

# Load Management Performance Report 2009/2010

December 2009



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For additional detailed information on any of the topics discussed, please refer to the appropriate PJM manual which can be found by accessing: <http://www.pjm.com/documents/manuals.aspx>



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## Executive Summary

Historically, Load Serving Entities in PJM have had the ability to meet their capacity requirements through the commitment of Demand Side Resources. With the advent of the Reliability Pricing Model, Demand Side Resources are able to participate in the capacity procurement process as either Demand Resources or Interruptible Load for Reliability. The 2009/2010 Delivery Year marks the first time PJM has required Demand Side Resources to test their capability to deliver the reductions committed to meet capacity requirements. The purpose of this report is to provide detailed results of this initial year of Demand Side Resource testing.

The test results for the 2009/2010 Deliver Year demonstrate that in aggregate, committed Demand Side Resources performed at 118% of their committed capacity values. Test results in excess of committed capacity values totaled 1,299 MW for the 7,089 MW of Demand Side Resources required to test.

Given that this was the first year testing was required for Demand Side Resources, valuable experience was gained that could lead to improvements in the testing process for future Delivery Years. PJM recommends potential improvements in the areas of measurement and verification of certain resources, retesting procedures, the eLoad Response user interface, accounting for meter malfunctions, penalty provisions and replacement capacity for Demand Side Resources.

Details on the recommendations from PJM are provided at the conclusion of this report. PJM will ensure that all recommendations from this report are brought forth to the PJM stakeholders for consideration. The stakeholder discussion may result in changes to market rules and manuals if methods to strengthen confidence in performance or improve the administrative process are approved by the stakeholders.

## Load Management Overview

PJM Interconnection, L.L.C. (PJM) procures capacity for its system reliability through the Reliability Pricing Model (RPM). The sources for meeting system reliability are divided into three groups:

- 1) Generation Capacity
- 2) Transmission Upgrades
- 3) Demand Side Resources - Load Management and Energy Efficiency

For the 2009/2010 Delivery Year<sup>1</sup>, Load Management Resources were registered as either Demand Resource (DR) or Interruptible Load for Reliability (ILR). DR may be bid into the RPM's Base Residual Auction, one of the Incremental Auctions, or may take on a capacity obligation through the bilateral market. ILR is registered in the spring prior to the commencement of the Delivery Year until 2012/2013 when ILR has been eliminated per the Federal Energy Regulatory Commission (FERC) approved tariff. Although the timing and methods for becoming DR or ILR Resources are different from one another, within the Delivery Year the performance obligations for both types of Resources are the same. Prior to the RPM, Demand Side Resources could provide Active Load Management (ALM) which was accounted for as a credit that lowered the amount of peak load requiring capacity.

DR and ILR, like ALM Resources in the past, agree to be interrupted up to ten (10) times per Delivery Year by PJM. The interruptions may be up to six (6) consecutive hours in duration on non-holiday weekdays from noon until 8 PM EPT in the months from May through September (and from 2 PM until 10 PM EPT from October through April). The interruptions must be implemented within two hours of notification by PJM. Those Resources that can be fully implemented within one hour of notification are considered Short Lead Time Resources, while those that require more than one hour but not more than two hours of notification are considered Long Lead Time Resources. This agreement by Load Management Resources to allow PJM to provide notice of the interruptions enables PJM to procure less generation capacity while maintaining the same level of reliability according to the current reliability criteria and practices within the PJM market.

DR and ILR compliance can be more complex to measure than compliance for generation resources meeting their capacity obligations. In order to ensure the reliability service for which a Resource is paid has actually been provided, PJM utilizes three different types of Measurement and Verification methodologies. DR and ILR Resources can choose to be measured using:

- Direct Load Control (DLC) – Load Management for non-interval metered customers which is initiated directly by a Curtailment Service Provider's (CSP) market operations center, employing a communication signal to cycle HVAC or water heating equipment. This is traditionally done for residential consumers and requires the necessary statistical study as outlined in PJM Manual 19.
- Firm Service Level (FSL) – Load Management achieved by a customer reducing its load to a pre-determined level upon the notification from the CSP's market operations center. Industrial customers with a high load factor normally use this approach because they understand the electricity usage for their base

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<sup>1</sup> The Delivery Year for the capacity construct corresponds to PJM's Planning Year which runs each year from June 1 until May 31 of the following year

electrical equipment that must operate even during an emergency situation. This is one of the easiest to verify since the firm service level amount is simply compared to the metered load during an event or test.

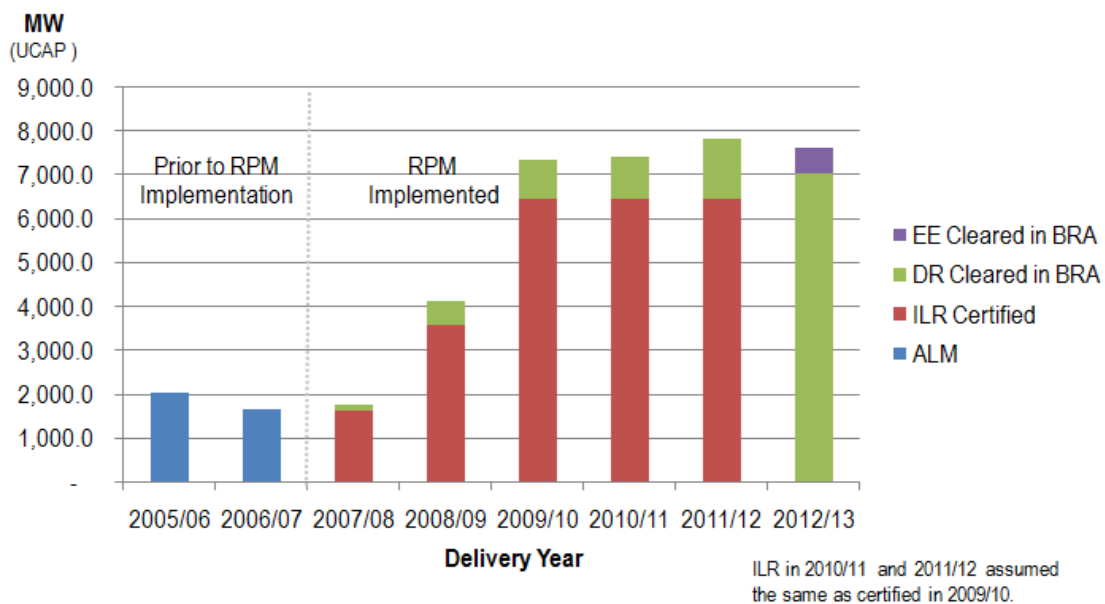
- **Guaranteed Load Drop (GLD)** – Load Management achieved by a customer reducing its load when compared to what the load would have been upon notification from the CSP's market operations center. This is normally utilized by customers that have a variable load profile to capture the impact of the system relative to what it would have been during the time periods under review.

## Load Management Participation Summary

The capacity numbers in this report are in terms of either Installed Capacity (ICAP) or Unforced Capacity (UCAP) depending upon which is most relevant. PJM calculates the Resource amounts required to meet the reliability standard in terms of UCAP and UCAP which are also utilized to measure compliance with a RPM commitment. PJM determines the UCAP value of different types of Resources that are offered into the RPM auctions based on methods described in the PJM manuals.

For a conventional generation resource, ICAP value is the summer net dependable rating. The UCAP value is the ICAP value reduced by historical average forced outage and forced derating. Therefore, the UCAP value represents the average availability of capacity from a generating unit after forced outages and forced deratings. For a Load Management Resource, ICAP value is the nominated load reduction. The nominated load reduction for a Firm Service Level, Guaranteed Load Drop, or Direct Load Control resource is calculated in accordance with the PJM Capacity Market Manual, Manual 18. The UCAP value is calculated in two steps: First, the nominated load reduction is discounted to account for its reduced impact during higher load periods by multiplying by the Demand Resource Factor. Then, the value is increased to gross up the load reduction by the approved reserve margin.

Load Management participation in the PJM capacity construct has increased over time. ALM participation three years ago in the 2006/2007 Delivery Year was under 1,700 Megawatts (MW). However, the Load Management commitments from the current year through the 2012/2013 Delivery Year average over 7,500 MW each year. This increase in participation by Load Management Resources reduces the need for generation capacity by providing reductions in demand at the system operator’s request. Below is a graphical representation of the growth in Load Management participation at PJM in MWs of UCAP.



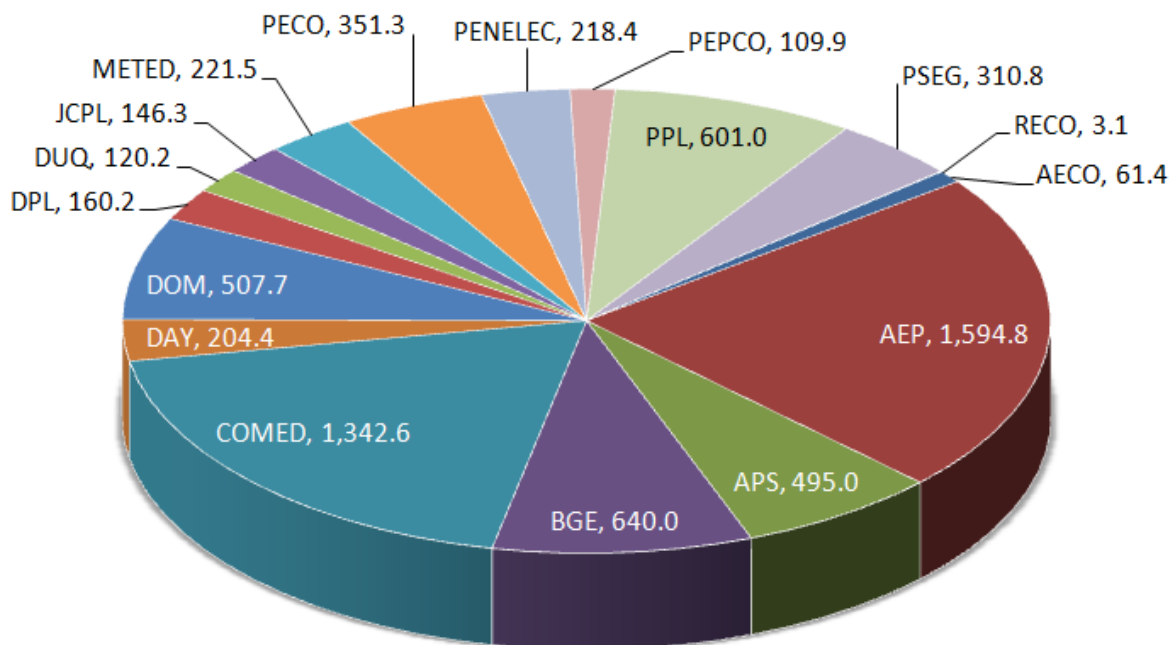
**Figure 1: Load Management Participation History (UCAP)**

In PJM, capacity is priced based on location to reflect the locational reliability requirements in various sub-regions of the market. The location of the capacity commitments are grouped into Zones based on Electric Distribution Company territories. Although capacity obligations are measured in UCAP, the most straightforward examination of Load Management participation by Zone is in MWs of ICAP. For the 2009/2010 Delivery Year, Load Management Resources represented 7,089 MW of ICAP. These commitments were spread across 17 Zones. The Zones represented are:

- Atlantic City Electric (AECO)
- American Electric Power (AEP)
- Allegheny Power (APS)
- Baltimore Gas and Electric (BGE)
- Commonwealth Edison (COMED)
- Dayton Power & Light (DAY)
- Dominion Virginia Power (DOM)
- Delmarva Power and Light (DPL)
- Duquesne Light (DUQ)
- Jersey Central Power & Light (JCPL)
- Metropolitan Edison (METED)
- PECO (PECO)
- Pennsylvania Electric Company (PENELEC)
- Potomac Electric Power Co. (PEPCO)
- PPL Electric Utilities Corp. (PPL)
- Public Service Electric and Gas Co. (PSEG)
- Rockland Electric Company (RECO)

**Figure 2: 2009/2010 Load Management Zones**

Following is an illustration of how the commitments of Load Management Resources were spread across the 17 Zones for the 2009/2010 Delivery Year.



**Figure 3: 2009/2010 Load Management Participation by Zone (ICAP)**



## Load Management Test Rules

Load Management Resources with an emergency load response registration are relied upon by PJM planning and PJM system operations to help maintain the safe and reliable operation of the PJM region. Historically, Load Management Resource performance was not measured unless a Load Management event was called by PJM. Following is an overview of PJM Load Management events over the past 10 years.

Delivery Year	Event History
2009/2010	No events to date
2008/2009	No events
2007/2008	Wednesday, August 8 <sup>th</sup> , HE <sup>2</sup> 1500 - 1800 <sup>3</sup>
2006/2007	Thursday, August 3 <sup>rd</sup> , HE 1500 – 1900 Wednesday, August 2 <sup>nd</sup> , HE 1600 – 1900
2005/2006	Thursday, August 4 <sup>th</sup> , HE 1600 - 1700 Wednesday, July 27 <sup>th</sup> , HE 1400 - 1800
2004/2005	No events
2003/2004	No events
2002/2003	Tuesday, July 30 <sup>th</sup> , HE 1300 - 1800 Monday, July 29 <sup>th</sup> , HE 1500 - 1800 Wednesday, July 3 <sup>rd</sup> , HE 1300 – 1800
2001/2002	Friday, August 10 <sup>th</sup> , HE 1300 - 1400 Thursday, August 9 <sup>th</sup> , HE 1300 - 1800 Wednesday, August 8 <sup>th</sup> , HE 1400 - 1800 Wednesday, July 25 <sup>th</sup> , HE 1600 - 1700
2000/2001	No events

**Figure 4: Load Management Event History**

The implementation of the forward capacity market, RPM, has incited an increase in capacity-based demand response which has been beneficial to the region. Given the increasing dependence on demand response to maintain reliability and due to the infrequency of Load Management events in recent years, PJM proposed the implementation of a the annual Load Management Test as a means to assess performance of demand response to provide the expected reliability services as committed.

<sup>2</sup> HE in the table is an abbreviation for Hour Ending. For example, HE 1500 – 1800 is the same as the expression 2:00 PM until 6:00 PM.

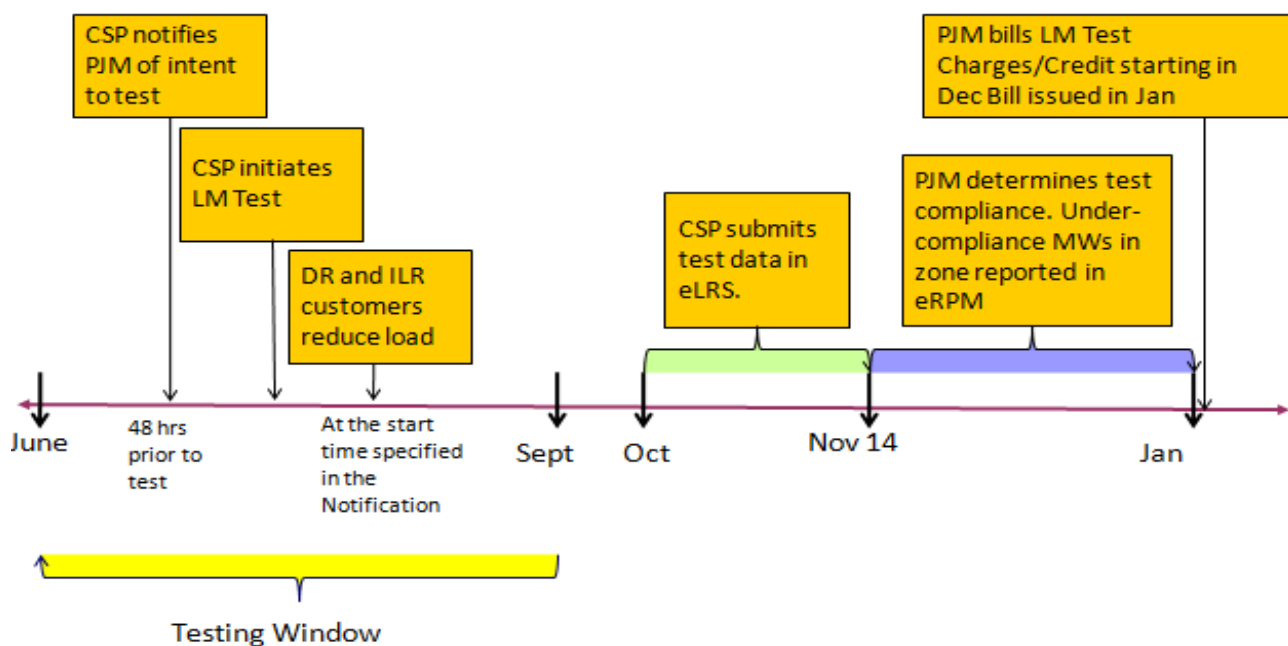
<sup>3</sup> The times shown for each event are the beginning and end of compliance reporting times. Events are not called or released exactly on the hour and all Resources are expected to improve reliability by decreasing load or increasing generation as soon as practicable. The times shown are a summary of all Zones but the event may have been shorter or not even called in some Zones.

The Load Management Test is initiated by a Curtailment Service Provider (CSP) that has a capacity commitment. The CSP must simultaneously test all Resources in a Zone if PJM has not called an event in that Zone by August 15<sup>th</sup> of a given Delivery Year. If a PJM-initiated Load Management Event is called in a Zone between June 1<sup>st</sup> and September 30<sup>th</sup> there is no test requirement and no Test Failure Charges would be assessed for that Zone.

The timing of a Load Management Test is intended to represent the conditions when a PJM-initiated Load Management event might occur in order to assess performance during a relative period. Therefore, a Load Management Test may occur from June 1<sup>st</sup> through September 30<sup>th</sup> on a non-holiday weekday during any hour from 12 noon until 8 PM EPT. All of a CSP’s committed DR and certified ILR resources in the same Zone are required to test at the same time for a one hour period. The requirement to test all resources in a zone simultaneously is necessary to ensure that test conditions are as close to realistic as possible. It is requested that the CSP notify PJM of intent to test 48 hours in advance to allow coordination with PJM dispatch.

There is not a limit on the number of tests a CSP can perform. However, a CSP may only submit data for one test to be used by PJM to measure compliance. If the CSP’s Zonal Resources collectively achieve a reduction greater than 75% of the CSP’s committed MW volume during the test, the CSP may choose to retest only the Resources in that Zone that failed to meet their individual nominated value.

In a Delivery Year without a PJM-initiated Load Management Event, CSPs must submit their test data using PJM’s Load Response System (eLRS). For the 2009/2010 Delivery Year, the test data deadline was November 14, 2009. PJM reviews the information and contacts the CSP for additional supporting information where necessary. PJM determines test compliance and reports the information in PJM’s RPM system (eRPM) during December. Any Load Management charges or credits are issued in January on the December bill.



**Figure 5: Load Management Test Timeline**

Load Management Resource Tests encourage resource providers to perform based on their commitments to avoid penalty or deficiency charges and compliment the other performance assessments utilized within the RPM. Following is an explanation of the performance assessment methods.

Assessment	Purpose
RPM Commitment Compliance	Determines if a resource has sufficient unforced capacity during the Delivery Year to meet its RPM commitments.
Peak-Hour Period Availability	Measures if a generation resource was available during critical peak-hour periods during the Delivery Year.
Summer/Winter Capability Testing	Determines if a generation resource demonstrated its ICAP commitment amount through summer and winter testing.
Peak Season Maintenance Compliance	Determines if a generation resource took an unapproved planned or maintenance outage during the peak season period.
Load Management Event Compliance	Determines if a committed Load Management Resource reduced load during an emergency event that occurs during June through September.
Load Management Test Compliance	Determines if a committed Load Management Resource reduced load during a CSP-initiated test that occurs during June through September.

**Figure 6: RPM Performance Assessment Types**

Load Management Resources are assessed a Test Failure Charge if their test data demonstrates that they did not meet their commitment level. The Test Failure Charge is calculated based on the CSP's Weighted Daily Revenue Rate which is the amount the CSP is paid for their RPM commitments in each Zone. The Weighted Daily Revenue Rate takes into consideration the different prices DR and ILR can be paid in the same Zone. For example, a CSP can clear DR in the Base Residual and/or Incremental Auctions and/or register ILR in the same Zone, all of which are paid different rates. The penalty rate for under-compliance is the greater of 1.2 times the CSP's Weighted Daily Revenue Rate or \$20 plus the Weighted Daily Revenue Rate. If a CSP didn't clear in a RPM auction or certify ILR resources in a Zone, the CSP-specific Revenue Rate will be replaced by the PJM Weighted Daily Revenue Rate for such Zone.

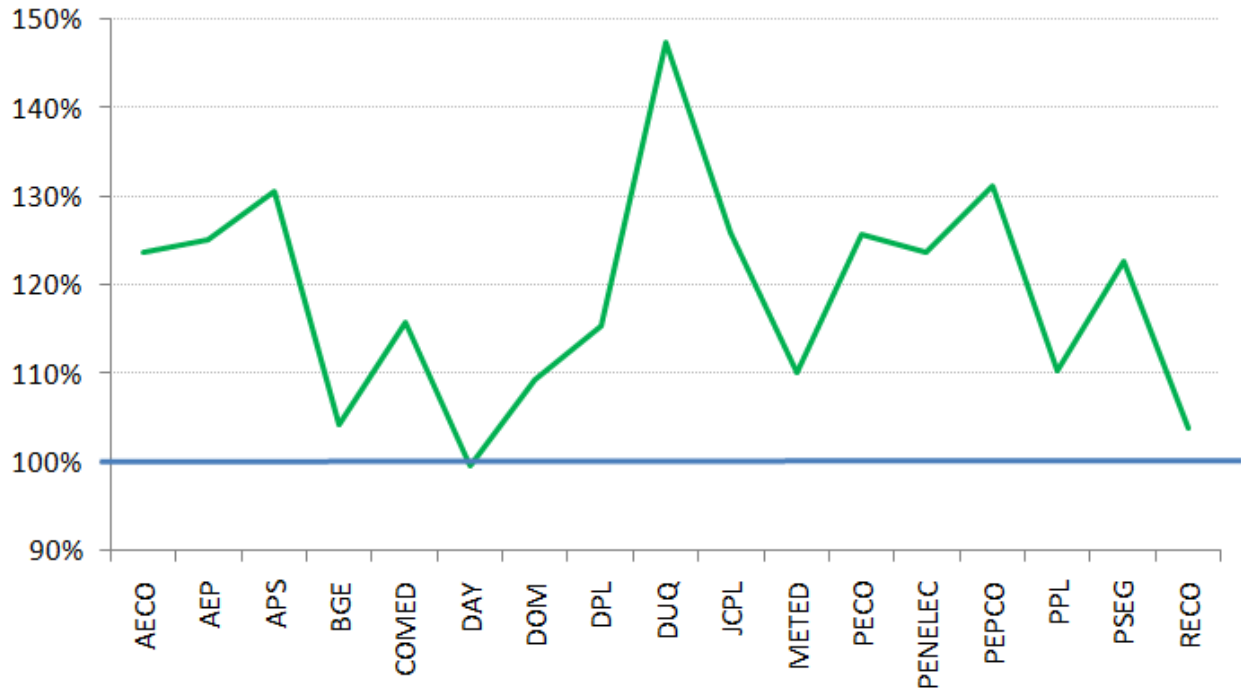
## Load Management Test Results – 118% performance level

There were 7,089 MW in ICAP of committed Load Management Resources in the 2009/2010 Delivery Year. This commitment was made by 80 CSPs in 17 Zones with a total of 336 CSP/Zone combinations. The over-compliance across all Zones and CSPs totaled 1,299 MW which equates to a performance level of 118%. Of the 7,089 MW of committed MWs, 139 MW were retested. Those 139 MW that were retested resulted in 46 MW of over-compliance after the retest. In tabular form, the Zonal results are as follows:

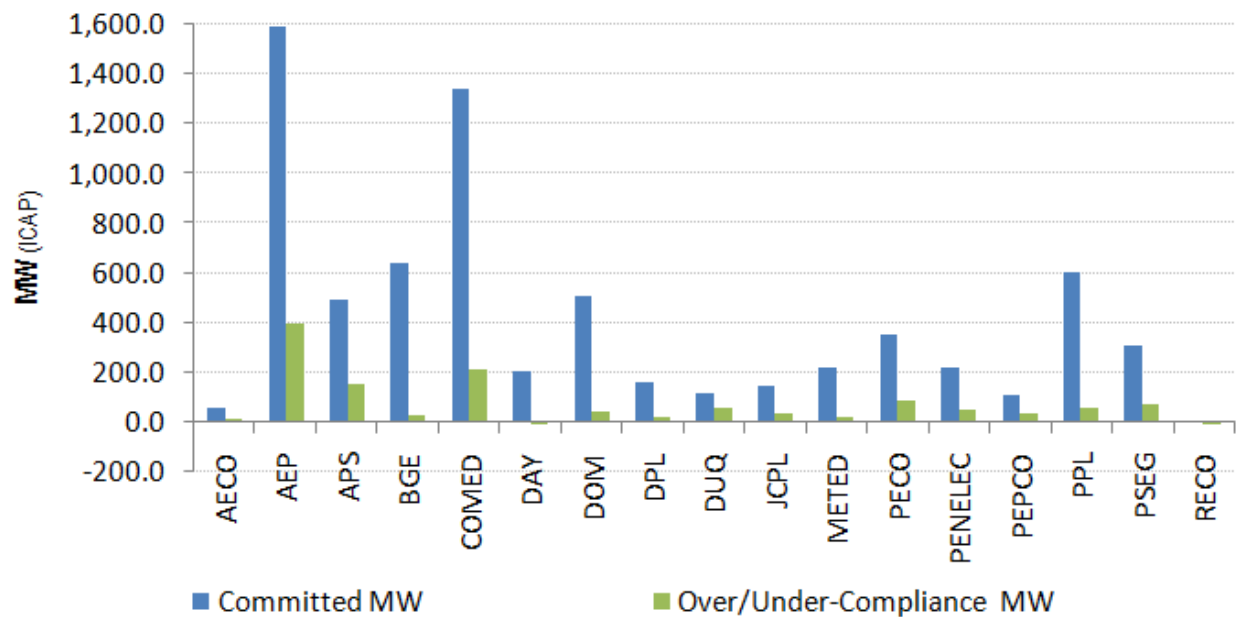
Zone	Committed MW	Over/Under-Compliance MW	Performance
AECO	61.4	14.5	124%
AEP	1,594.8	400.5	125%
APS	495.0	150.7	130%
BGE	640.0	26.5	104%
COMED	1,342.6	210.3	116%
DAY	204.4	-1.1	99%
DOM	507.7	47.0	109%
DPL	160.2	24.4	115%
DUQ	120.2	57.0	147%
JCPL	146.3	38.0	126%
METED	221.5	22.4	110%
PECO	351.3	90.3	126%
PENELEC	218.4	51.8	124%
PEPCO	109.9	34.3	131%
PPL	601.0	61.2	110%
PSEG	310.8	70.5	123%
RECO	3.1	0.12	104%
<b>Total</b>	<b>7,088.8</b>	<b>1,298.5</b>	<b>118%</b>

**Figure 7: Load Management Obligations, Compliance, and Performance (ICAP)**

The same results are shown graphically on the following page.



**Figure 8: Load Management Performance**



**Figure 9: Load Management Obligations and Compliance (ICAP)**

The performance on an individual CSP/Zone basis varied. Overall, 263 CSP/Zone combinations over-complied in the Load Management Tests for the 2009/2010 Delivery Year. The over-compliance averaged just over 5 MW per CSP/Zone combination and totaled 1,357 MW of over-compliance. There were 55 CSP/Zone combinations that under-complied. The under-compliance averaged just over 1 MW per CSP/Zone combination for a total of 58 MW of under-compliance.

Load Management compliance is measured on a CSP/Zone basis for settlement purposes against committed MW amounts. For ILR Resources, the nominated and committed MWs are the same value. However, the amount of DR load reduction that CSPs nominate (or register) on a site specific basis is often different from their Zonal commitment amount when summed by Zone. If the total nominated load reduction ability for a CSP in a particular Zone does not meet their committed MW value, the CSP will be assessed a Daily Commitment Compliance penalty. It is acceptable for the total load reduction ability of a CSP in a Zone to exceed their committed MW value although there is no RPM payment awarded for such over-nomination. However, the ability to over-nominate allows CSPs to hedge against under-compliance if they over-nominate for DR.

Zone	DR		ILR Nominated/ Committed MW
	Nominated MW	Committed MW	
AECO	0.4	0.3	61.1
AEP	579.4	410.0	1,184.8
APS	7.4	5.2	489.8
BGE	237.3	235.4	404.6
COMED	66.6	65.5	1,277.1
DAY	0.3	0.0	204.4
DOM	7.3	1.1	506.7
DPL	13.7	11.5	148.7
DUQ	1.7	1.6	118.6
JCPL	4.0	3.6	142.7
METED	3.7	0.8	220.8
PECO	18.2	17.7	333.6
PENELEC	4.7	2.9	215.5
PEPCO	19.6	11.8	98.1
PPL	19.2	13.2	587.9
PSEG	36.5	34.4	276.4
RECO	0.4	0.0	3.1
<b>Total</b>	<b>1,020.5</b>	<b>815.1</b>	<b>6,273.8</b>

**Figure 10: Nominated and Committed Load Management by Zone (ICAP)**

The total number of nominated MWs, both DR and ILR, are 7,294 MW registered across 7,419 individual sites. The total nominated load reduction for DR was 1,021 MW and the total for ILR was 6,274 MW. These reduction values

show that ILR represents 86% of the nominated MWs for the 2009/2010 Delivery Year. Comparing the nominations based on lead times shows that 83% of the nomination values are Long Lead Time Resources.

In order to examine the performance of site-specific nominated MWs, the performance was calculated by comparing the test MWs, or retest MWs where applicable, to the nominated MWs. The site-specific performance was then weighted based on nominated MWs to calculate a site-specific performance level weighted by nominated load reduction. This calculation resulted in a site-specific performance level of 115%. This performance level indicates that, on average, the nominated load reductions were exceeded on a site-specific basis.

Test Failure Charges for the 2009/2010 Delivery Year are applied on an individual CSP/Zone basis for settlement purposes. However, the Test Failure Charges are reported on an aggregate basis here to preserve confidentiality. The average Penalty Rate for the 2009/2010 Delivery Year is \$194.48/MW-day. This Penalty Rate is an average of \$165.02/day when weighted by the under-compliance amounts. The annual penalties for under-compliance total just over \$3.3 million which will be allocated to RPM LSEs pro-rata based on their Daily Load Obligation Ratio. To better understand the order of magnitude, the under-compliance penalties compare to the total Load Management annual credits of just over \$410 million. Therefore, the under-compliance penalties are less than 1% of the Load Management credits in the RPM.

## Observations and Recommendations

Following are topics that have been identified as issues, clarifications, and recommendations for stakeholder consideration.

### **Guaranteed Load Drop (GLD) Measurement and Verification (M&V)**

There are 6 different GLD methods whereby it is incumbent on the CSP to utilize the method that results in “the best possible estimate of what load level would have occurred in the absence of a curtailment event<sup>4</sup>”. PJM received several questions regarding how to select the appropriate method and how to perform the associated calculation. Currently, the quantity of demand response that is delivered may vary for the same Resource for the same hour depending on whether or not the demand response is for economic energy participation, emergency energy participation or emergency capacity compliance validation. Since the economic DSR M&V recently went through an extensive review there is an opportunity to refine the existing GLD M&V rules to help simplify and make more consistent across the markets where appropriate.

The current GLD rules were explicitly designed around how to measure the quantity of load reduction during an emergency event. Consideration should be given to enhance the language to better reflect potential test conditions which may be significantly different than emergency conditions. PJM recommends the following GLD method enhancements for stakeholder consideration in order of priority:

**Comparable Day:** PJM recommends that the calculation should be clearly defined and ensure the language is appropriate for both test and event compliance scenarios. Further, consideration should be given to if and how weather normalization may occur to compliance results during a test period. For example, if the Load Management Resource will cycle an air conditioner and the test event is done on an 80 degree day then the measured load reduction may be significantly lower than would be expected during an emergency condition when it is likely to be above 90 degrees.

**Same Day (Before/After Event):** PJM recommends that there should be a clear definition of the calculation that should take place and determine whether or not it is appropriate to simply use the metered load prior to the event

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<sup>4</sup> See PJM Manual 19 Attachment A - Comparable Day: The customer’s actual hourly loads on a non-interruption day judged to be similar in other respects to the interruption day. These loads may be adjusted for differences in weather conditions. Or, an average of the customer’s actual hourly loads on peak days; Same Day (Before/After Event): The customer’s actual loads on the same day of the interruption, from the hours surrounding the event. This option is appropriate for high load factor customers with no weather sensitivity; Customer Baseline: The Customer’s estimated baseline used to calculate load drops for PJM economic demand Resources; Load Profile: The Customer’s estimated hourly load from an unrestricted load profile approved for use in retail balancing and settlements; Regression Analysis: The customer’s estimated hourly loads from a regression analysis of the customer’s actual loads versus weather. This option is appropriate for customers with significant weather sensitivity. Generation: The hourly integrated output from a generator used to provide Guaranteed Load Drop.



which is consistent with the method used to determine the amount of energy that is delivered to the market under emergency conditions. Also, the ramp time period necessary to allow each Resource to reach full potential may be excluded to avoid selecting an hour when usage is always partially reduced.

**Customer Baseline (CBL):** PJM recommends that it be clarified that this is the customer baseline method currently effective for the Resource on an active economic registration otherwise it is the current standard CBL method with one of the standard adjustments as appropriate.

**Load Profile:** PJM believes this method is no longer utilized or valid and therefore would suggest eliminating to avoid confusion.

**Regression Analysis:** No change recommended

**Generation:** No change recommended

### **Test and Retest Rules**

The comprehensive test and retest rules implemented for the 2009/2010 Delivery Year allow a CSP the ability to retest only Resources that did not perform if the overall Zonal portfolio performance was greater than 75%. If a CSP that met this condition choose to perform a retest for a subset of Resources in the Zone then the CSP would need to retest all Resources in the Zone that did not comply. For example, if a CSP Zonal performance was 80% and 20 Resources did not meet 100% of their commitment then all 20 Resources would need to be included in the retest. If the CSP only retested 19 of the individual Resources in the retest period then the test was deemed invalid. As a result, no retest data would be considered in determining the testing shortfall.

The fundamental reason for this provision was to give a CSP an opportunity to not retest all Resources during the retest (if test performance was greater than 75%) and avoid a CSP simply picking a Resource's best case test result from the test and retest period. The underlying intention was to simulate emergency conditions where all Resources may need to perform simultaneously. The issue raised was that a CSP may want to keep the test results for a Resource that performed less than 100% and only retest some of the Resources that individually performed less than 100%. A perfect example is a 10 MW industrial commitment where test performance is 95% is currently required to be in the retest group when the CSP may want to accept that test performance as part of their final portfolio test results.

PJM recommends that under the retest provision, the CSP not be required to include all Resources in the retest group if the CSP explicitly notifies PJM in advance of the retest exactly which individual Resource(s) will not be retested. This advance notification will mitigate the potential for the CSP to pick the best result between two different tests and therefore maintain the integrity of the test.

### **System (eLRS) Enhancements to Improve Administration**

PJM should enhance the current application used to manage the test result information. Potential enhancements include the following items:

- Allow users the ability to download test results for more than one location at a time when a CSP needs to verify the information uploaded by the CSP. This will help to eliminate confusion regarding the information that will be used to determine whether or not the CSP was in compliance and make data errors easier to identify and correct.
- The data format for the test data submission should be simplified and expanded to include all 24 hours of information for the test or event day. This will make it easier to provide the information and provide greater transparency regarding the test results.
- PJM should consider taking on the responsibility of performing the GLD calculations instead of the current practice whereby the CSP performs these calculations and then submits the information to PJM. In order to do this each GLD method calculated by PJM would need to be discretely defined<sup>5</sup>. Methods such as the regression method that require an analyst judgment may still be performed by the CSP where supporting information is provide to PJM upon request.

### **Meter Malfunctions**

In a few isolated circumstances there were meter malfunctions and therefore no interval meter data to determine compliance. PJM would recommend, where good utility practices are exercised and a meter malfunction occurs, and is known by the CSP prior to the test compliance data submission deadline, that other information may be utilized to verify the site's performance since the standard meter Validation, Estimation and Editing (VEE)<sup>6</sup> rules may not adequately capture this situation. Other information would include building automation system logs combined with an engineering analysis or meter data for a comparable site.

### **Penalties**

There was some confusion whereby some CSPs did not fully understand how the Daily Capacity Resource Deficiency Charge, Event Compliance Penalty Charge in the case of an event or Test Failure Charge if there are no events are calculated. For example, if a CSP has a 10 MW RPM commitment as a result of clearing a bid in an RPM auction and is only capable of delivering 8 MW as substantiated by DR registrations then the CSP is still required to deliver 10 MW during an event or test although they will already be penalized for 2 MW for the Delivery Year through the Daily Capacity Resource Deficiency Charge.

By contrast, in the event that a generator was delayed, derated, or retired, the absent MWs are assessed the same Daily Capacity Resource Deficiency Charge, but are subtracted from the calculation of a Daily ICAP shortfall due to a generation resource rating test failure. Two important differences exist between measuring DR and generation resource Test Compliance. First, test results for DR are netted with any ILR registered by the CSP in the same Zone, whereas test results for generation are evaluated on an individual unit basis. Secondly, CSPs may register MWs in excess of the RPM commitments that count toward the Zonal test performance. While MWs registered in

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<sup>5</sup> Please see economic customer baseline as a reference to the level of detail that would be required for methods calculated by PJM.

<sup>6</sup> See PJM Manual 11 section 10 for outline of Metering rules.

excess of the RPM commitment receive no RPM auction credits, they can help offset poor performance of other CSP owned resources in the same Zone. These two key differences may provide added benefits to DR aside from a potential double penalty. However, PJM recommends that this issue be considered for review by the stakeholders.

### **Replacement Capacity**

Load Management Test Compliance is measured by comparing the committed MW value to the reported test result. In the case of ILR, the committed MW amount is simply the load reduction MW amount as stated in the approved Load Response Registration.

DR Resources, however, are committed through the RPM Auction process or designation in a Fixed Resource Requirement (FRR) Plan, and require CSPs to register individual sites to meet their RPM or FRR commitment. Additionally, DR Resources can have a variable commitment amount throughout the year due to the ability to replace committed capacity on a daily basis via replacement transactions. To be consistent with the Load Management Event Compliance calculation, the committed MW value on the date of the initial test was used to compare against the reported test result to calculate the Test Compliance Shortfall.

While no misuse was evident with the 2009/2010 test, PJM recognizes the opportunity for replacement capacity to be applied in advance of the test to reduce the committed value of DR Resources. Because CSPs can choose the date of their test by Zone, the same available replacement capacity in an LDA could be applied to different Zones on different days potentially reducing the committed capacity significantly in attempt to avoid testing the full output of their RPM or FRR commitments. PJM recommends that a provision be added to the rules to explicitly disallow this potential gaming situation.