

# 2016 Demand Response Operations Markets Activity Report: April 2019

James McAnany

PJM Demand Side Response Operations

April 11, 2019



This page intentionally left blank

Figure 1: DY 16/17 Active Participants in Economic, Load Management DR, and Capacity Performance Programs

State	Zone	EDC	Economic		Load Management		Capacity Performance		Unique	
			Locations	MW	Locations	MW	Locations	MW	Locations	MW
DC	PEPCO	PEPCO	17	23.0	308	95.3			314	96.6
DE	DPL	DEMEC	2	5.8	28	15.7			28	15.7
DE	DPL	DOVDE			16	3.8			16	3.8
DE	DPL	DPL	8	197.9	241	216.0			242	219.4
DE	DPL	ODEC			12	4.5			12	4.5
IL	COMED	BATAV			1	1.9			1	1.9
IL	COMED	COMED	1,139	304.5	2,173	1,033.7	69	122.6	3,330	1,325.7
IL	COMED	GENEVA	1	1.0						
IL	COMED	IMEAA1	1	0.3	1	32.7	1	6.0	2	38.7
IN	AEP	AEPIMP			112	219.1			112	219.1
IN	AEP	HEREC	1	39.0			1	21.3	1	21.3
IN	AEP	WVPA			68	2.0			68	2.0
IN	AEP	WVSDI			1	23.3			1	23.3
KY	AEP	AEPKPT			1	1.5			1	1.5
KY	DEOK	DEK			54	28.3			54	28.3
KY	EKPC	EKPC			6	27.5	5	114.2	11	141.7
MD	APS	AETSAP	21	16.3	162	72.7			163	79.5
MD	APS	AETSHG	3	2.2	3	0.2			3	0.2
MD	APS	AETSTH			1	0.1			1	0.1
MD	BGE	BC	91	566.6	743	726.6	1	1.6	748	728.4
MD	DPL	DPL	8	95.9	180	115.6			180	115.6
MD	DPL	EASTON			7	3.1			7	3.1
MD	DPL	ODEC	1	1.5	18	10.8			18	10.8
MD	PEPCO	PEPCO	11	309.5	337	404.7			339	405.0
MD	PEPCO	SMECO	11	2.7	113	50.5			113	50.5
MI	AEP	COSEDC					1	5.2	1	5.2
NJ	AECO	AE	16	56.7	251	109.4	1	0.9	255	111.3
NJ	AECO	VMEU			23	6.3			23	6.3
NJ	JCPL	AECI			1	0.2			1	0.2
NJ	JCPL	BSHNJ	1	2.0	1	2.0			1	2.0
NJ	JCPL	JCBGS	14	53.6	454	134.8			460	180.6
NJ	PSEG	PSEG	33	44.1	1,057	345.2			1,061	366.7
NJ	RECO	RECO			17	4.3			17	4.3
NY	PENELEC	PaElec			2	2.0			2	2.0
OH	AEP	AEPOPT	42	58.5	779	450.5	28	77.0	810	539.4
OH	AEP	AMPO			36	50.0	3	1.0	39	51.0
OH	AEP	BUCK			2	20.1			2	20.1
OH	ATSI	AMPO			17	45.7			17	45.7
OH	ATSI	BUCK			2	5.6			2	5.6
OH	ATSI	CPP	1	0.9	11	4.1			11	4.1
OH	ATSI	OEEDC	26	53.9	942	733.6	2	2.2	949	757.9
OH	DAY	AMPO	1	7.0	9	28.8			9	28.8
OH	DAY	BUCK			2	4.0			2	4.0
OH	DAY	DAYEDC	7	8.3	189	146.5	1	6.0	190	152.5
OH	DEOK	AMPO			3	1.4			3	1.4
OH	DEOK	BUCK			2	2.0			2	2.0

State	Zone	EDC	Economic		Load Management		Capacity Performance		Unique	
			Locations	MW	Locations	MW	Locations	MW	Locations	MW
OH	DEOK	DEOEDC	18	75.2	381	156.1	2	94.7	384	252.2
PA	APS	AECI			1	0.3			1	0.3
PA	APS	AETSAP	12	104.2	622	334.4	5	57.3	628	396.1
PA	APS	CHBDTE	0	0.0	1	0.3			1	0.3
PA	ATSI	PAPWR	2	0.3	83	57.2			84	57.4
PA	DUQ	DLCO	53	17.5	338	148.8	5	1.0	344	164.8
PA	METED	AECI			1	1.9			1	1.9
PA	METED	MetEd	36	44.4	487	227.5			488	228.5
PA	PECO	PE	124	75.9	1,230	330.2	2	0.8	1,238	339.8
PA	PENELEC	AECI			22	10.7			22	10.7
PA	PENELEC	PaElec	7	13.0	508	238.6	1	12.1	513	258.7
PA	PENELEC	WELLSB			1	1.1			1	1.1
PA	PPL	AMPO			8	2.2			8	2.2
PA	PPL	CTZECL			4	3.4			4	3.4
PA	PPL	PPL	238	159.1	1,768	617.2	1	0.7	1,773	692.4
PA	PPL	UGI-UI			15	4.1			15	4.1
TN	AEP	AEPAPT			11	6.6			11	6.6
VA	AEP	AEPAPT	1	0.1	210	283.8	1	1.4	211	285.2
VA	AEP	AMPO	3	0.1	12	5.3			12	5.3
VA	AEP	RADFRD			1	1.5			1	1.5
VA	AEP	SALEM			1	0.1			1	0.1
VA	AEP	VATECH			1	7.8			1	7.8
VA	APS	ODEC	3	0.9	52	37.2			52	37.2
VA	DOM	CVEC			6	6.9			6	6.9
VA	DOM	DOMEDC	40	143.9	862	398.1	10	37.5	873	515.7
VA	DOM	DOMVME	2	0.4	19	94.0			19	94.0
VA	DOM	NVEC	2	14.6	49	27.9			51	42.5
VA	DOM	ODEC	3	47.4	33	48.3			33	48.3
VA	DPL	ODEC			19	6.2			19	6.2
WV	AEP	AEPAPT	32	2.1	320	303.4			320	303.4
WV	AEP	APWVP			4	0.5			4	0.5
WV	APS	AETSAP	134	46.2	292	200.9	4	31.7	296	232.6
<b>Total</b>			<b>2,166</b>	<b>2,597</b>	<b>15,748</b>	<b>8,749</b>	<b>144</b>	<b>595</b>	<b>17,037</b>	<b>9,836</b>

**Note:**

- 1) Data as of 5/8/2017.
- 2) Load Management and Capacity Performance MW are in ICAP.
- 3) Economic MW are CSP reported Load Reduction values.
- 4) Residential Locations reported as one location not a total number of end use customers in that program.
- 5) Unique MW: represents total estimated demand reduction assuming full Load Management, Capacity Performance, and Economic reductions.
- 6) As of May 2, 2017, DY16/17 RPM Committed Values are 7,762 MW for Load Management, and 574 MW for Capacity Performance.
- 7) No Emergency Energy Only registrations to report.

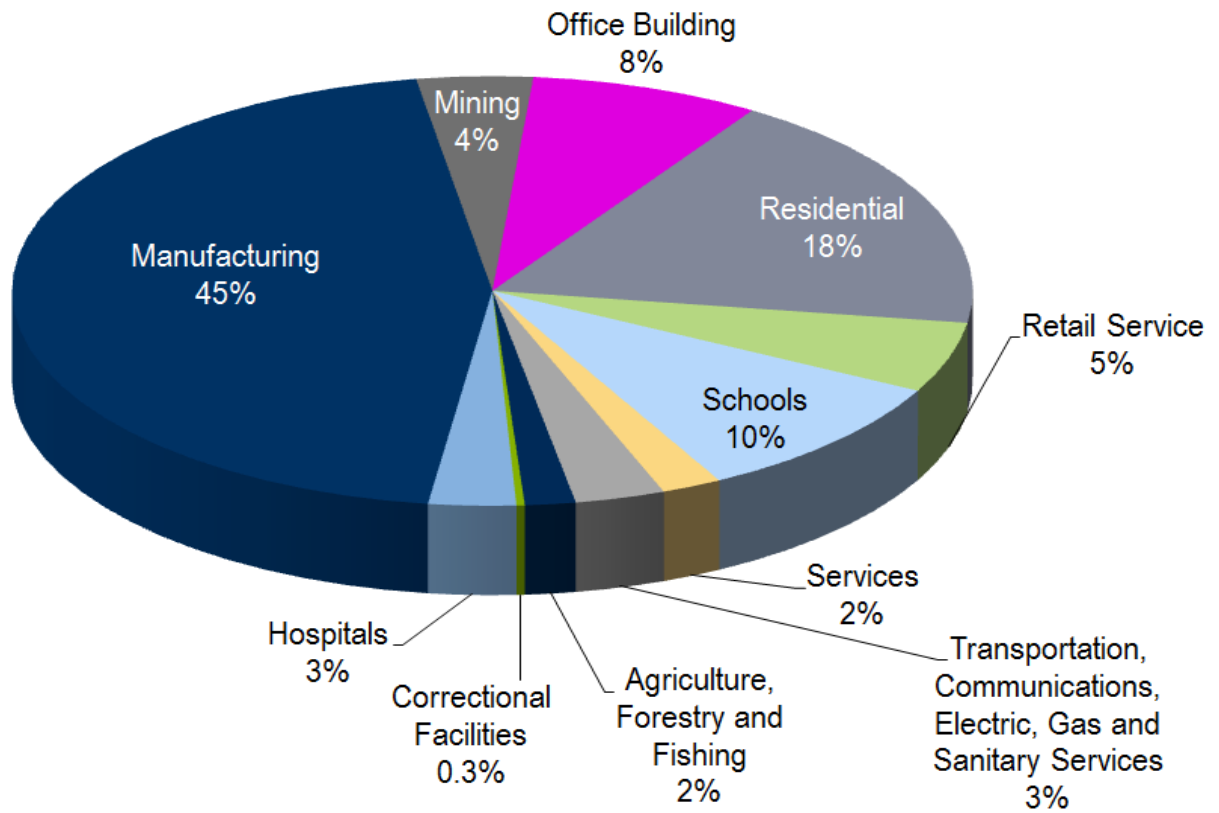
Figure 2: DY 16/17 MWs in Load Management DR by Resource, Product, and Lead Times

Zone		DR Product			Lead Times (Minutes)			Total DR MWs	Committed MWs
		Limited	Extended	Annual	30	60	120		
<b>AECO</b>									
	Pre-Emergency	52.7	54.9	7.9	103.1	4.1	8.2	115.5	
	Emergency	0.2	0.0	0.0	0.2	0.0	0.0	0.2	
	Total	52.9	54.9	7.9	103.3	4.1	8.2	115.7	109.7
<b>AEP</b>									
	Pre-Emergency	1,332.6	5.4	0.0	698.4	37.4	602.1	1,337.9	
	Emergency	37.7	0.0	0.0	28.8	0.8	8.0	37.7	
	Total	1,370.2	5.4	0.0	727.3	38.2	610.2	1,375.6	1,323.7
<b>APS</b>									
	Pre-Emergency	617.4	5.2	2.0	339.4	11.5	273.7	624.6	
	Emergency	21.5	0.0	0.0	14.0	0.0	7.5	21.5	
	Total	638.9	5.2	2.0	353.4	11.5	281.3	646.1	587.3
<b>ATSI</b>									
	Pre-Emergency	657.2	90.1	73.9	380.3	44.1	396.8	821.2	
	Emergency	25.0	0.0	0.0	20.2	0.3	4.5	25.0	
	Total	682.2	90.1	73.9	400.5	44.4	401.3	846.2	488.5
<b>BGE</b>									
	Pre-Emergency	700.8	0.3	3.9	659.3	4.0	41.7	705.0	
	Emergency	21.5	0.0	0.0	12.3	0.0	9.3	21.5	
	Total	722.3	0.3	3.9	671.6	4.0	50.9	726.6	653.9
<b>COMED</b>									
	Pre-Emergency	998.0	52.2	0.0	793.3	29.9	227.0	1,050.2	
	Emergency	18.1	0.0	0.0	4.2	0.0	14.0	18.1	
	Total	1,016.2	52.2	0.0	797.5	29.9	240.9	1,068.4	1,034.5
<b>DAY</b>									
	Pre-Emergency	174.1	0.6	0.0	116.0	0.5	58.2	174.7	
	Emergency	4.6	0.0	0.0	4.6	0.0	0.0	4.6	
	Total	178.7	0.6	0.0	120.6	0.5	58.2	179.3	165.3
<b>DEOK</b>									
	Pre-Emergency	168.0	16.9	0.0	84.2	70.2	30.5	184.9	
	Emergency	2.8	0.0	0.0	2.8	0.0	0.0	2.8	
	Total	170.8	16.9	0.0	87.0	70.2	30.5	187.7	169.4
<b>DOM</b>									
	Pre-Emergency	455.6	64.8	0.0	232.7	33.0	254.6	520.3	
	Emergency	54.5	0.0	0.3	46.6	6.2	2.1	54.8	
	Total	510.1	64.8	0.3	279.3	39.2	256.7	575.2	504.9
<b>DPL</b>									
	Pre-Emergency	157.4	211.0	1.0	176.9	19.8	172.7	369.4	
	Emergency	6.4	0.0	0.0	3.4	1.9	1.1	6.4	
	Total	163.7	211.0	1.0	180.3	21.7	173.8	375.8	328.3
<b>DUQ</b>									
	Pre-Emergency	145.6	2.3	0.0	72.6	6.8	68.5	147.9	
	Emergency	0.9	0.0	0.0	0.9	0.0	0.0	0.9	
	Total	146.5	2.3	0.0	73.5	6.8	68.5	148.8	132.5
<b>EKPC</b>									
	Pre-Emergency	27.5	0.0	0.0	27.5	0.0	0.0	27.5	
	Emergency	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	Total	27.5	0.0	0.0	27.5	0.0	0.0	27.5	26.9

Zone		DR Product			Lead Times (Minutes)			Total DR MWs	Committed MWs
		Limited	Extended	Annual	30	60	120		
<b>JCPL</b>									
	Pre-Emergency	120.1	0.3	11.4	95.2	1.4	35.3	131.8	
	Emergency	5.2	0.0	0.0	5.2	0.0	0.0	5.2	
	Total	125.3	0.3	11.4	100.3	1.4	35.3	137.0	120.3
<b>METED</b>									
	Pre-Emergency	212.8	0.0	4.3	138.3	15.9	62.9	217.1	
	Emergency	12.3	0.0	0.0	0.4	3.5	8.3	12.3	
	Total	225.1	0.0	4.3	138.7	19.5	71.2	229.4	211.0
<b>PECO</b>									
	Pre-Emergency	269.9	6.9	18.8	202.5	29.6	63.5	295.6	
	Emergency	34.6	0.0	0.0	31.3	3.2	0.0	34.6	
	Total	304.4	6.9	18.8	233.8	32.8	63.5	330.2	297.1
<b>PENELEC</b>									
	Pre-Emergency	246.5	1.0	4.4	135.1	6.6	110.0	251.8	
	Emergency	0.5	0.0	0.0	0.5	0.0	0.0	0.5	
	Total	247.0	1.0	4.4	135.7	6.6	110.0	252.3	232.9
<b>PEPCO</b>									
	Pre-Emergency	186.0	355.1	2.1	344.1	0.9	198.1	543.2	
	Emergency	7.3	0.0	0.0	6.7	0.0	0.6	7.3	
	Total	193.3	355.1	2.1	350.8	0.9	198.7	550.5	510.0
<b>PPL</b>									
	Pre-Emergency	603.9	0.3	17.4	333.2	64.0	224.3	621.5	
	Emergency	5.3	0.0	0.0	3.1	0.0	2.2	5.3	
	Total	609.2	0.3	17.4	336.3	64.0	226.5	626.8	549.0
<b>PSEG</b>									
	Pre-Emergency	317.3	1.5	23.1	303.1	7.8	31.0	341.9	
	Emergency	3.3	0.0	0.0	0.2	0.0	3.2	3.3	
	Total	320.7	1.5	23.1	303.2	7.8	34.1	345.2	313.2
<b>RECO</b>									
	Pre-Emergency	4.0	0.0	0.3	4.2	0.0	0.1	4.3	
	Emergency	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	Total	4.0	0.0	0.3	4.2	0.0	0.1	4.3	3.6
<b>TOTAL</b>									
	Pre-Emergency	7,447.4	868.7	170.4	5,239.7	387.7	2,859.2	8,486.5	
	Emergency	261.8	0.0	0.3	185.3	16.0	60.7	262.1	
	Total	7,709.2	868.7	170.7	5,425.0	403.7	2,919.9	8,748.5	7,762.0

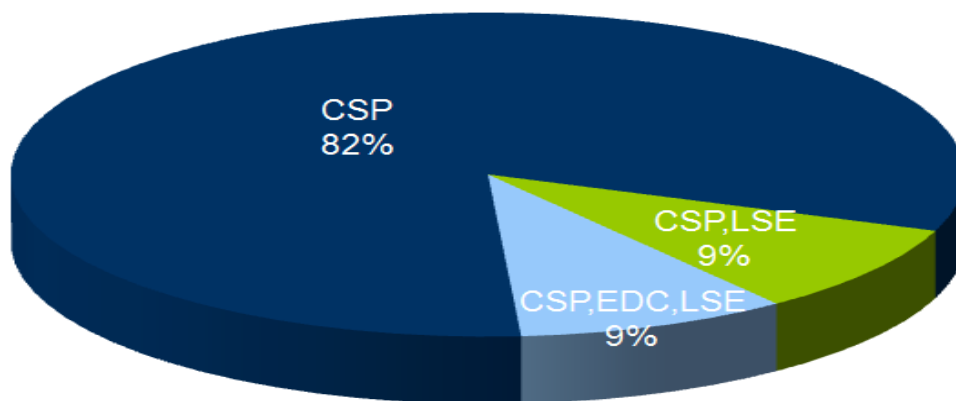
Note: MWs are Nominated Capacity (MWs)

Figure 3: DY 16/17 Confirmed Load Management DR Registrations Business Segments



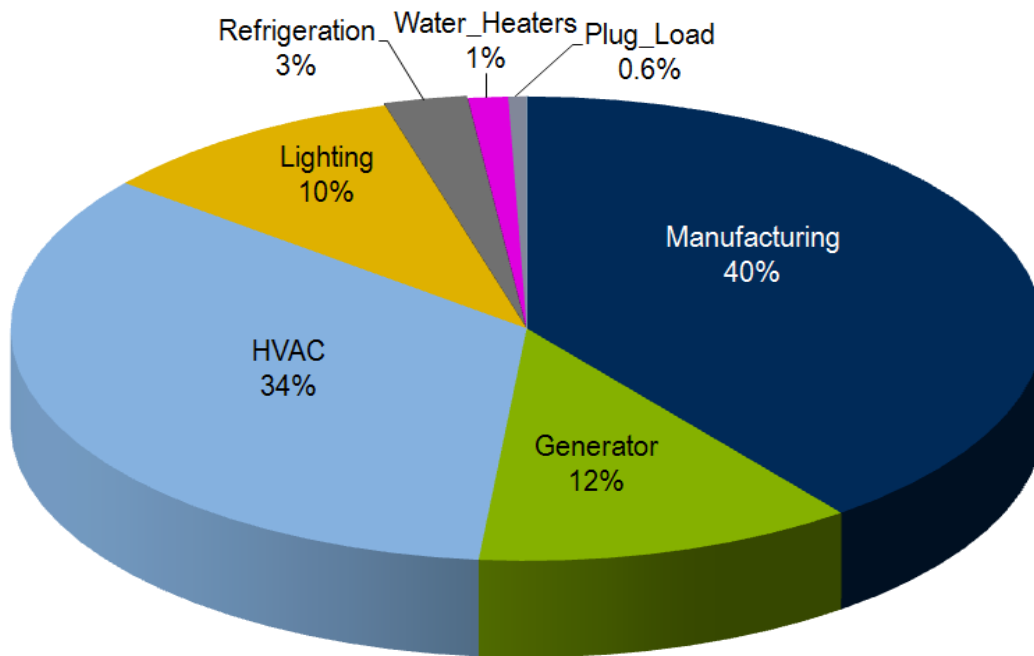
Note: Percent of Nominated Capacity (MWs)

Figure 4: DY 16/17 Confirmed Load Management DR Registrations Owner/Company Type



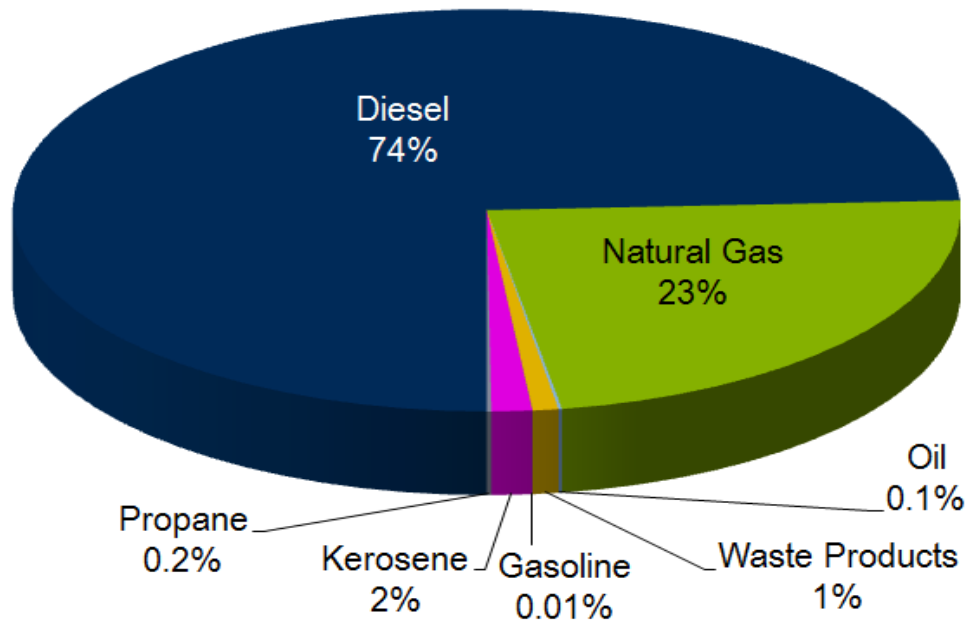
Note: Percent of Nominated Capacity (MWs)

**Figure 5: DY 16/17 Confirmed Load Management DR Registrations Customer Load Reduction Methods**



Note: Percent of Nominated Capacity (MWs)

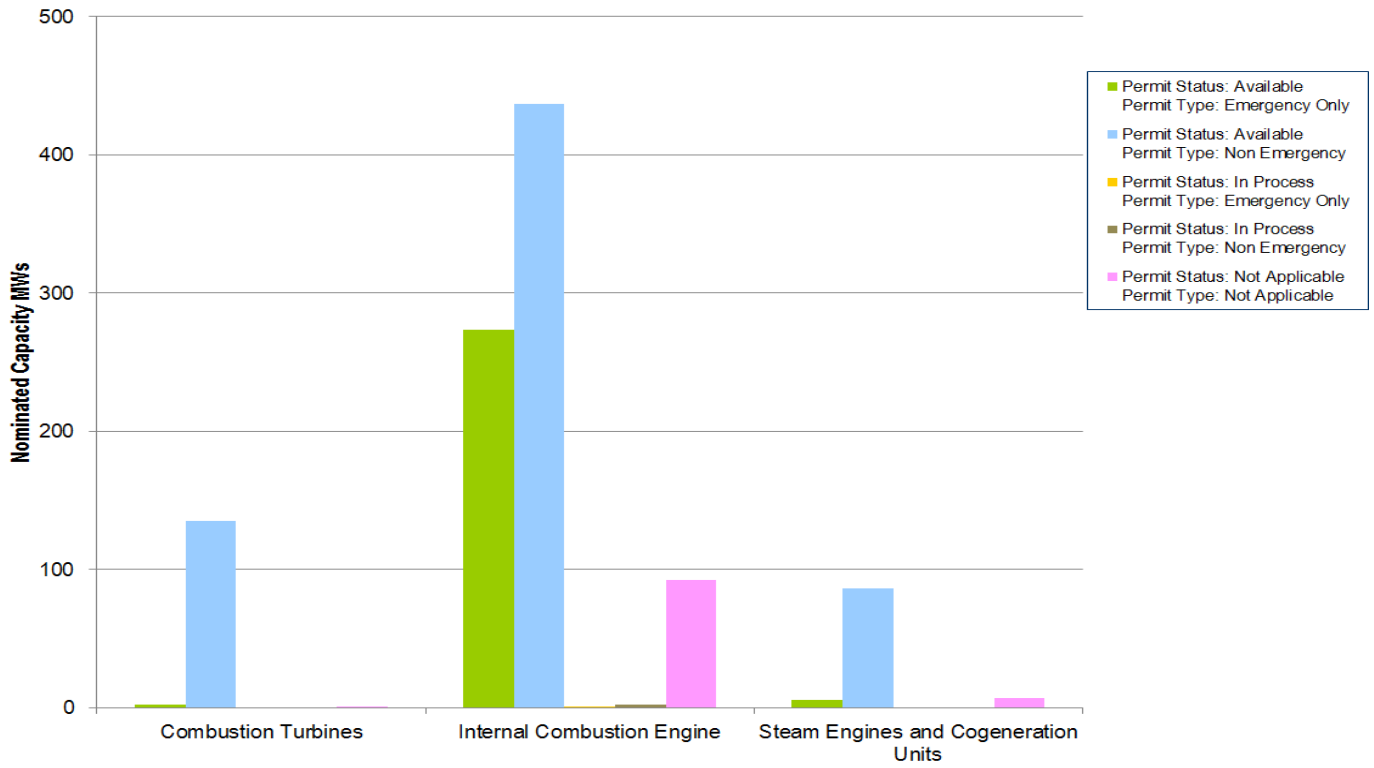
**Figure 6: DY 16/17 Confirmed Load Management DR Registrations Fuel Mix with Behind the Meter Generation**



Note: Percent of Nominated Capacity (MWs)



**Figure 7: DY 16/17 Confirmed Load Management DR Registrations Generator and Permit Type**



**Figure 8: DY 16/17 Confirmed Load Management DR Registrations Fuel Mix with Behind the Meter Generation**

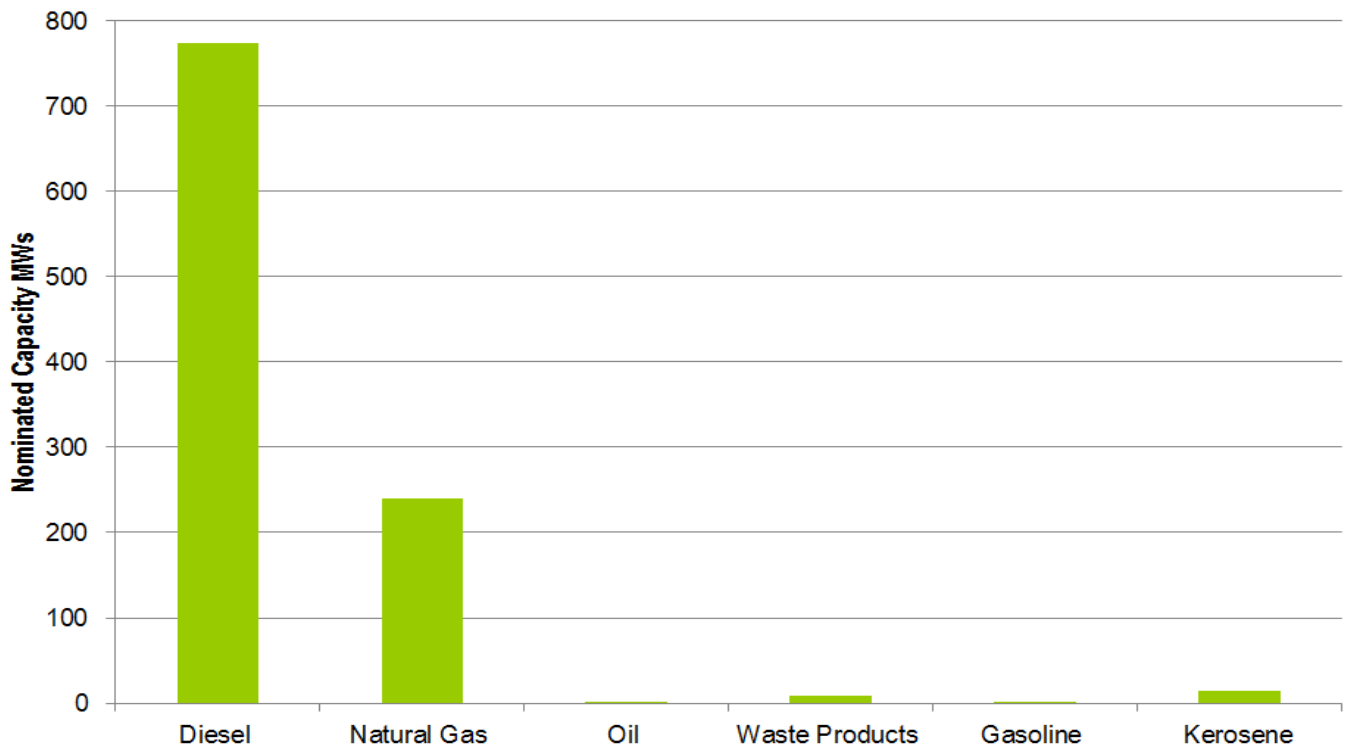
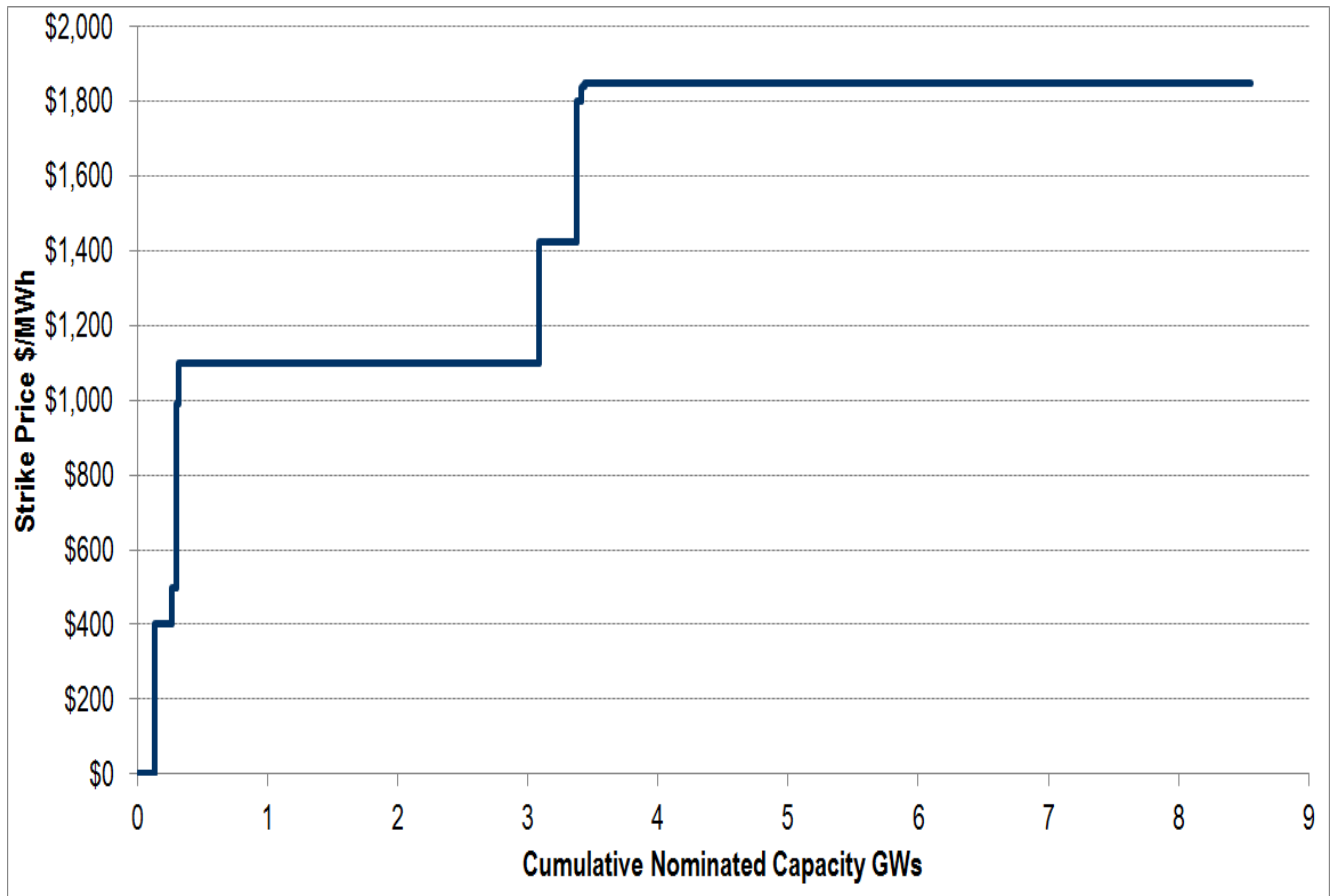


Figure 9: DY 16/17 Confirmed Load Management Full DR Registrations Energy Supply Curve:



This area intentionally left blank

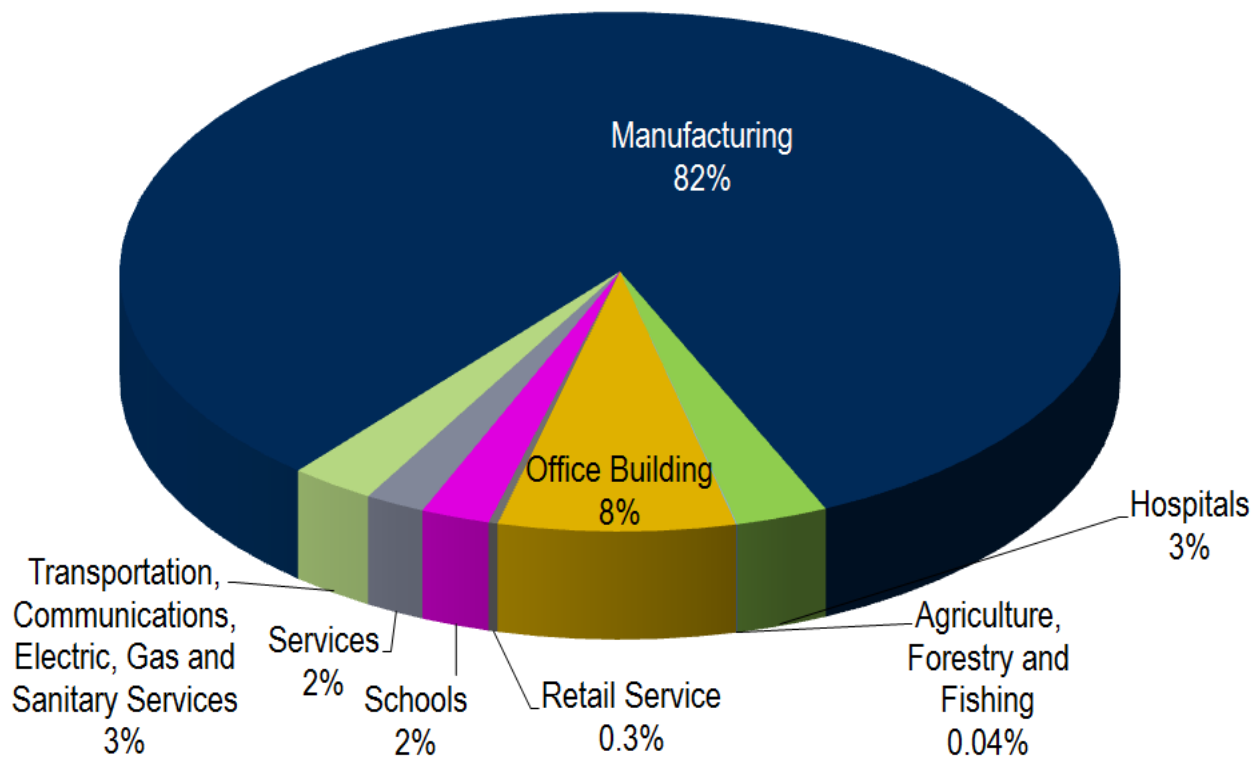
Figure 10: DY 16/17 MWs in PJM Capacity Performance by Resource and Lead Times

Zone		Lead Times (Minutes)			Total MWs	Committed MWs
		30	60	120		
<b>AECO</b>						
	Pre-Emergency	0.9	0.0	0.0	0.9	
	Emergency	0.0	0.0	0.0	0.0	
	Total	0.9	0.0	0.0	0.9	0.9
<b>AEP</b>						
	Pre-Emergency	68.5	0.0	12.3	80.8	
	Emergency	14.7	0.0	10.3	25.0	
	Total	83.2	0.0	22.7	105.8	104.0
<b>APS</b>						
	Pre-Emergency	64.1	6.5	18.3	88.9	
	Emergency	0.0	0.0	0.0	0.0	
	Total	64.1	6.5	18.3	88.9	84.1
<b>ATSI</b>						
	Pre-Emergency	2.2	0.0	0.0	2.2	
	Emergency	0.0	0.0	0.0	0.0	
	Total	2.2	0.0	0.0	2.2	2.3
<b>BGE</b>						
	Pre-Emergency	1.6	0.0	0.0	1.6	
	Emergency	0.0	0.0	0.0	0.0	
	Total	1.6	0.0	0.0	1.6	1.0
<b>COMED</b>						
	Pre-Emergency	112.3	5.4	9.5	127.2	
	Emergency	1.4	0.0	0.0	1.4	
	Total	113.6	5.4	9.5	128.6	123.5
<b>DAY</b>						
	Pre-Emergency	6.0	0.0	0.0	6.0	
	Emergency	0.0	0.0	0.0	0.0	
	Total	6.0	0.0	0.0	6.0	6.0
<b>DEOK</b>						
	Pre-Emergency	8.0	0.0	86.7	94.7	
	Emergency	0.0	0.0	0.0	0.0	
	Total	8.0	0.0	86.7	94.7	93.5
<b>DOM</b>						
	Pre-Emergency	27.2	0.0	5.3	32.6	
	Emergency	5.0	0.0	0.0	5.0	
	Total	32.2	0.0	5.3	37.5	30.5
<b>DUQ</b>						
	Pre-Emergency	1.0	0.0	0.0	1.0	
	Emergency	0.0	0.0	0.0	0.0	
	Total	1.0	0.0	0.0	1.0	1.0
<b>EKPC</b>						
	Pre-Emergency	10.2	7.2	95.1	112.4	
	Emergency	1.7	0.0	0.0	1.7	
	Total	11.9	7.2	95.1	114.2	113.9
<b>PECO</b>						
	Pre-Emergency	0.0	0.0	0.8	0.8	
	Emergency	0.0	0.0	0.0	0.0	
	Total	0.0	0.0	0.8	0.8	0.8
<b>PENELEC</b>						
	Pre-Emergency	0.0	0.0	12.1	12.1	
	Emergency	0.0	0.0	0.0	0.0	
	Total	0.0	0.0	12.1	12.1	12.1

Zone		Lead Times (Minutes)			Total MWs	Committed MWs
		30	60	120		
PPL	Pre-Emergency	0.7	0.0	0.0	0.7	
	Emergency	0.0	0.0	0.0	0.0	
	Total	0.7	0.0	0.0	0.7	0.7
	TOTAL					
TOTAL	Pre-Emergency	302.8	19.2	240.2	562.1	
	Emergency	22.7	0.0	10.3	33.1	
	Total	325.5	19.2	250.6	595.2	574.3

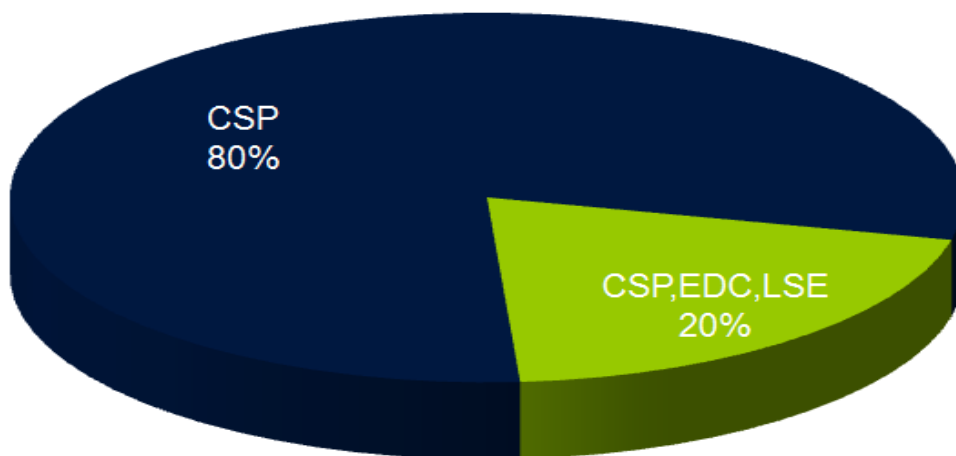
Note: MWs are Nominated Capacity (MWs)

Figure 11: DY 16/17 Confirmed Capacity Performance Registrations Business Segments



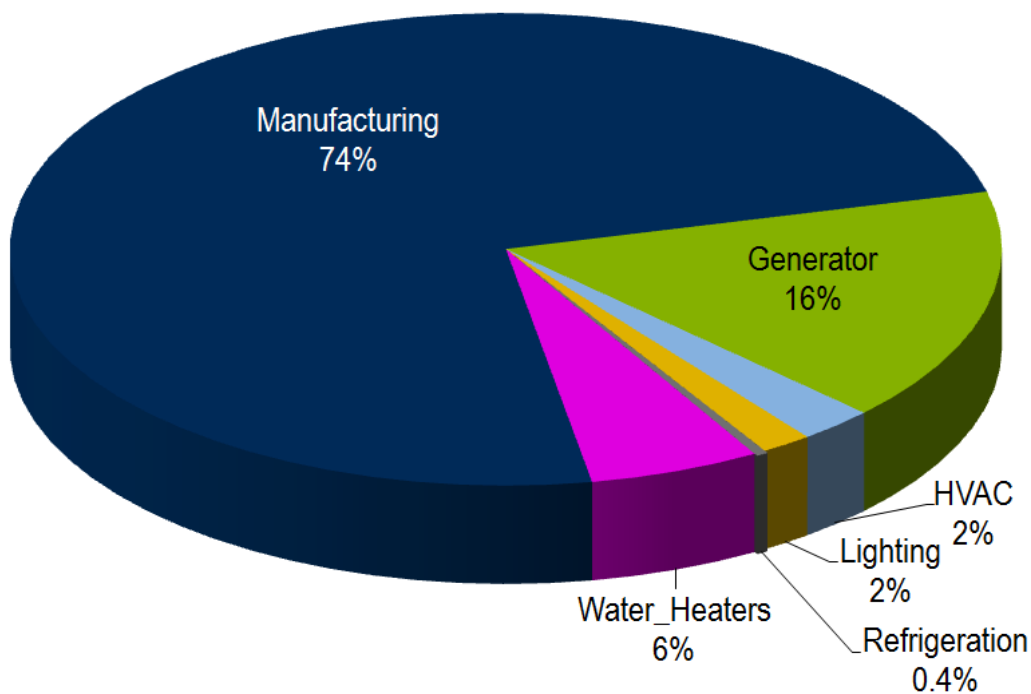
Note: Percent of Nominated Capacity (MWs)

Figure 12: DY 16/17 Confirmed Capacity Performance Registrations Owner/Company Type



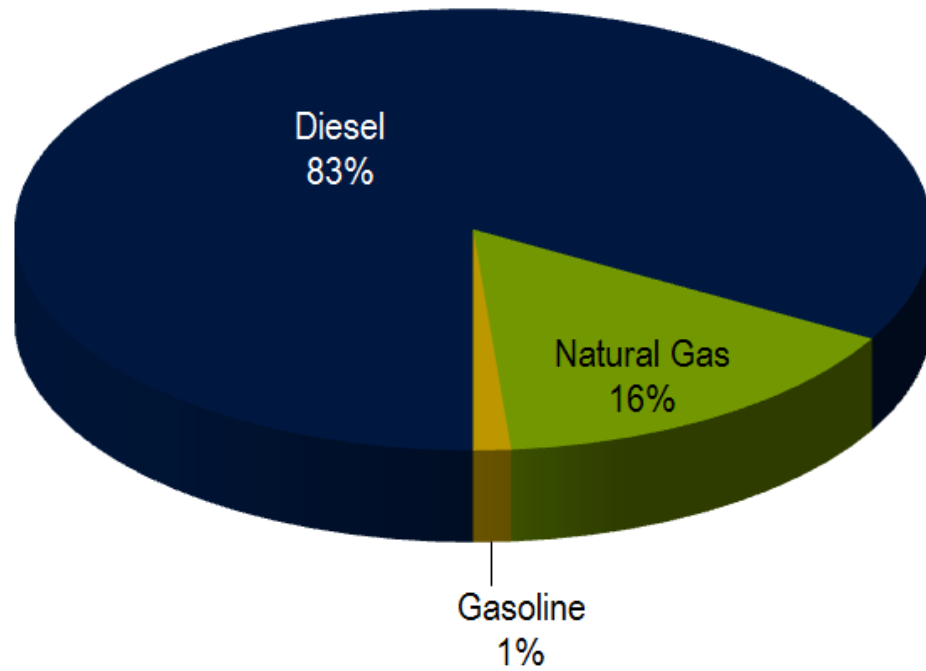
Note: Percent of Nominated Capacity (MWs)

Figure 13: DY 16/17 Confirmed Capacity Performance Registrations Load Reduction Methods



Note: Percent of Nominated Capacity (MWs)

Figure 14: DY 16/17 Confirmed Capacity Performance Registrations Fuel Mix with Behind the Meter Generation



Note: Percent of Nominated Capacity (MWs)

Figure 15: DY 16/17 Confirmed Capacity Performance Registrations Generator and Permit Type

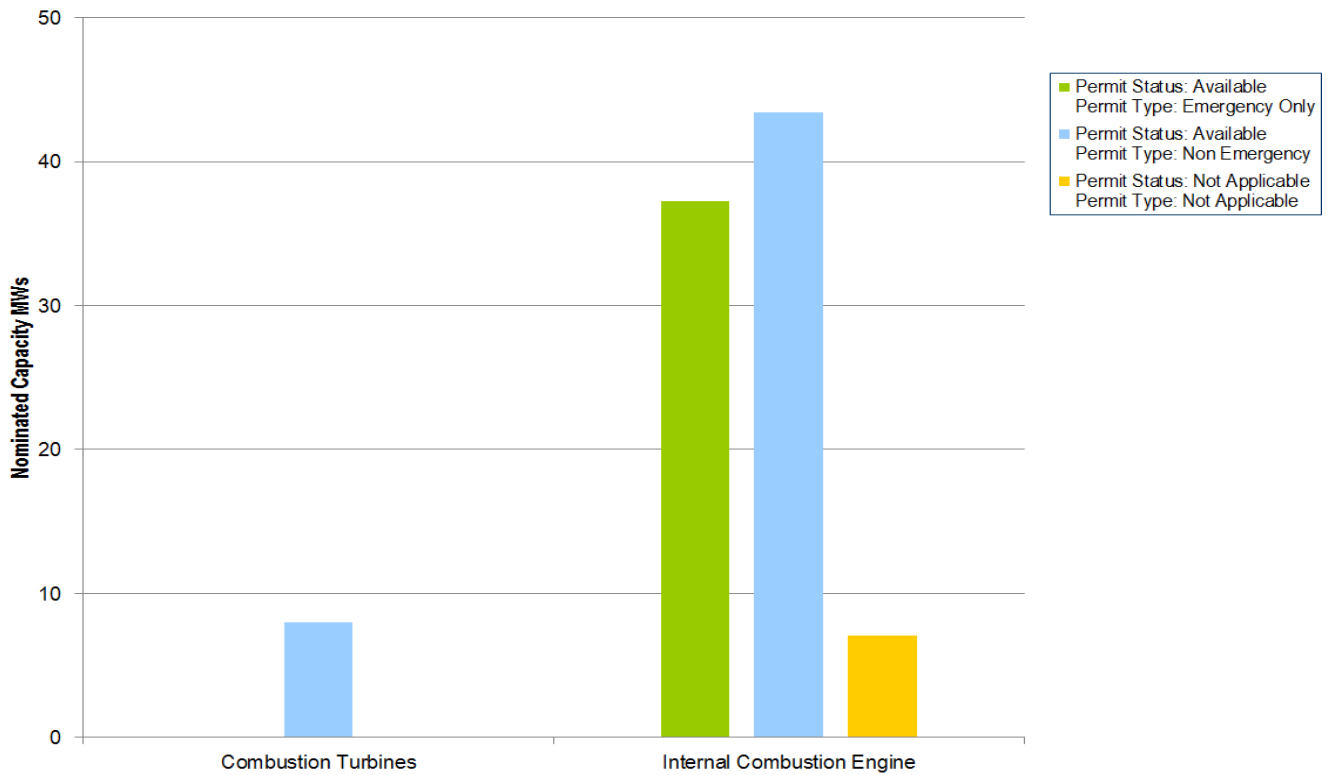


Figure 16: DY 16/17 Confirmed Capacity Performance Registrations Fuel Mix with Behind the Meter Generation

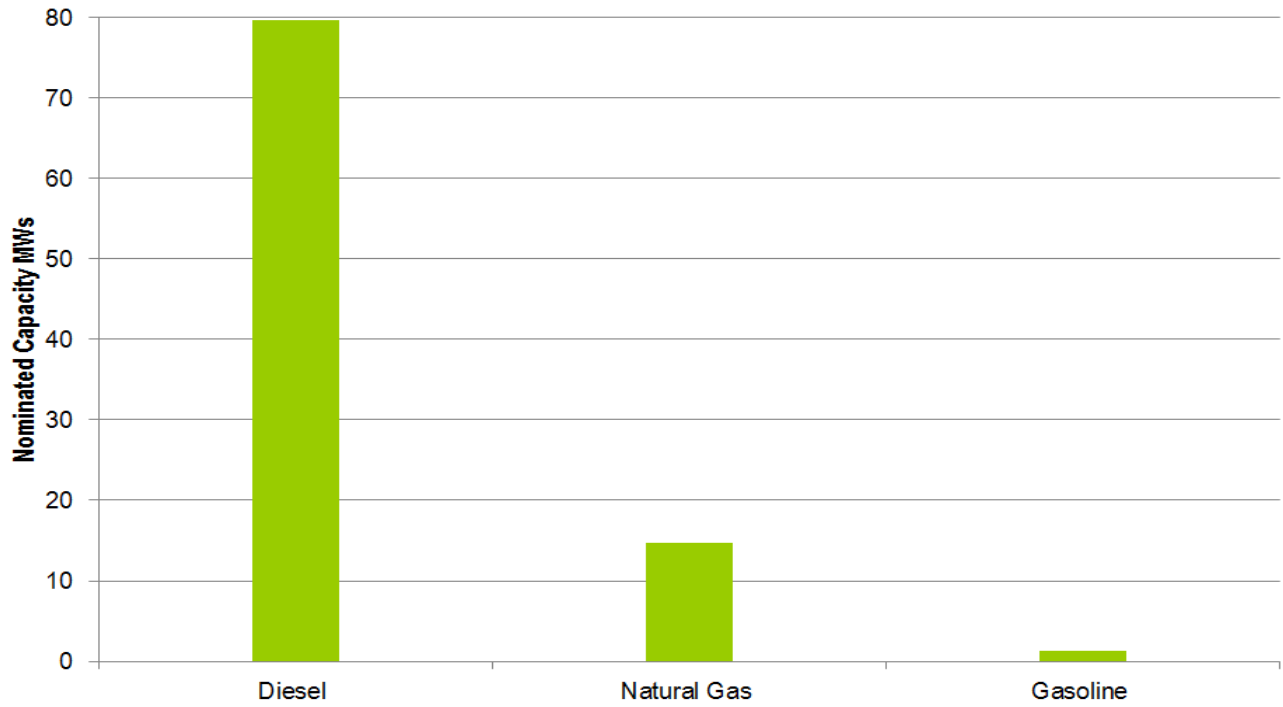
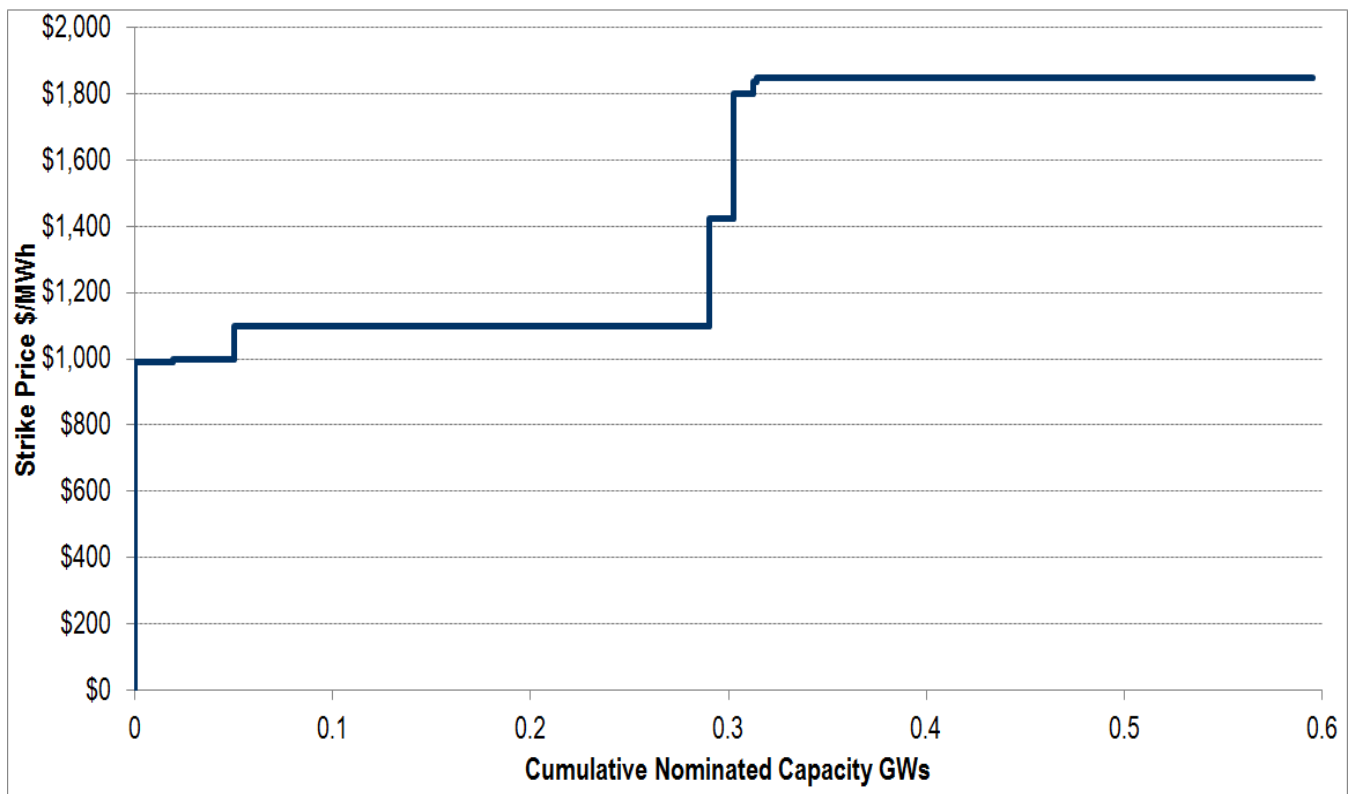


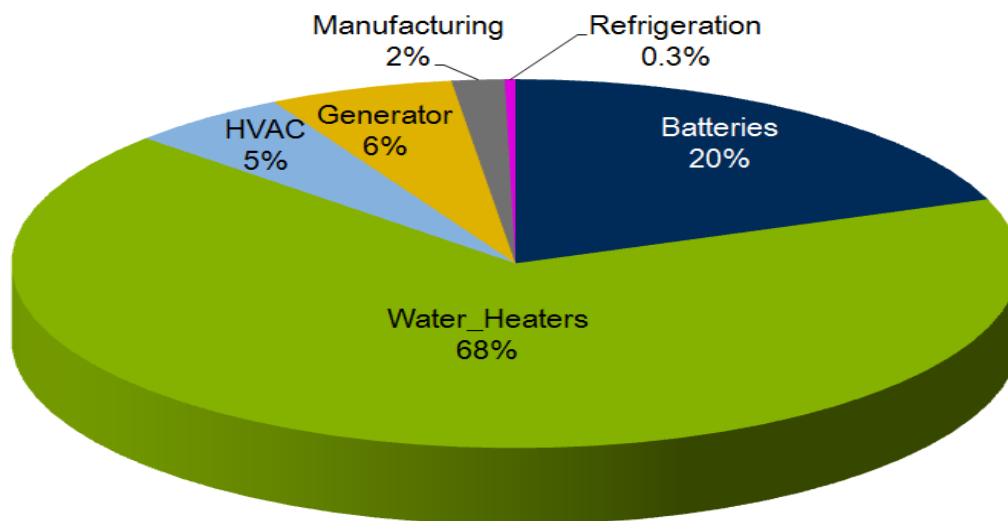
Figure 17: DY 16/17 Confirmed Capacity Performance Registrations Energy Supply Curve



**Figure 18: 2016 Economic Demand Response Capability in the Ancillary Service Markets**

Synch Reserves	Zone	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Locations	MAD	135	136	136	136	136	146	140	139	140	139	141	158
	Non-MAD	10	10	12	12	12	11	11	11	12	12	13	15
	<b>RTO</b>	<b>145</b>	<b>146</b>	<b>148</b>	<b>148</b>	<b>148</b>	<b>157</b>	<b>151</b>	<b>150</b>	<b>152</b>	<b>151</b>	<b>154</b>	<b>173</b>
<b>Average Number of Unique Participating Locations per Month:</b>					<b>152</b>								
MWs	MAD	375	375	375	375	370	360	360	344	347	349	349	360
	Non-MAD	198	198	202	202	202	149	149	149	149	150	150	150
	<b>RTO</b>	<b>573</b>	<b>573</b>	<b>576</b>	<b>576</b>	<b>571</b>	<b>509</b>	<b>509</b>	<b>492</b>	<b>496</b>	<b>499</b>	<b>499</b>	<b>510</b>
<b>Average MWs per Month:</b>					<b>532</b>								
Regulation	Zone	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Locations	RTO	293	292	277	331	338	302	302	391	396	400	397	407
<b>Average Number of Unique Participating Locations per Month:</b>					<b>344</b>								
MWs	RTO	24	24	25	33	36	36	36	42	47	56	57	59
<b>Average MWs per Month:</b>					<b>39</b>								

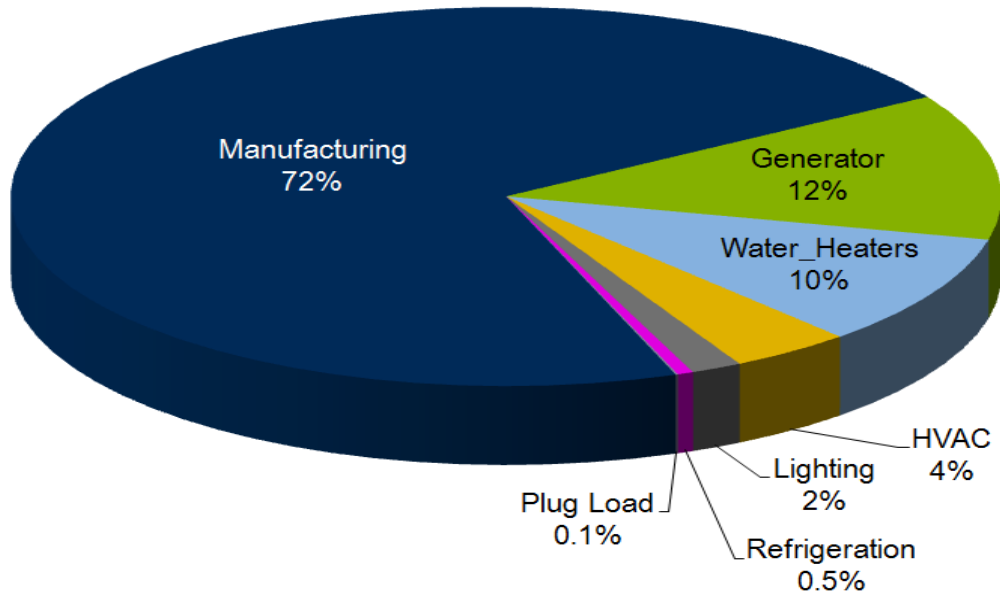
Capability represents total amount that may be offered. Actual offered and cleared volume may be significantly lower and is represented in subsequent figures/tables in report

**Figure 19: 2016 PJM Demand Response Confirmed Regulation Registrations Load Reduction Methods**


Note: Percent of CSP Reported Load Reduction MWs

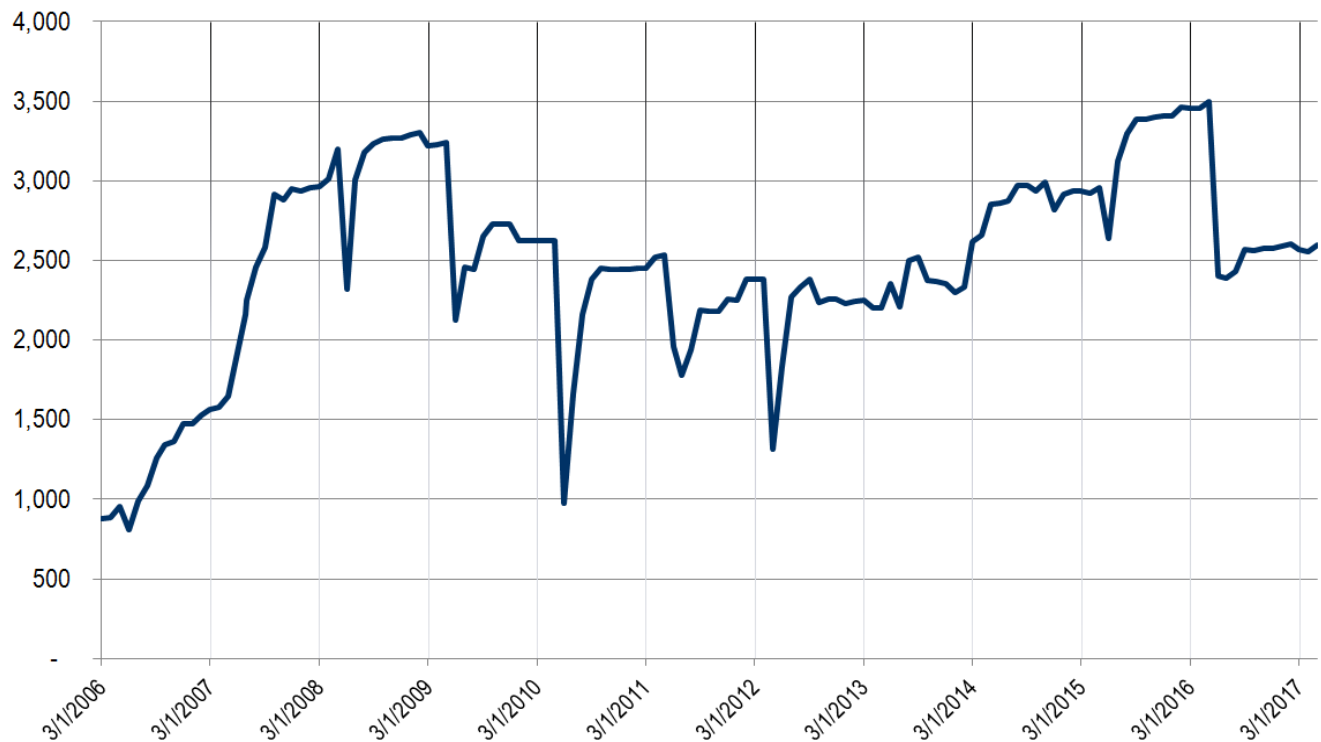


Figure 20: 2016 PJM Demand Response Confirmed Synch Reserve Registrations Load Reduction Methods:



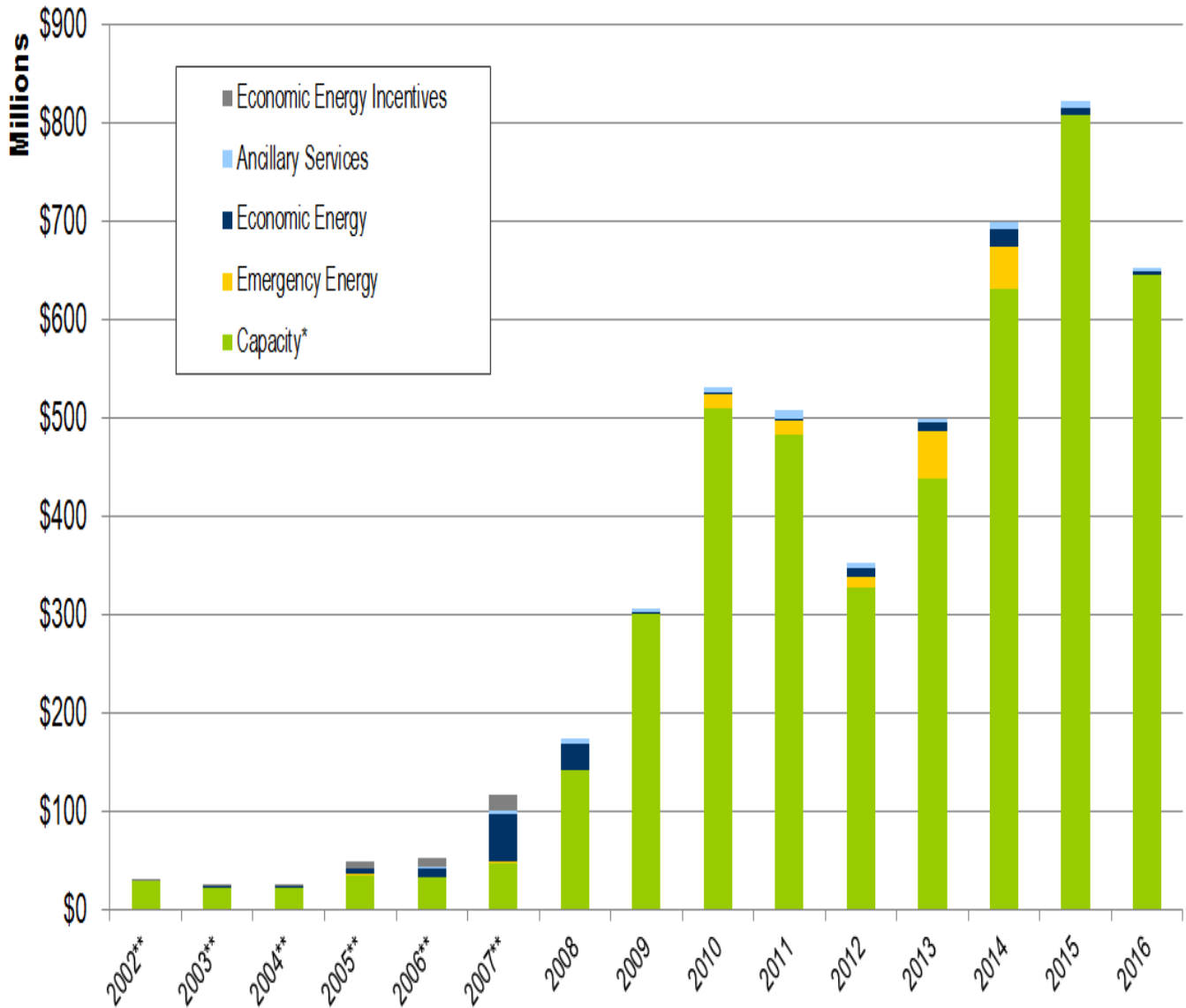
Note: Percent of CSP Reported Load Reduction MWs

Figure 21: PJM Economic Demand Response Capability in Energy Market (3/1/2006-05/10/2017)



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.

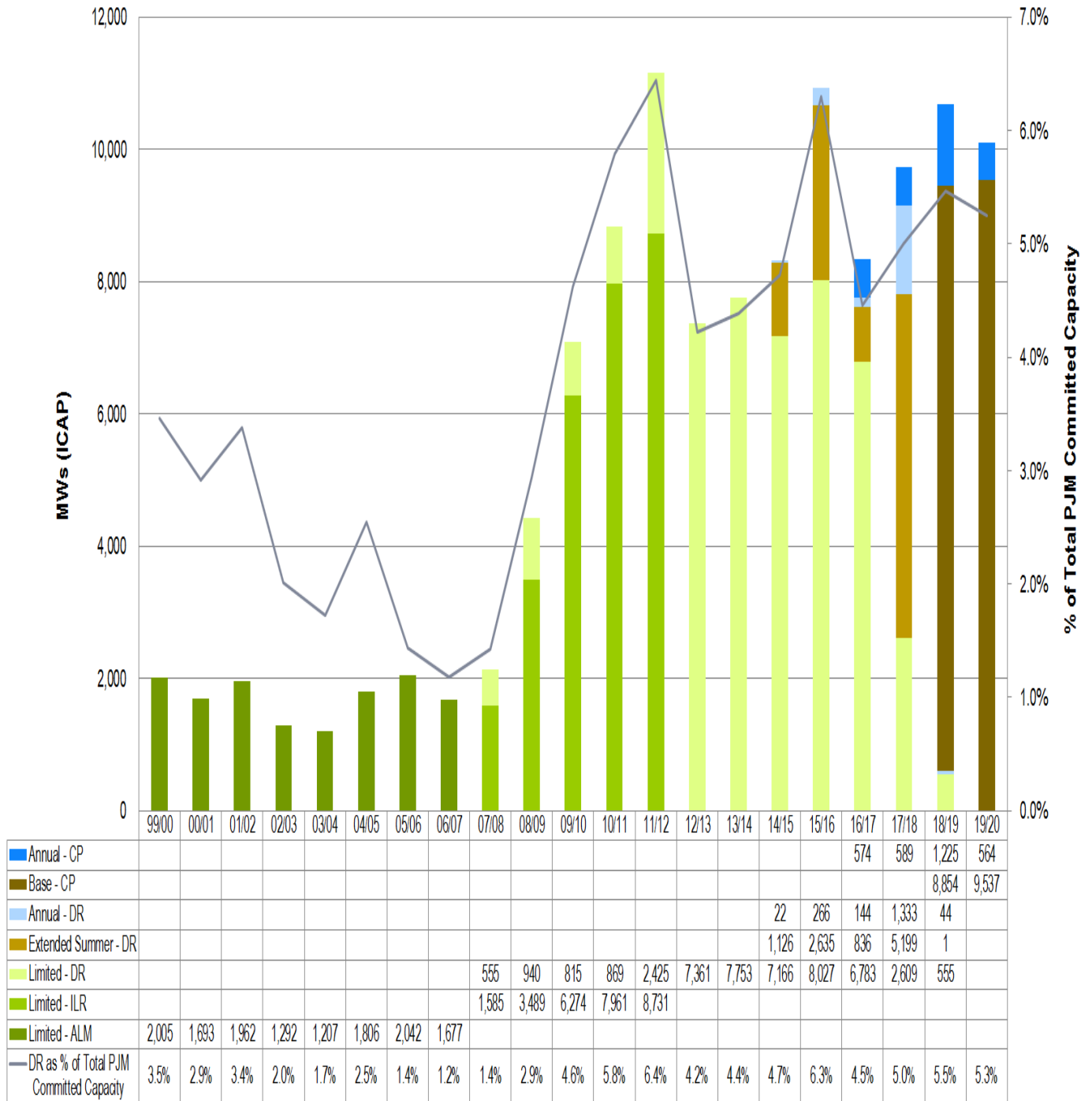
Figure 22: PJM Estimated Revenue for Economic and Load Management DR Markets



\*Capacity Net Revenue inclusive of Capacity Credits and Charges.

\*\*PJM assumes capacity value at \$50 MW Day (PJM does not know the value of capacity credits in the forward market prior to RPM; only a portion of capacity was purchased through the daily capacity market at the time).

This area intentionally left blank

**Figure 23: PJM Demand Response Committed MWs by Delivery Year**

**Notes:**

- 1) Data as of 5/8/2017.
- 2) RPM was implemented DY 07/08.
- 3) DY 17/18 MWs include results from Base, First, Second, and Third Incremental Auctions.
- 4) DY 18/19 MWs include results from Base and First Incremental Auction.
- 5) DY 19/20 MWs include results from Base Residual Auction.
- 6) ALM MWs are seasonal averages for Delivery Years before 07/08.

**Figure 24: 2016 Economic Demand Response Monthly Registration Participation**

State	Zone	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
DC	PEPCO							1		1			
DE	DPL							4	1	2			
IL	COMED	2	2	2	4	3	4	6	7	6	5	3	3
MD	BGE							8	1				
	DPL							2		2			
	PEPCO							2		2			
NJ	AECO					1	1	2	1	1	1		1
	JCPL		1					2	2				
	PSEG	10	7	7	8	6	7	10	9	8	8	6	7
OH	ATSI	1	1	1	1	1	1	1	1	1	1	1	1
	DEOK							8	8	8			
PA	METED							1	2	2	2	2	2
	PECO	2	2	1		1	1	7	3	3			2
	PENELEC	2	2	2	2	2	2	3	2	2	2	2	2
	PPL	1					1	3	2			1	1
VA	DOM	2	3	1	1	2	3	3	3	3	2	1	1
WV	APS	1		1			1	1	1	1	1	1	1
<b>Total</b>		<b>21</b>	<b>18</b>	<b>15</b>	<b>16</b>	<b>17</b>	<b>21</b>	<b>63</b>	<b>43</b>	<b>42</b>	<b>22</b>	<b>17</b>	<b>21</b>

Average Unique Participating Registrations per Month: 26

**Figure 25: 2016 Economic Demand Response Monthly Registration Participation Day-Ahead Activity**

State	Zone	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
DC	PEPCO												
DE	DPL							1	1				
IL	COMED												
MD	BGE												
	DPL												
	PEPCO												
NJ	AECO												
	JCPL							1	1				
	PSEG	5	5	5	5	4	3	5	4	3	4	3	4
OH	ATSI												
	DEOK							8	8	8			
PA	METED								1	1	1	1	1
	PECO		1					1		1			1
	PENELEC	1	1	1	1	1	1	1	1	1	1	1	1
	PPL							2	1				1
VA	DOM	1	1			1	1		1		1		
WV	APS												
<b>Total</b>		<b>7</b>	<b>8</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>5</b>	<b>19</b>	<b>18</b>	<b>14</b>	<b>7</b>	<b>5</b>	<b>8</b>

Average Unique Participating Registrations per Month (Day-Ahead): 9

**Figure 26: 2016 Economic Demand Response Monthly Registration Participation Real-Time Activity**

State	Zone	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
DC	PEPCO							1		1			
DE	DPL							3		2			
IL	COMED	2	2	2	4	3	4	6	7	6	5	3	3
MD	BGE							8	1				
	DPL							2		2			
	PEPCO							2		2			
NJ	AECO					1	1	2	1	1	1		1
	JCPL		1					1	1				
	PSEG	5	2	2	3	2	4	5	5	5	4	3	3
OH	ATSI	1	1	1	1	1	1	1	1	1	1	1	1
	DEOK												
PA	METED							1	1	1	1	1	1
	PECO	2	1	1		1	1	6	3	2			1
	PENELEC	1	1	1	1	1	1	2	1	1	1	1	1
	PPL	1					1	1	1			1	
VA	DOM	1	2	1	1	1	2	3	2	3	1	1	1
WV	APS	1		1		1	1	1	1	1	1	1	1
<b>Total</b>		<b>14</b>	<b>10</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>16</b>	<b>44</b>	<b>25</b>	<b>28</b>	<b>15</b>	<b>12</b>	<b>13</b>

Average Unique Participating Registrations per Month (Real-Time): 17

**Figure 27: 2016 Economic Demand Response Monthly MWh Reductions**

State	Zone	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
DC	PEPCO							44		16			
DE	DPL							210	4	0			
IL	COMED	193	6	20	143	458	514	1,092	1,575	1,082	647	62	572
MD	BGE							8,607	2				
	DPL							165		31			
	PEPCO							798		150			
NJ	AECO					8	1	42	40	19	0		0
	JCPL		5					2,307	739				
	PSEG	2,156	1,011	143	2,236	1,142	919	974	891	601	723	916	2,211
OH	ATSI	1,009	667	610	1,190	328	1,105	1,442	1,883	1,066	1,076	78	159
	DEOK							211	46	29			
PA	METED							30	12	37	31	8	19
	PECO	5	4	0		0	1	353	31	97			4
	PENELEC	1,185	534	493	1,208	815	1,335	645	626	886	893	903	378
	PPL	1					1	770	122			16	854
VA	DOM	3,374	2,311	2,059	3,445	2,413	1,935	215	1,374	827	1,569	852	1,875
WV	APS	205		47		111	212		334	303	81	0	0
<b>Total</b>		<b>8,128</b>	<b>4,538</b>	<b>3,373</b>	<b>8,222</b>	<b>5,275</b>	<b>6,024</b>	<b>17,906</b>	<b>7,679</b>	<b>5,145</b>	<b>5,022</b>	<b>2,835</b>	<b>6,071</b>

Total MWh: 80,217

**Figure 28: 2016 Economic Demand Response Monthly MWh Reductions Day-Ahead Activity**

State	Zone	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
DC	PEPCO												
DE	DPL							30	4				
IL	COMED												
MD	BGE												
	DPL												
	PEPCO												
NJ	AECO												
	JCPL							2,189	668				
	PSEG	2,050	918	126	2,014	1,067	632	842	204	305	194	298	1,560
OH	ATSI												
	DEOK							211	46	29			
PA	METED								9	32	14	3	16
	PECO		0					274		64			4
	PENELEC	1,005	522	372	1,142	533	1,231	564	204	636	443	613	328
	PPL							763	120				854
VA	DOM	912	464			824	434		542		399		
WV	APS												
<b>Total</b>		<b>3,967</b>	<b>1,905</b>	<b>498</b>	<b>3,157</b>	<b>2,424</b>	<b>2,298</b>	<b>4,875</b>	<b>1,797</b>	<b>1,066</b>	<b>1,051</b>	<b>913</b>	<b>2,762</b>

Total Day-Ahead MWh: 26,714

**Figure 29: 2016 Economic Demand Response Monthly MWh Reductions Real-Time Activity**

State	Zone	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
DC	PEPCO							44		16			
DE	DPL							180		0			
IL	COMED	193	6	20	143	458	514	1,092	1,575	1,082	647	62	572
MD	BGE							8,607	2				
	DPL							165		31			
	PEPCO							798		150			
NJ	AECO					8	1	42	40	19	0		0
	JCPL		5					118	71				
	PSEG	105	93	17	221	75	287	131	688	296	529	618	651
OH	ATSI	1,009	667	610	1,190	328	1,105	1,442	1,883	1,066	1,076	78	159
	DEOK												
PA	METED							30	3	5	17	5	2
	PECO	5	4	0		0	1	79	31	33			0
	PENELEC	181	12	121	65	282	103	81	422	250	450	289	50
	PPL	1					1	7	1			16	
VA	DOM	2,461	1,847	2,059	3,445	1,589	1,500	215	832	827	1,170	852	1,875
WV	APS	205		47		111	212		334	303	81	0	0
<b>Total</b>		<b>4,160</b>	<b>2,633</b>	<b>2,875</b>	<b>5,065</b>	<b>2,851</b>	<b>3,726</b>	<b>13,031</b>	<b>5,881</b>	<b>4,079</b>	<b>3,970</b>	<b>1,921</b>	<b>3,309</b>

Total Real-Time MWh: 53,503

**Figure 30: 2016 Economic Demand Response Monthly Energy Market Revenue**

State	Zone	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
DC	PEPCO							\$1,606		\$522			
DE	DPL							\$13,825	\$490	\$1,609			
IL	COMED	\$6,380	\$194	\$231	\$4,265	\$10,461	\$16,621	\$38,588	\$73,779	\$50,558	\$22,085	\$980	\$22,974
MD	BGE							\$487,806	\$241				
	DPL							\$6,535		\$977			
	PEPCO							\$29,309		\$4,630			
NJ	AECO					\$563	\$37	\$1,747	\$2,776	\$777	\$0		\$0
	JCPL		\$308					\$137,272	\$38,619				
	PSEG	\$90,115	\$40,477	\$3,490	\$61,433	\$26,640	\$28,710	\$50,813	\$32,678	\$24,707	\$20,467	\$13,429	\$85,500
OH	ATSI	\$38,068	\$22,026	\$18,985	\$46,867	\$12,725	\$45,699	\$58,848	\$90,484	\$47,383	\$35,208	\$2,365	\$5,509
	DEOK							\$21,996	\$4,213	\$2,115			
PA	METED							\$1,534	\$485	\$1,658	\$900	\$244	\$790
	PECO	\$247	(\$2,391)	\$0		\$0	\$40	\$33,071	\$4,424	\$8,982			\$322
	PENELEC	\$39,606	\$15,657	\$13,765	\$41,646	\$28,204	\$44,737	\$28,831	\$22,765	\$39,430	\$23,345	\$17,060	\$9,019
	PPL	\$38					\$23	\$40,749	\$10,793			(\$16)	\$34,308
VA	DOM	\$203,643	\$105,347	\$67,538	\$163,066	\$94,672	\$72,093	\$9,586	\$77,272	\$55,069	\$71,575	\$21,630	\$111,757
WV	APS	\$7,823		\$960		\$3,031	\$7,935		\$24,096	\$10,128	\$2,015	\$0	\$0
<b>Total</b>		<b>\$385,920</b>	<b>\$181,618</b>	<b>\$104,969</b>	<b>\$317,277</b>	<b>\$176,295</b>	<b>\$215,893</b>	<b>\$962,116</b>	<b>\$383,115</b>	<b>\$248,546</b>	<b>\$175,595</b>	<b>\$55,692</b>	<b>\$270,179</b>

Total CSP Credits: \$3,477,215

**Figure 31: 2016 Economic Demand Response Monthly Energy Market Revenue Day-Ahead Activity**

State	Zone	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
DC	PEPCO												
DE	DPL							\$2,671	\$490				
IL	COMED												
MD	BGE												
	DPL												
	PEPCO												
NJ	AECO												
	JCPL							\$129,260	\$35,861				
	PSEG	\$86,509	\$36,686	\$3,080	\$54,614	\$23,318	\$19,707	\$44,978	\$1,747	\$13,291	\$6,013	\$6,607	\$67,969
OH	ATSI												
	DEOK							\$21,996	\$4,213	\$2,115			
PA	METED								\$352	\$1,433	\$487	\$100	\$685
	PECO		(\$2,581)					\$26,903		\$6,053			\$322
	PENELEC	\$33,647	\$15,394	\$11,540	\$39,649	\$17,671	\$41,730	\$25,696	\$4,452	\$26,257	\$15,226	\$13,164	\$8,174
	PPL							\$40,462	\$10,766				\$34,308
VA	DOM	\$43,482	\$14,732			\$23,468	\$9,726		\$17,350		\$17,655		
WV	APS												
<b>Total</b>		<b>\$163,639</b>	<b>\$64,230</b>	<b>\$14,620</b>	<b>\$94,264</b>	<b>\$64,456</b>	<b>\$71,162</b>	<b>\$291,966</b>	<b>\$75,231</b>	<b>\$49,150</b>	<b>\$39,380</b>	<b>\$19,871</b>	<b>\$111,457</b>

Total Day-Ahead CSP Credits: \$1,059,426

**Figure 32: 2016 Economic Demand Response Monthly Energy Market Revenue Real-Time Activity**

State	Zone	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
DC	PEPCO							\$1,606		\$522			
DE	DPL							\$11,154		\$1,609			
IL	COMED	\$6,380	\$194	\$231	\$4,265	\$10,461	\$16,621	\$38,588	\$73,779	\$50,558	\$22,085	\$980	\$22,974
MD	BGE							\$487,806	\$241				
	DPL							\$6,535		\$977			
	PEPCO							\$29,309		\$4,630			
NJ	AECO					\$563	\$37	\$1,747	\$2,776	\$777	\$0		\$0
	JCPL		\$308					\$8,012	\$2,758				
	PSEG	\$3,606	\$3,790	\$410	\$6,819	\$3,322	\$9,003	\$5,834	\$30,931	\$11,415	\$14,454	\$6,822	\$17,531
OH	ATSI	\$38,068	\$22,026	\$18,985	\$46,867	\$12,725	\$45,699	\$58,848	\$90,484	\$47,383	\$35,208	\$2,365	\$5,509
	DEOK												
PA	METED							\$1,534	\$134	\$225	\$413	\$144	\$105
	PECO	\$247	\$190	\$0		\$0	\$40	\$6,168	\$4,424	\$2,929			\$0
	PENELEC	\$5,959	\$263	\$2,225	\$1,997	\$10,533	\$3,007	\$3,135	\$18,313	\$13,174	\$8,119	\$3,896	\$845
	PPL	\$38					\$23	\$287	\$27			(\$16)	
VA	DOM	\$160,161	\$90,616	\$67,538	\$163,066	\$71,204	\$62,367	\$9,586	\$59,922	\$55,069	\$53,921	\$21,630	\$111,757
WV	APS	\$7,823		\$960		\$3,031	\$7,935		\$24,096	\$10,128	\$2,015	\$0	\$0
<b>Total</b>		<b>\$222,281</b>	<b>\$117,388</b>	<b>\$90,349</b>	<b>\$223,013</b>	<b>\$111,839</b>	<b>\$144,731</b>	<b>\$670,150</b>	<b>\$307,884</b>	<b>\$199,396</b>	<b>\$136,214</b>	<b>\$35,821</b>	<b>\$158,722</b>

Total Real-Time CSP Credits: \$2,417,789

**Figure 33: 2016 Economic Demand Response Energy Market Cost Allocation by Zone**

Zone	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
AECO	\$3,909	\$2,797	\$572	\$2,699	\$2,006	\$2,590	\$15,410	\$5,406	\$2,752	\$921	\$379	\$2,982
AEP	\$61,507	\$26,701	\$19,772	\$55,451	\$28,377	\$33,758	\$135,563	\$56,988	\$38,356	\$29,922	\$7,549	\$40,407
APS	\$25,411	\$12,526	\$7,495	\$21,191	\$10,641	\$12,386	\$52,345	\$21,626	\$14,982	\$11,334	\$3,014	\$16,018
ATSI	\$30,433	\$14,082	\$10,414	\$29,156	\$15,424	\$18,108	\$76,974	\$31,990	\$20,049	\$16,093	\$4,284	\$21,037
BGE	\$17,843	\$13,378	\$4,900	\$13,129	\$6,937	\$8,588	\$39,776	\$16,443	\$11,565	\$8,524	\$3,215	\$11,092
COMED	\$35,941	\$9,206	\$12,101	\$33,432	\$22,093	\$27,308	\$120,358	\$47,453	\$30,632	\$23,045	\$5,042	\$26,974
DAY	\$8,580	\$3,505	\$2,662	\$7,589	\$3,972	\$4,887	\$19,526	\$8,385	\$5,592	\$4,464	\$1,090	\$5,605
DEOK	\$12,263	\$3,982	\$3,881	\$11,534	\$6,103	\$7,889	\$31,310	\$13,236	\$8,858	\$6,178	\$1,507	\$8,048
DOM	\$52,633	\$27,376	\$14,607	\$40,297	\$21,615	\$27,008	\$120,632	\$48,818	\$34,629	\$26,322	\$7,875	\$32,265
DPL	\$9,111	\$4,489	\$2,439	\$5,439	\$3,756	\$4,013	\$24,413	\$8,730	\$5,147	\$1,800	\$923	\$6,304
DUQ	\$5,960	\$2,557	\$1,998	\$5,790	\$3,173	\$3,984	\$17,081	\$6,876	\$4,446	\$3,151	\$810	\$3,941
EKPC	\$6,939	\$2,164	\$1,809	\$5,275	\$2,592	\$3,415	\$12,640	\$5,551	\$3,652	\$2,465	\$731	\$4,422
JCPL	\$9,635	\$4,081	\$1,611	\$7,346	\$4,909	\$5,862	\$33,565	\$12,097	\$6,455	\$2,241	\$857	\$6,548
METED	\$6,844	\$2,967	\$1,194	\$5,165	\$3,115	\$3,592	\$17,580	\$6,377	\$3,672	\$1,693	\$622	\$4,401
PECO	\$17,023	\$6,772	\$2,922	\$12,132	\$8,122	\$9,217	\$50,770	\$17,714	\$10,111	\$3,963	\$1,585	\$11,934
PENELEC	\$7,961	\$4,042	\$2,449	\$7,667	\$3,807	\$4,123	\$17,335	\$7,060	\$4,041	\$3,242	\$950	\$5,341
PEPCO	\$16,299	\$8,753	\$4,662	\$12,682	\$7,016	\$8,677	\$39,410	\$16,110	\$11,180	\$8,460	\$2,771	\$10,083
PPL	\$19,654	\$8,344	\$3,307	\$14,971	\$8,129	\$9,380	\$43,635	\$15,953	\$9,258	\$4,193	\$1,615	\$13,075
PSEG	\$18,650	\$8,019	\$3,191	\$14,874	\$9,273	\$10,817	\$57,941	\$21,068	\$11,951	\$5,080	\$1,812	\$13,088
RECO	\$665	\$223	\$118	\$515	\$345	\$422	\$2,267	\$827	\$458	\$224	\$66	\$437
Exports	\$18,659	\$15,654	\$2,865	\$10,943	\$4,891	\$9,868	\$33,583	\$14,407	\$10,762	\$12,280	\$8,994	\$26,177
<b>TOTAL</b>	<b>\$385,920</b>	<b>\$181,618</b>	<b>\$104,969</b>	<b>\$317,277</b>	<b>\$176,295</b>	<b>\$215,893</b>	<b>\$962,116</b>	<b>\$383,115</b>	<b>\$248,546</b>	<b>\$175,595</b>	<b>\$55,692</b>	<b>\$270,179</b>

 Total Zonal Charges: **\$3,477,215**
**Figure 34: 2016 Economic Demand Response Day-Ahead Energy Market Cost Allocation by Zone**

Zone	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
AECO	\$1,359	\$1,239	\$55	\$527	\$701	\$591	\$5,135	\$2,041	\$435	\$97	\$60	\$972
AEP	\$21,817	\$5,322	\$1,636	\$10,509	\$9,412	\$7,828	\$45,538	\$19,743	\$6,133	\$4,793	\$784	\$13,319
APS	\$8,886	\$2,918	\$639	\$3,961	\$3,507	\$2,879	\$17,320	\$7,611	\$2,333	\$1,679	\$353	\$5,224
ATSI	\$11,196	\$3,467	\$878	\$5,644	\$5,118	\$4,174	\$26,177	\$11,116	\$3,195	\$2,628	\$513	\$7,051
BGE	\$6,643	\$5,484	\$444	\$2,450	\$2,230	\$2,024	\$13,324	\$6,070	\$1,798	\$1,235	\$573	\$3,662
COMED	\$14,264	\$1,643	\$1,147	\$7,295	\$6,957	\$6,144	\$40,805	\$15,880	\$5,022	\$4,068	\$480	\$8,741
DAY	\$3,203	\$764	\$224	\$1,470	\$1,316	\$1,148	\$6,547	\$2,932	\$930	\$710	\$111	\$1,865
DEOK	\$4,435	\$740	\$320	\$2,246	\$2,001	\$1,815	\$10,434	\$4,550	\$1,429	\$1,066	\$143	\$2,596
DOM	\$17,275	\$5,706	\$1,257	\$7,495	\$6,875	\$6,237	\$40,327	\$17,782	\$5,184	\$3,695	\$837	\$10,402
DPL	\$3,128	\$1,039	\$294	\$1,012	\$1,265	\$936	\$8,093	\$3,281	\$839	\$184	\$244	\$1,986
DUQ	\$2,162	\$622	\$172	\$1,135	\$1,041	\$925	\$5,652	\$2,441	\$731	\$527	\$94	\$1,297
EKPC	\$2,382	\$381	\$148	\$946	\$838	\$765	\$4,405	\$1,924	\$561	\$416	\$71	\$1,403
JCPL	\$3,459	\$1,071	\$152	\$1,432	\$1,681	\$1,342	\$11,377	\$4,555	\$1,007	\$234	\$142	\$2,106
METED	\$2,400	\$1,004	\$122	\$1,029	\$1,120	\$822	\$5,916	\$2,360	\$606	\$180	\$91	\$1,636
PECO	\$5,902	\$1,972	\$406	\$2,353	\$2,921	\$2,153	\$16,941	\$6,648	\$1,569	\$403	\$226	\$3,878
PENELEC	\$2,896	\$1,225	\$201	\$1,482	\$1,319	\$972	\$5,874	\$2,509	\$713	\$539	\$116	\$1,726
PEPCO	\$5,850	\$2,269	\$426	\$2,429	\$2,271	\$2,056	\$13,070	\$5,941	\$1,699	\$1,211	\$420	\$3,326
PPL	\$6,815	\$2,101	\$323	\$3,030	\$2,956	\$2,277	\$14,763	\$5,887	\$1,520	\$432	\$240	\$4,428
PSEG	\$7,111	\$2,084	\$289	\$3,126	\$3,246	\$2,587	\$19,662	\$7,851	\$1,862	\$802	\$254	\$4,215
RECO	\$275	\$61	\$10	\$112	\$116	\$100	\$775	\$306	\$72	\$35	\$11	\$143
Exports	\$10,210	\$9,301	\$346	\$2,094	\$1,454	\$1,968	\$11,949	\$5,058	\$1,447	\$1,880	\$2,133	\$10,588
<b>TOTAL</b>	<b>\$141,668</b>	<b>\$50,414</b>	<b>\$9,490</b>	<b>\$61,778</b>	<b>\$58,346</b>	<b>\$49,744</b>	<b>\$324,084</b>	<b>\$136,487</b>	<b>\$39,085</b>	<b>\$26,813</b>	<b>\$7,897</b>	<b>\$90,566</b>

 Total Day-Ahead Zonal Charges: **\$996,371**

**Figure 35: 2016 Economic Demand Response Real-Time Energy Market Cost Allocation by Zone**

Zone	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
AECO	\$2,549	\$1,558	\$517	\$2,172	\$1,305	\$1,999	\$10,275	\$3,365	\$2,318	\$824	\$319	\$2,009
AEP	\$39,691	\$21,379	\$18,136	\$44,942	\$18,965	\$25,930	\$90,025	\$37,245	\$32,223	\$25,129	\$6,765	\$27,088
APS	\$16,525	\$9,608	\$6,855	\$17,230	\$7,134	\$9,508	\$35,025	\$14,014	\$12,649	\$9,655	\$2,661	\$10,794
ATSI	\$19,237	\$10,615	\$9,536	\$23,513	\$10,306	\$13,934	\$50,798	\$20,874	\$16,854	\$13,465	\$3,771	\$13,986
BGE	\$11,199	\$7,894	\$4,456	\$10,679	\$4,706	\$6,564	\$26,452	\$10,373	\$9,767	\$7,289	\$2,641	\$7,430
COMED	\$21,676	\$7,563	\$10,954	\$26,137	\$15,137	\$21,164	\$79,554	\$31,574	\$25,611	\$18,977	\$4,562	\$18,233
DAY	\$5,377	\$2,742	\$2,438	\$6,119	\$2,655	\$3,739	\$12,978	\$5,453	\$4,662	\$3,754	\$979	\$3,740
DEOK	\$7,828	\$3,242	\$3,560	\$9,288	\$4,102	\$6,074	\$20,877	\$8,686	\$7,428	\$5,112	\$1,364	\$5,451
DOM	\$35,358	\$21,670	\$13,349	\$32,801	\$14,740	\$20,771	\$80,305	\$31,036	\$29,445	\$22,627	\$7,038	\$21,863
DPL	\$5,983	\$3,450	\$2,145	\$4,426	\$2,491	\$3,077	\$16,319	\$5,449	\$4,308	\$1,616	\$679	\$4,318
DUQ	\$3,799	\$1,935	\$1,826	\$4,655	\$2,131	\$3,060	\$11,429	\$4,435	\$3,715	\$2,624	\$716	\$2,644
EKPC	\$4,557	\$1,783	\$1,661	\$4,329	\$1,754	\$2,650	\$8,235	\$3,627	\$3,091	\$2,049	\$660	\$3,019
JCPL	\$6,176	\$3,009	\$1,460	\$5,914	\$3,227	\$4,519	\$22,188	\$7,542	\$5,447	\$2,007	\$715	\$4,442
METED	\$4,444	\$1,963	\$1,071	\$4,136	\$1,996	\$2,770	\$11,664	\$4,017	\$3,066	\$1,513	\$531	\$2,765
PECO	\$11,121	\$4,800	\$2,516	\$9,780	\$5,201	\$7,064	\$33,829	\$11,066	\$8,542	\$3,559	\$1,359	\$8,056
PENELEC	\$5,065	\$2,816	\$2,248	\$6,185	\$2,488	\$3,152	\$11,461	\$4,551	\$3,328	\$2,703	\$834	\$3,615
PEPCO	\$10,448	\$6,484	\$4,236	\$10,253	\$4,745	\$6,621	\$26,340	\$10,169	\$9,481	\$7,249	\$2,351	\$6,757
PPL	\$12,839	\$6,243	\$2,984	\$11,941	\$5,173	\$7,103	\$28,872	\$10,066	\$7,738	\$3,761	\$1,375	\$8,647
PSEG	\$11,539	\$5,935	\$2,902	\$11,748	\$6,027	\$8,230	\$38,279	\$13,217	\$10,089	\$4,278	\$1,558	\$8,873
RECO	\$390	\$162	\$108	\$403	\$230	\$322	\$1,492	\$521	\$385	\$189	\$54	\$294
Exports	\$8,449	\$6,354	\$2,519	\$8,849	\$3,436	\$7,900	\$21,634	\$9,350	\$9,314	\$10,400	\$6,862	\$15,588
<b>TOTAL</b>	<b>\$244,251</b>	<b>\$131,205</b>	<b>\$95,478</b>	<b>\$255,499</b>	<b>\$117,950</b>	<b>\$166,149</b>	<b>\$638,033</b>	<b>\$246,628</b>	<b>\$209,461</b>	<b>\$148,782</b>	<b>\$47,795</b>	<b>\$179,613</b>

Total Real-Time Zonal Charges: \$2,480,844

**Figure 36: 2016 Load Management Demand Response Monthly Capacity Revenue from RPM**

Zone	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
AECO	\$1,018,226	\$952,534	\$1,018,226	\$985,380	\$1,018,226	\$618,278	\$638,888	\$638,888	\$618,278	\$638,888	\$618,278	\$638,888
AEP	\$6,833,359	\$6,392,497	\$6,833,359	\$6,612,928	\$6,833,359	\$2,787,543	\$2,880,461	\$2,880,461	\$2,787,543	\$2,880,461	\$2,787,543	\$2,880,461
APS	\$3,279,835	\$3,068,232	\$3,279,835	\$3,174,034	\$3,279,835	\$1,613,157	\$1,666,929	\$1,666,929	\$1,613,157	\$1,666,929	\$1,613,157	\$1,666,929
ATSI	\$19,097,783	\$17,865,668	\$19,097,783	\$18,481,726	\$19,097,783	\$5,701,661	\$5,891,717	\$5,891,717	\$5,701,661	\$5,891,717	\$5,701,661	\$5,891,717
BGE	\$5,546,155	\$5,188,338	\$5,546,155	\$5,367,247	\$5,546,155	\$3,355,267	\$3,467,109	\$3,467,109	\$3,355,267	\$3,467,109	\$3,355,267	\$3,467,109
COMED	\$6,679,174	\$6,248,259	\$6,679,174	\$6,463,717	\$6,679,174	\$2,980,466	\$3,079,815	\$3,079,815	\$2,980,466	\$3,079,815	\$2,980,466	\$3,079,815
DAY	\$760,832	\$711,746	\$760,832	\$736,289	\$760,832	\$448,489	\$463,438	\$463,438	\$448,489	\$463,438	\$448,489	\$463,438
DEOK	\$1,319,812	\$1,234,663	\$1,319,812	\$1,277,237	\$1,319,812	\$577,029	\$596,264	\$596,264	\$577,029	\$596,264	\$577,029	\$596,264
DOM	\$5,235,719	\$4,897,930	\$5,235,719	\$5,066,825	\$5,235,719	\$2,395,261	\$2,475,103	\$2,475,103	\$2,395,261	\$2,475,103	\$2,395,261	\$2,475,103
DPL	\$2,201,083	\$2,059,077	\$2,201,083	\$2,130,080	\$2,201,083	\$1,572,292	\$1,624,702	\$1,624,702	\$1,572,292	\$1,624,702	\$1,572,292	\$1,624,702
DUQ	\$878,296	\$821,632	\$878,296	\$849,964	\$878,296	\$388,781	\$401,741	\$401,741	\$388,781	\$401,741	\$388,781	\$401,741
EKPC	\$47,787	\$44,704	\$47,787	\$46,245	\$47,787	\$504,721	\$521,545	\$521,545	\$504,721	\$521,545	\$504,721	\$521,545
JCPL	\$1,720,510	\$1,609,510	\$1,720,510	\$1,665,010	\$1,720,510	\$797,471	\$824,053	\$824,053	\$797,471	\$824,053	\$797,470	\$824,053
METED	\$1,667,231	\$1,559,668	\$1,667,231	\$1,613,449	\$1,667,231	\$1,120,926	\$1,158,290	\$1,158,290	\$1,120,926	\$1,158,290	\$1,120,926	\$1,158,290
PECO	\$3,824,221	\$3,577,497	\$3,824,221	\$3,700,859	\$3,824,221	\$1,898,249	\$1,961,524	\$1,961,524	\$1,898,249	\$1,961,524	\$1,898,249	\$1,961,524
PENELEC	\$2,625,490	\$2,456,104	\$2,625,490	\$2,540,797	\$2,625,490	\$1,545,027	\$1,596,528	\$1,596,528	\$1,545,027	\$1,596,528	\$1,545,027	\$1,596,528
PEPCO	\$4,232,745	\$3,959,665	\$4,232,745	\$4,096,205	\$4,232,745	\$2,379,380	\$2,458,692	\$2,458,692	\$2,379,380	\$2,458,692	\$2,379,380	\$2,458,692
PPL	\$5,591,452	\$5,230,713	\$5,591,452	\$5,411,083	\$5,591,452	\$3,571,436	\$3,690,484	\$3,690,484	\$3,571,436	\$3,690,484	\$3,571,436	\$3,690,484
PSEG	\$3,862,880	\$3,613,662	\$3,862,880	\$3,738,271	\$3,862,880	\$4,088,123	\$4,224,394	\$4,224,394	\$4,088,123	\$4,224,394	\$4,088,123	\$4,224,394
RECO	\$103,031	\$96,384	\$103,031	\$99,707	\$103,031	\$36,097	\$37,300	\$37,300	\$36,097	\$37,300	\$36,097	\$37,300
<b>Total</b>	<b>\$76,525,621</b>	<b>\$71,588,484</b>	<b>\$76,525,621</b>	<b>\$74,057,052</b>	<b>\$76,525,621</b>	<b>\$38,379,653</b>	<b>\$39,658,975</b>	<b>\$39,658,975</b>	<b>\$38,379,653</b>	<b>\$39,658,975</b>	<b>\$38,379,653</b>	<b>\$39,658,975</b>

Total Capacity Credits: \$648,997,257



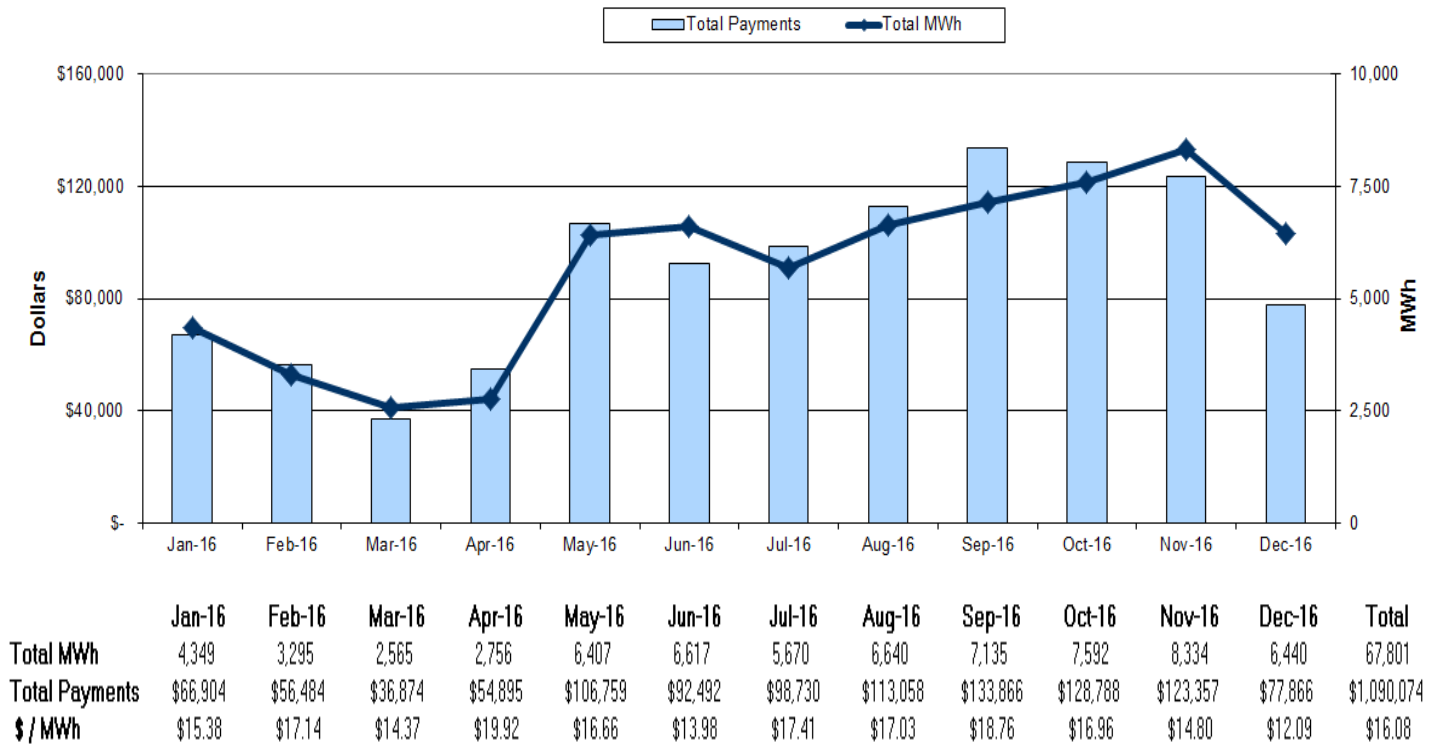
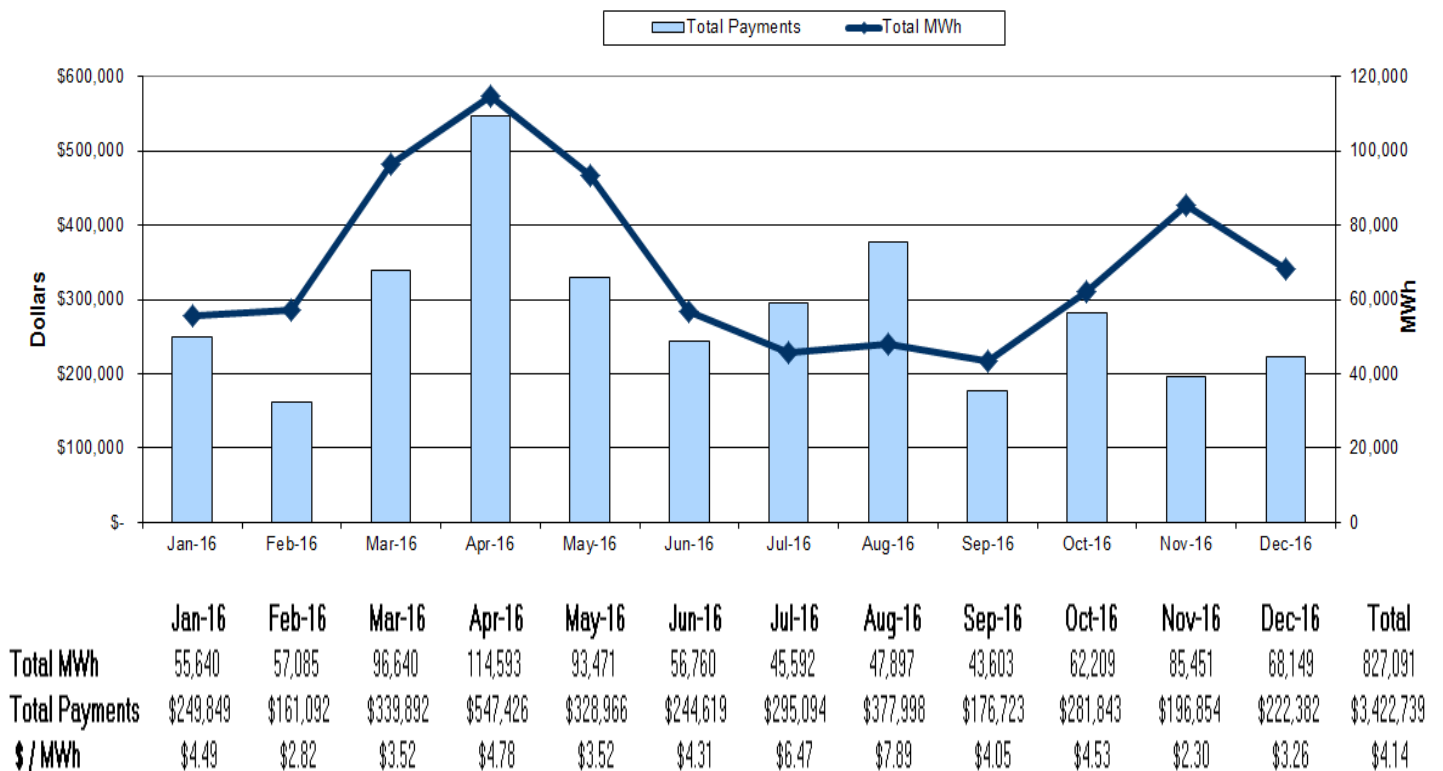
**Figure 37: 2016 Economic Demand Response Dispatched vs Settled Real-Time Energy Market Summary**

Time		CSPs		Zone		Registrations			MWh			Registration Hours		
Year	Month	Dispatched	Settled	Dispatched	Settled	Dispatched	Settled	%	Dispatched	Settled	%	Dispatched	Settled	%
2016	1	4	4	8	8	14	14	100%	3,621	4,160	115%	610	610	100%
2016	2	4	4	7	7	10	10	100%	2,204	2,633	119%	288	288	100%
2016	3	4	4	7	7	9	9	100%	2,372	2,875	121%	272	272	100%
2016	4	4	4	5	5	10	10	100%	3,888	5,065	130%	622	622	100%
2016	5	5	5	8	8	11	11	100%	2,652	2,851	108%	763	763	100%
2016	6	4	4	9	9	16	16	100%	4,103	3,726	91%	996	996	100%
2016	7	11	11	13	13	44	44	100%	15,588	13,031	84%	2,115	2,115	100%
2016	8	7	7	12	12	25	25	100%	6,046	5,881	97%	2,081	2,081	100%
2016	9	7	7	11	11	28	28	100%	4,607	4,079	89%	1,352	1,352	100%
2016	10	4	4	8	8	15	15	100%	3,250	3,970	122%	1,226	1,226	100%
2016	11	4	4	8	8	12	12	100%	1,388	1,921	138%	513	513	100%
2016	12	4	4	9	9	13	13	100%	2,683	3,309	123%	849	849	100%
<b>YTD Totals</b>						<b>207</b>	<b>207</b>	<b>100%</b>	<b>52,402</b>	<b>53,503</b>	<b>102%</b>	<b>11,687</b>	<b>11,687</b>	<b>100%</b>
<b>YTD Average</b>		<b>5</b>	<b>5</b>	<b>9</b>	<b>9</b>									

**Figure 38: 2016 Economic Demand Response Cleared vs Settled Day-Ahead Energy Market Summary**

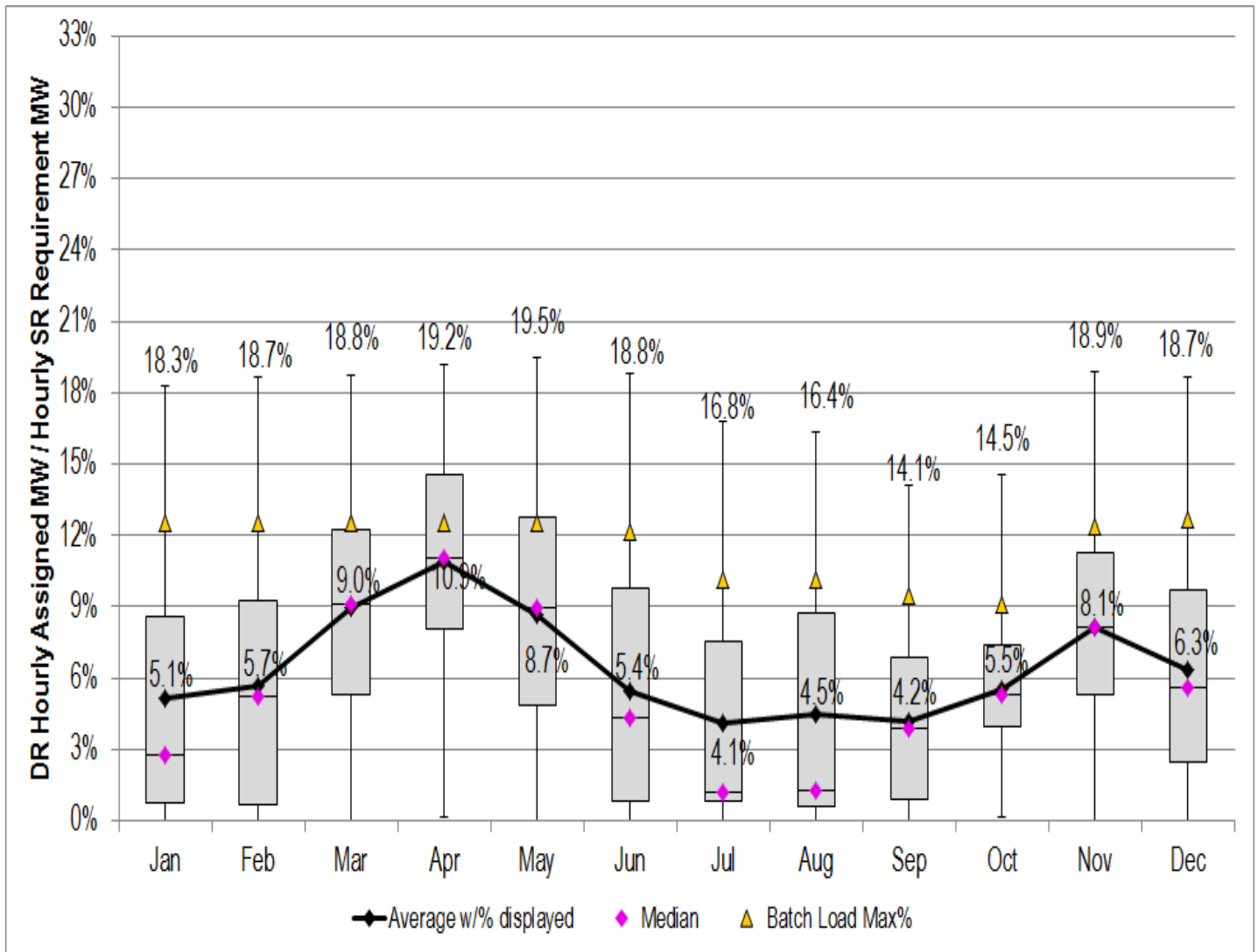
Time		CSPs		Zone		Registrations			MWh			Registration Hours		
Year	Month	Cleared	Settled	Cleared	Settled	Cleared	Settled	%	Cleared	Settled	%	Cleared	Settled	%
2016	1	3	3	3	3	7	7	100%	3,557	3,967	112%	872	872	100%
2016	2	3	3	4	4	8	8	100%	1,568	1,905	121%	401	401	100%
2016	3	2	2	2	2	6	6	100%	349	498	143%	109	109	100%
2016	4	2	2	2	2	6	6	100%	2,168	3,157	146%	764	764	100%
2016	5	3	3	3	3	6	6	100%	2,148	2,424	113%	592	592	100%
2016	6	2	2	3	3	5	5	100%	1,609	2,298	143%	506	506	100%
2016	7	6	6	7	7	19	19	100%	5,423	4,875	90%	1,177	1,177	100%
2016	8	5	5	8	8	18	18	100%	2,491	1,797	72%	467	467	100%
2016	9	4	4	5	5	14	14	100%	791	1,066	135%	402	402	100%
2016	10	2	2	4	4	7	7	100%	706	1,051	149%	177	177	100%
2016	11	3	3	3	3	5	5	100%	545	913	168%	225	225	100%
2016	12	5	5	5	5	8	8	100%	2,286	2,762	121%	848	848	100%
<b>YTD Totals</b>						<b>109</b>	<b>109</b>	<b>100%</b>	<b>23,639</b>	<b>26,714</b>	<b>113%</b>	<b>6,540</b>	<b>6,540</b>	<b>100%</b>
<b>YTD Average</b>		<b>3</b>	<b>3</b>	<b>4</b>	<b>4</b>									

Note: For Figures 37 and 38 above, Settlement information 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 39: 2016 Economic Demand Response Regulation Market Participation**

**Figure 40: 2016 Economic Demand Response Synchronous Reserve Market Participation**


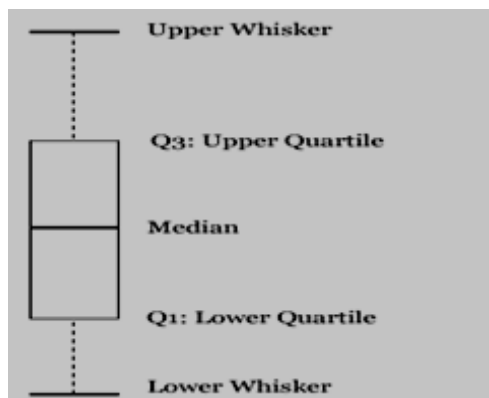
Note: For Figures 39 and 40 above, MWh=sum of the settled MW. Example: 1 MW load available for 12 hours = 12 MWh.

Figure 41: Economic DR Synchronous Reserve Penetration Distribution (Box-plot) for 2016



Notes:

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