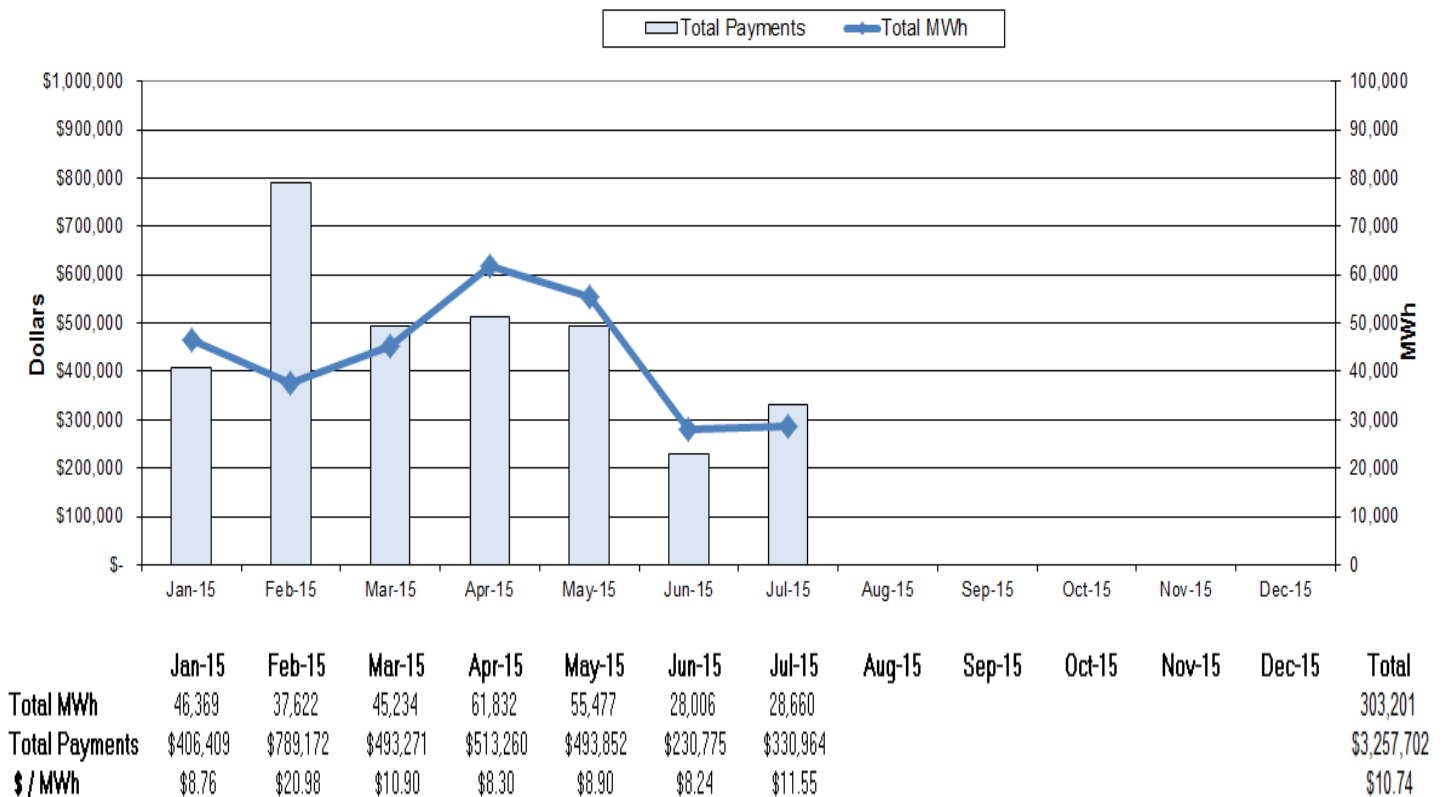
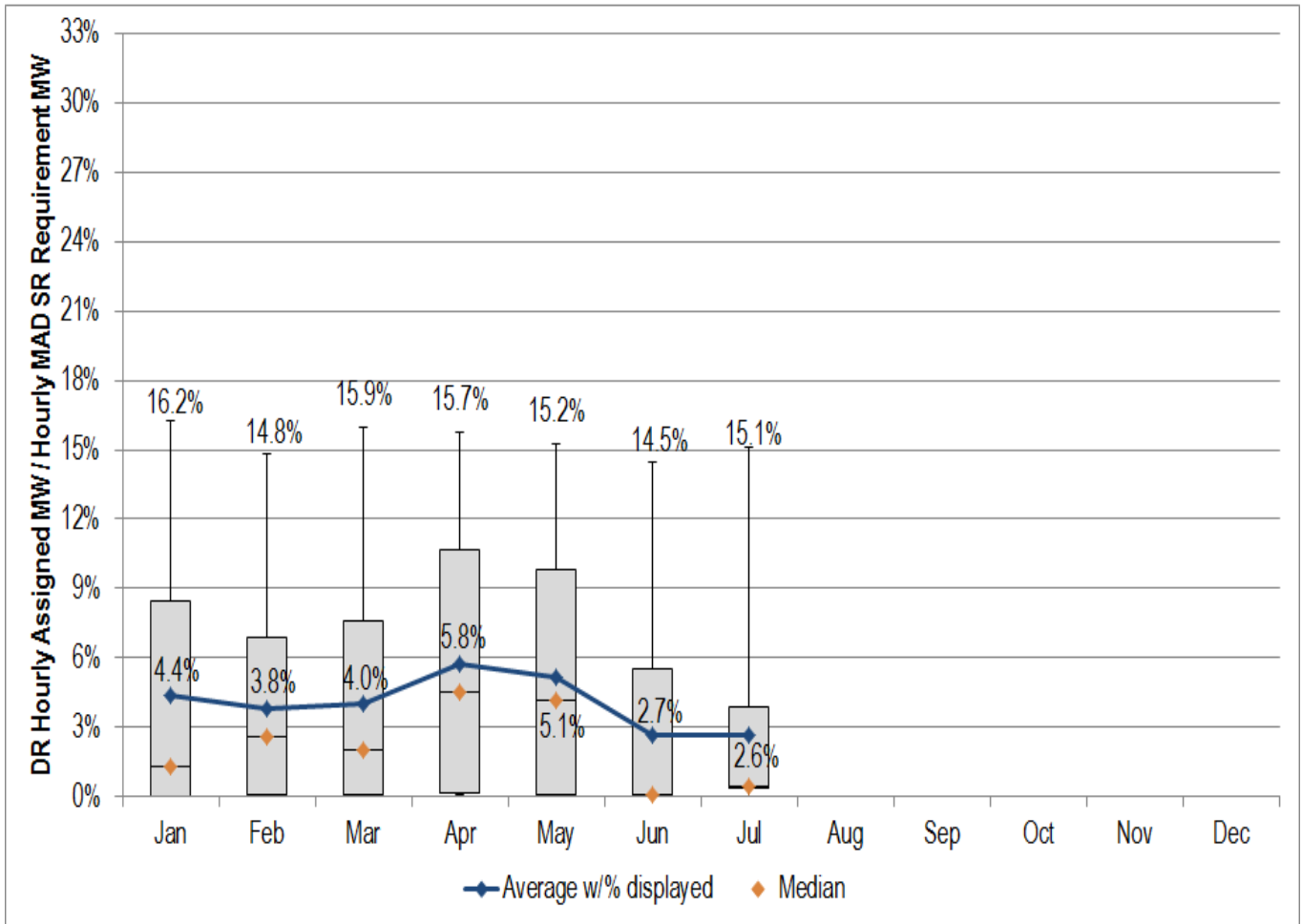


Figure 31: Economic Demand Response Synchronous Reserve Market Participation (2015)



Note: For Figures 30 and 31 above, MWh=sum of the settled MW. Example: 1 MW load available for 12 hours = 12 MWh.

Figure 32: Economic DR Synchronous Reserve Penetration Distribution (Box-plot) for MAD Zone (2015)



Notes:

- 1) Economic Demand Response are Tier2 resources.
- 2) Percents shown on upper whisker are maximum hourly DR percentage of Total MAD SR Requirement.
- 3) The Box-plot depicts the distribution of DR hourly assigned (as a percentage of the MAD requirement) for a month:



The upper whisker is the maximum value

The box top is the Upper Quartile (75%) value

The line inside the box is the median (50%) value

The box bottom is the Lower Quartile (25%) value

The lower whisker is the minimum value