



Working to Perfect the Flow of Energy

PJM Manual 18:
PJM Capacity Market

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Prepared by
PJM Capacity Market Operations

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4.3 Load Management Products

Load management is the ability to reduce metered load, either manually by the customer, after a request from the resource provider which holds the Load management rights or its agent (for Contractually Interruptible), or automatically in response to a communication signal from the resource provider which holds the Load management rights or its agent (for [Legacy](#) Direct Load Control).

A load management program (e.g., [Legacy](#) Direct Load Control, Firm Service Level, or Guaranteed Load Drop program) is eligible to be offered by a resource provider as:

- (1) A **Demand Resource (DR)** offered into the Base Residual Auction or an Incremental Auction and paid the Resource Clearing Price.

4.3.1 Requirements of Load Management Products in RPM

In order to offer a Demand Resource in an RPM Auction, a demand resource provider must submit no later than 15 business days prior to the RPM Auction a Demand Resource Sell Offer Plan (DR Sell Offer Plan) in accordance with Attachment C of this Manual. Actual deadline date for a DR Sell Offer Plan for an RPM Auction is provided in the RPM Auction Schedule posted on the PJM website. A demand resource provider with a PJM approved DR Sell Offer Plan for the RPM Auction will be permitted to offer their Demand Resource(s) into such RPM Auction, provided the additional demand resource requirements in section 4.3.3 are met.

Demand resources that clear in an RPM Auction will have an RPM Resource Commitment for the relevant Delivery Year. Demand resources that are committed to an FRR Capacity Plan will have an FRR Capacity Plan Commitments for the relevant Delivery Year. A resource provider who has RPM Resource Commitments or FRR Capacity Plan Commitments for their demand resource must meet the following requirements:

- Must be registered in the Pre-Emergency or Emergency Load Response Program (see more detail below in the Pre-Emergency and Emergency Load Response Registration section) prior to the start of the relevant Delivery Year.
- Have the capability to retrieve electronic messages from PJM which notify curtailment service providers of a load management event in accordance with PJM Manual 1: Control Center and Data Exchange Requirements.
- Provide (or contract with another party to provide) supplemental status reports during the Delivery Year, detailing availability of the load management resource, as requested by PJM System Operations in accordance with the ***PJM Manuals***;
- Provide (or contract with another party to provide) customer-specific compliance and verification information within 45 days after the end of the month in which a PJM-initiated Load Management event occurred, in accordance with the Load Management Compliance section of Section 8 of this Manual. [Statistical sampling may be used instead of customer-specific compliance and verification information for residential customers without interval metering when approved by PJM in accordance with ***PJM Manual 19: Load Forecasting & Analysis, Attachment D.***](#)



- Provide load drop estimates for all Load Management events (whether initiated by PJM or the resource provider) in accordance with ***PJM Manual 19: Load Forecasting & Analysis***.
- Provide accurate estimates of the amount of energy that will be reduced in direct response to PJM dispatch of demand response during the Delivery Year (see more detail in the Load Reduction Reporting section)

These requirements are described in terms of the customer response and qualifications. The specifics of the customer contract and tariffs are the responsibility of the resource provider and the regulatory process. PJM does not have direct involvement with customers. The entity requesting load management must verify that each customer's load management meets the following criteria:

- Availability for PJM-initiated interruptions in accordance with the availability requirements of the demand resource product type.
- Limited DR – Limited DR is available for interruption for at least 10 times during the summer period of June through September in the Delivery Year, and will be capable of maintaining each such interruption for at least a 6-hour duration. At a minimum, the Limited Demand Resource shall be available for such interruptions on weekdays, other than NERC holidays, from 12:00PM (noon) to 8:00PM Eastern Prevailing Time.
- Extended Summer DR (Effective 2014/2015 Delivery Year) – Extended Summer DR is available for an unlimited number of interruptions during an extended summer period of June through October and the following May, and will be capable of maintaining each such interruption for at least a 10-hour duration between the hours of 10:00AM to 10:00PM Eastern Prevailing Time.
- Annual DR (Effective 2014/2015 Delivery Year) – Annual DR is available for an unlimited number of interruptions during the Delivery Year, and will be capable of maintaining each such interruption for at least a 10-hour duration between the hours of 10:00AM to 10:00PM Eastern Prevailing Time for the months of June through October and the following May, and 6:00AM through 9:00PM Eastern Prevailing Time for the months of November through April unless there is an Office of the Interconnection approved maintenance outage during October through April.
- Load management must be able to be implemented within two hours of notification to the resource provider of a PJM-initiated load management event. Effective with the 2015/2016 Delivery Year, load management will be required to fully respond within 30 minutes of notification unless an exception request for 60 or 120 minutes notification time is approved by PJM. If qualified for one of the following exceptions, then CSP shall elect either 60 minute or 120 minute lead time based on the resources physical capability to provide the load reduction:
 - The manufacturing processes for the Demand Resource require gradual reduction to avoid damaging major industrial equipment used in the manufacturing process, or damage to the product generated or feedstock used in the manufacturing process; or
 - Transfer of load to back-up generation requires time-intensive manual process taking more than 30 minutes; or

- On-site safety concerns prevent location from implementing reduction plan in less than 30 minutes; or
- The Demand Resource is comprised of mass market residential customers or similarly situated mass market small commercial customers which collectively cannot be notified of a Load Management event within a 30-minute timeframe due to unavoidable communications latency, in which case the requested notification time shall be no longer than 120 minutes.
- The intent of these exemptions is to accommodate resources with legitimate, physical reasons as to why the load reduction cannot be achieved in the default, 30 minute notification time period and require up to 120 minutes to fully provide the load reduction. CSP must provide additional data and information within three business days of PJM request to substantiate the request for a longer lead time (60 or 120 minutes). PJM will make its determination within ten business days of receiving such additional information regarding the appropriate lead time for the registration.
- Initiation of load interruptions upon request of PJM must be within the authority of the resource provider dispatcher without any additional approvals being required.
- LDLC programs are certified based on load research and customer subscription data. Load Research guidelines are outlined in ***PJM Manual 19: Load Forecasting & Analysis***.

4.3.2 Types of Load Management Programs

PJM recognizes three types of Load Management programs:

- Legacy Direct Load Control (LDLC) – Load management that is initiated directly by the resource provider’s market operations center or its agent, employing a communication signal to cycle equipment (typically water heaters or central air conditioners) and is qualified based on load research and customer subscription data. LDLC is only in effect through May 31, 2016. Effective June 1, 2015, non-interval metered residential programs that use Direct Load Control may use statistical sampling to qualify for Firm Service Level or Guaranteed Load Drop in accordance with PJM Manual 19: Load Forecasting & Analysis, Attachment D.
- Firm Service Level (FSL) – Load management achieved by a customer reducing its load to a pre-determined level (the Firm Service Level), upon notification from the resource provider’s market operations center or its agent.
- Guaranteed Load Drop (GLD) – Load management achieved by a customer reducing its load by a pre-determined amount (the Guaranteed Load Drop), upon notification from the resource provider’s market operations center or its agent. Typically, the load reduction is achieved through running customer-owned backup generators, or by shutting down process equipment.

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For each type of recognized Load Management Program, there can be three notification periods:

- 30 Minute Lead Time – Load management which must be fully implemented in 30 minutes or less from the time the PJM dispatcher notifies the market operations center of a curtailment event.



- 60 Minute Lead Time – Load management which requires more than 30 minutes but no more than one hour, from the time the PJM dispatcher notifies the market operations center of a curtailment event, to be fully implemented.
- 120 Minute Lead Time - Load management which requires more than one hour but no more than two hours, from the time the PJM dispatcher notifies the market operations center of a curtailment event, to be fully implemented.

4.3.3 Demand Resources

Both Existing and Planned Demand Resources may participate in RPM Auctions, provided the resource resides in a party's portfolio for the duration of the Delivery Year. A Demand Resource is added to a party's portfolio through the creation of a Demand Resource Modification transaction in eRPM. More information on Demand Resource Modification transactions is available in the next section.

Existing Demand Resources are those MWs on a demand resource identified in a pre-registration process in the eRPM system prior to the RPM Auction. The Nominated DR Values (in MWs) associated with end-use customer sites that the Curtailment Service Provider (CSP) has under contract for the current Delivery Year (i.e., end-use customer sites registered in PJM eLRS system for the current Delivery Year)¹ and that the CSP intends to have under contract for the auction Delivery Year are considered Existing MWs. A CSP may request an adjustment to the Nominated DR Value (in MWs) associated with an end-use customer site and used in the determination of a CSP's Existing MWs if the following three criteria are satisfied:

- The original Nominated DR Value for the end-use customer was determined based on one registration in eLRS.
- The peak load contribution (PLC) reported in the eLRS registration for the end-use customer is at least 2 MW lower than it should have been due to an anomaly. An anomaly is a condition at the end-use customer site that resulted in significantly low usage that is not expected to occur in the future, such as a lighting strike or a major mechanical failure to an end use device.
- The CSP provides supporting information including historical load data to support an adjustment to the Nominated DR Value for the end-use customer.

A CSP request for an adjustment to the Nominated DR Value of an end-use customer and supporting information must be submitted via email to rpm_hotline@pjm.com at least five business days prior to the opening of the pre-registration window in the eRPM system for an RPM Auction. PJM will notify the CSP of the approval or rejection of their request prior to the opening of the pre-registration window in the eRPM system for an RPM Auction.

Planned Demand Resources are defined as resources that do not currently have the capability to provide reduction in demand or to otherwise control load in PJM, but that is scheduled to be capable of providing such reduction or control on or before the start of the Delivery Year. Planned Demand Resources are those MWs on a demand resource that the

¹ For a Base Residual Auction and a Third Incremental Auction, end-use customer sites registered in the PJM eLRS system for the subsequent Delivery Year may also be considered as existing DR provided the registrations are in "Confirmed" status by specified deadlines established by PJM and communicated to CSPs in advance of the DR Sell Offer Plan submittal deadline.



CSP intends to offer in the RPM Auction in excess of the CSP's Existing MWs on such demand resource.

Planned Demand Resources must establish an RPM Credit Limit prior to an RPM Auction. Credit requests should be made to PJM's Treasury Department at least two weeks prior to an RPM Auction.

A resource provider may offer Demand Resources (Planned or Existing) associated with Behind the Meter Generation for an entire Delivery Year into the Base Residual or Incremental Auctions. If the DR offer clears in an RPM auction for a given Delivery Year, the Behind the Meter Generation cannot be netted from load for the purposes of calculating the Peak Load Contributions for that Delivery Year. Requests for Behind the Meter changes for capacity obligations must be received by PJM by December 1 prior to the start of the Delivery Year as outlined in ***PJM Manual 14D: Load Generator Operational Requirements***.

If offering as a Demand Resource in the Base Residual Auction or Incremental Auction, a sell offer must be submitted in the Base Residual Auction or Incremental Auction. Demand Resources offered and cleared in a Base Residual or Incremental Auction will receive the corresponding LDA Resource Clearing Price determined by the optimization algorithm. However, prior to 2013/2014, if a resource provider cannot provide Demand Resource data on individual LDA basis in a Zone with multiple LDAs, Demand Resources will be paid a Weighted Zonal Resource Clearing Price based on the resource provider's distribution of registered sites in each LDA that are approved before June 1st of the Delivery Year. Effective 2013/2014, resource providers must offer DR resources in the lowest level LDA in order to receive proper payment. No Weighted Prices will be calculated effective 2013/2014.

4.3.4 Demand Resource Modifications (DR Mods)

In order to offer a Demand Resource into an RPM Auction, the resource must be in a party's portfolio for the duration of the Delivery Year. A Demand Resource Modification transaction is the mechanism to add a demand resource to a party's portfolio. Demand Resource Modifications (DR MODs) are a type of eRPM transaction used by PJM to track an increase or decrease of the nominated value of the DR resource in a party's resource portfolio in eRPM. The following are business rules that apply to Demand Resource Modifications (DR Mods):

- DR MODs must be submitted by the resource provider within the eRPM system for Planned Demand Resources and for Demand Resources that have not yet participated in an RPM Auction.
- DR MODs may be submitted to reflect changes in the Peak Load Contributions or EDC loss factors of customers associated with a Demand Resource.
- PJM will "provisionally approve" DR MODs for Planned DR resources after verifying that the Planned DR resource has posted the appropriate credit and after completing a review of the submitted timeline and milestones to ensure that the Planned Demand Resource will be available for the start of the Delivery Year.
- PJM will "provisionally approve" DR MODs for existing demand response sites that have not yet participated in an RPM Auction after completing a review of the sites currently registered by this resource provider in the PJM Load Response system to



ensure that the nominated value of the Demand Resource will be available for the start of the Delivery Year.

- PJM will “approve” DR MODs for DR resources once the demand resource sites have been registered and approved for the Full Program Option or Capacity Only Option in the PJM Load Response system.
- DR MODs must be in a “Provisionally Approved” or “Approved” status in order for the DR MOD to be considered in a party’s Demand Resource Position and in the calculation of Available ICAP to offer for an RPM Auction.
- DR MODs that are not in the “Approved” status by the start date of the transaction will have their status changed to “PJM Withdrawn”.

4.3.5 Pre-Emergency and Emergency Load Response Registration

Pre-Emergency and Emergency Load Response Registration is the process of providing the following information through the submittal of a Pre-Emergency or Emergency Load Response registration into PJM’s Load Response system (eLRS). As part of this process, resource providers will submit the following types of information:

- Customer-specific load management information for planning and verification purposes (i.e., EDC account number, Zone, etc)
- Customer-specific information to establish nominated load management levels (i.e., Peak Load Contribution, EDC Loss Factor, notification period, Firm Service Level data, [Legacy](#) Direct Load Control data, Guaranteed Load Drop data)
- Load Management Program information (Demand Resource Name if applicable)
- Load Management product type for customer site (Limited DR, Extended DR, Annual Summer DR) (Effective with the 2014/2015 Delivery Year)
- A point of contact with appropriate backup to ensure single call notification from PJM and timely execution of the notification process

A resource provider who has RPM or FRR Resource Commitments for their demand resource must register customers in the Full Program Option or as a Capacity Only Option of the Emergency Load Response or Pre-Emergency Load Response Program.

The Full Program and Capacity Only Option enable a resource provider that has approved registrations for the Delivery Year prior to the applicable registration deadline to receive capacity credits, in the form of RPM Auction Credits, if the resource provider cleared their demand resource in an RPM Auction, for that Delivery Year. Full Program Option resource providers may claim an energy settlement for a PJM-initiated Load Management Event. Capacity Only resource providers may not claim an energy settlement for a PJM-initiated Load Management Event for Capacity Only registrations.

Customer sites registered in the Energy Only Program are not eligible to receive capacity credits.

Effective with the 2014/2015 Delivery Year, a provider with RPM or FRR Resource Commitments for their Demand Resource must register customer sites that are of the same product-type (Limited, Extended Summer, or Annual) as the committed Demand Resource.



A completed Load Response registration in eLRS for a DR resource must be submitted no later than one day before the tenth business day preceding the relevant Delivery Year. All registrations that have not been approved on or before May 31st preceding the relevant Delivery year shall be rejected by PJM.

Full details of the Pre-Emergency and Emergency Load Response registration and approval process may be found in **Section 10 of PJM Manual for Scheduling Operations (M-11)**.

4.3.6 End-Use Customer Aggregation

A resource provider may aggregate multiple end-use customer sites to create a single Demand Resource for the purposes of submitting an offer in the RPM Auctions, if all the end-use customer sites have the same following characteristics:

- Curtailment Service Provider
- Electric Distribution Company (EDC)
- Transmission Zone (or sub-zonal LDA)

The mechanism for aggregating end-use customer sites to create a single Demand Resource is to select the same Demand Resource for multiple end-use customer sites during the registration process.

4.3.7 Determination of Nominated Values for Load Management

Once an end-use customer is registered in the Pre- Emergency or Emergency Load Response Program (Full Program Option or Capacity Only), a nominated load reduction value is calculated for that customer. The determination of the value of the load reduction is consistent with the process for determination of the capacity obligation for the customer. Nominated value of a load management resource is equivalent to the Installed Capacity value of a generation resource. Nominated load reductions are effective for an entire RPM Delivery Year.

For existing Demand Resources, the maximum load reduction (used in determining the Nominated DR Value) is based on the Peak Load Contributions in place at the time of the Full Program Option of the Load Response Program registration in the Load Response system.

Nominated Value of Firm Service Level Resources

The nominated value for a Firm Service Level customer will be based on the Peak Load Contribution for the customer, as determined by the 5CP methodology.

The nominated value for a Firm Service Level (FSL) customer will be equal to the difference between its Peak Load Contribution (PLC) and its pre-determined firm load adjusted for system losses

$$\text{Nominated Value of FSL} = \text{PLC} - (\text{FL} * \text{LossF})$$

Where:

PLC = the customer's EDC-assigned Peak Load Contribution;

FL = Firm Load level;

LossF = the customer's EDC-assigned loss factor.



Nominated Value of Guaranteed Load Drop Resources

The nominated value for a Guaranteed Load Drop (GLD) customer will be the guaranteed load drop amount, adjusted for system losses, as established by the customer's contract with the resource provider. The value nominated shall not exceed the customer's Peak Load Contribution.

$$\text{Nominated Value of GLD} = \text{GLD} (\text{LossF})$$

Where:

GLD = Customer's Load Reduction;

LossF = the customer's EDC-assigned loss factor.

Nominated Value of Legacy Direct Load Control Resources

The nominated value for a Legacy Direct Load Control (LDLC) program will be based on load research and customer subscription. The value of the program is equal to the PJM-approved per-participant load reduction (evaluated at average peak day weather conditions and adjusted for the switch operability rate) multiplied by the number of active participants, adjusted for system losses.

$$\text{Nominated Value of LDLC} = \text{PPI} * \text{Cust} * \text{LossF}$$

Where:

PPI = the PJM-approved Per-Participant Impact;

Cust = the number of active participants;

LossF = the EDC-assigned loss factor.

The per-participant impact is to be estimated at long-term average local weather conditions at time of the RTO summer peak. Load research studies to support per-participant impacts must comply with the Guidelines for LDLC load research studies presented in **PJM Manual 19: Load Forecasting & Analysis of this Manual**.



Section 8: Resource Performance Assessments

8.5 Load Management Event Compliance

Compliance is the process utilized to review resource performance during PJM-initiated Load Management events, as defined in the tariff. The process establishes potential under/over compliance values for each dispatched Demand Resource registration.

Compliance is evaluated separately by event in each Compliance Aggregation Area (“CAA”) as defined in the tariff for Demand Resources dispatched by PJM. Response to transmission sub-zonal dispatch is voluntary (meaning there are no penalty charges assessed for non-performance) for 2012/2013 and 2013/2014 Delivery Years. Beginning with the 2014/2015 Delivery Year, response to transmission sub-zonal dispatch becomes mandatory (meaning there are penalty charges assessed for non-performance) if the sub-zone is defined and publicly posted the day before the Load Management event. Response to zonal dispatch is mandatory for the DR product type dispatched within the compliance period of such DR product type for all Delivery Years.

Effective with the 2014/2105 Delivery Year, resource providers may use substitute registrations of a different resource product type to cover the commitment of non-performing registrations that cannot respond to a PJM initiated Load Management event. The non-performing registration(s) and corresponding substitute registration(s) must be in the same geographic location defined by the PJM dispatch instruction with the same designated lead time. In addition, the total nominated value of the substitute registration(s) must be comparable (within either +/- 25% or +/- 0.5 MW) to the total nominated value of the corresponding non-performing registration(s). Resource providers that use substitute registrations must submit their list of nonperforming registrations and corresponding substitute registrations to PJM by 11:59 pm of the event day in the appropriate PJM system. PJM may also request that resource providers submit evidence that notification to respond were sent to substitute registrations in advance or during the event to verify that meter data was not used after the fact in finding the substitutes. Any registration used as a substitute must be included in the submittal of compliance information to the appropriate PJM system. The reduction value(s) of the substitute registration(s) will be used by PJM when measuring event compliance for the corresponding non-performing registration(s). Non-performing registration(s) will be considered to have not performed. Registrations used as substitutes during an event will have the same obligation to respond to future event(s) as if it did not respond to such event.

Resource providers are responsible for the submittal of compliance information to PJM through the Load Response system for each PJM initiated Load Management event during the compliance period. For the 2012/2013 and 2013/2014 Delivery Years, registrations that voluntarily responded to a transmission sub-zonal dispatch must submit compliance information in the eLRS system.

PJM will establish and communicate reasonable deadlines for the timely submittal of event data to expedite compliance reviews.



Compliance reviews will be completed as soon after the event as possible, with the expectation that reviews of a single event will be completed within two months of the end of the month in which the event took place.

8.5.1 Measuring Event Compliance

PJM verifies Load Management Event Compliance on an end-use customer basis by reviewing the data submitted by the resource provider through the Load Response system. Load Management Event Compliance for non-interval metered residential customers may be verified using a statistical sample of end-use customers in accordance with **PJM Manual 19: Load Forecasting & Analysis, Attachment D** and subject to PJM approval. Like the determination of Nominated Values, Compliance is measured differently for each type of Load Management program.

Compliance for Legacy Direct Load Control (LDLC) programs will consider only the transmission of the control signal. Resource providers are required to report the time period (during the Load Management event) that the control signal was started and stopped. Failure to start the signal by the start of the event and continue the signal for the duration of the event will result in a deficiency for that end-use customer.

Compliance for Firm Service Level (FSL) customers will be determined by comparing actual load during the event to the nominated firm service level. Resource providers must submit load data for all hours of the event and test day and for all days required for PJM to calculate compliance through the Load Response system.

Compliance for Guaranteed Load Drop (GLD) customers will be determined by comparing actual load dropped during the event to the nominated amount of load drop. Resource providers must submit load data for all hours of the event and test day and for all days required for PJM to calculate compliance. Comparison loads must be developed from the guidelines included in **Attachment A of PJM Manual M-19 Load Data Analysis**, and note which method was employed.

Load Management customers may not reduce their load below zero (i.e., export energy into the system). No compliance credit will be given for the incremental load drop below zero.

Compliance is averaged over the hours the registration was dispatched for at least 30 minutes of the clock hour during the event for FSL and GLD customers. Compliance is averaged over all hours the registration was dispatched for non-interval metered LDLC programs. For FSL and GLD customers dispatched by PJM for at least 30 minutes of the clock hour (i.e. "partial dispatch compliance hour"), the registered capacity commitment for the partial dispatch compliance hour will be prorated based on the number of minutes dispatched during the clock hour.

- Curtailment Service Provider may submit 1 minute load data for use in capacity compliance calculations for partial dispatch compliance hours subject to PJM approval and in accordance with the PJM Manuals where: (a) metering meets all Tariff and Manual requirements, (b) 1 minute load data shall be submitted to PJM for all locations on the registration, and (c) 1 minute load data measures energy consumption over the minute. CSP may provide 1 minute meter data to use for capacity compliance measurement for partial dispatch hour instead of using prorated.



The averaged compliance data will be used to determine a Resource Compliance Position for the Load Management event for each dispatched registration. Compliance data is netted for a DR Provider by CAA for all registrations in the Load Response System that were dispatched.

Resource Compliance Position for a registration is determined as the Nominated Load Reduction Value reported in the Load Response system minus the actual load reduction, where the Nominated Load Reduction Value is capped at the RPM/FRR Commitment for such registration on the day of the event. If multiple registrations are linked to a committed Demand Resource in the eRPM system, the RPM/FRR Commitment for such Demand Resource is allocated to the registrations pro-rata based on the nominated load reduction value of the registrations.

Resource Compliance Positions for a registration that are positive indicate that the registration under complied during the event. Resource Compliance Positions that are negative indicate that the registration over complied during the event.



Section 11: Fixed Resource Requirement Alternative

11.4 Supply Resources in the FRR Alternative

The supply resources available and the qualification requirements for use in FRR Capacity Plans are very similar to RPM resources.

11.4.7 Load Management Products

A Load Management program (e.g., [Legacy](#) Direct Load Control, Firm Service Level, or Guaranteed Load Drop program) is eligible to be committed as a Demand Resource (DR) to the FRR Capacity Plan, if the program meets the requirements specified in the Load Data Systems Manual (M-19) and Section 4.3 of this manual.

In order to commit a Demand Resource to the initial FRR Capacity Plan for a Delivery Year, an FRR Entity must submit no later than 15 business days prior to the initial FRR Capacity Plan submittal deadline a completed DR Plan template (i.e., the DR Sell Offer Plan template described in Attachment C of this Manual). The completed DR Plan template must clearly identify in the Summary section the Existing Nominated DR Value or Planned Nominated DR Value in ICAP MWs that the FRR Entity intends to commit to their initial FRR Capacity Plan. Actual deadline date for the DR Plan template is provided in the RPM Auction Schedule posted on the [pjm website](#).

If an FRR Entity intends to commit demand resources located in a pre-identified zone/sub-zone, PJM will grant conditional approval of the total Nominated DR Value in such zone/sub-zone pending the PJM review of DR Sell Offer Plans for the Base Residual Auction for such Delivery Year.

An FRR Entity with PJM approved or conditionally approved Nominated DR Value(s) in zone/sub-zone(s) will be permitted to commit the associated Demand Resource(s) to the FRR Capacity Plan, provided credit has been posted with the PJM Treasury Department for any Planned Demand Resource(s).

If a review of the DR Sell Offer Plans for the Base Residual Auction for such Delivery Year reveals that any of the conditionally approved MWs in a pre-identified zone/sub-zone are ascribed to another CSP by a letter of support from an end-use customer, such MWs shall be uncommitted from the FRR Capacity Plan and additional capacity resources shall be committed by the FRR Entity to the FRR Capacity Plan to satisfy the FRR Entity's Preliminary Unforced Capacity Obligation.

The UCAP value of a Demand Resource is the Nominated DR Value * DR Factor * Forecast Pool Requirement. (The DR Factor was formerly known as the ALM Factor).

The Nominated DR Value for a load management program cannot exceed the maximum value determined in accordance with the **Load Data Systems Manual (M-19)**.

A resource provider who has FRR Capacity Plan Commitments for their demand resource must provide (or contract with another party to provide) the following during the Delivery Year:

Supplemental status reports, detailing Load Management availability, as requested by PJM System Operations in accordance with the PJM Manuals;



After each PJM-initiated Load Management event, customer-specific compliance and verification information within 45 days after the end of the month in which the event occurred, in accordance with Load Data Systems Manual (M-19);

Load drop estimates for all Load Management events (whether initiated by PJM or the resource provider) at the end of each season, in accordance with the Load Data Systems Manual (M-19).

A resource provider who has FRR Capacity Plan Commitments for their demand resource will be subject to the Load Management Event Compliance and Load Management Test Compliance in accordance with Section 8 of this manual.



Attachment A: Glossary of Terms

Welcome to the *Glossary of Terms* section of the *PJM Manual for the Capacity Market*. In this section, you will find the following information:

Load Management – is the ability to reduce metered load, either manually by the customer, after a request from the resource provider which holds the Load management rights or its agent (for Contractually Interruptible), or automatically in response to a communication signal from the resource provider which holds the Load management rights or its agent (for [Legacy](#) Direct Load Control).



Attachment C: Demand Resource Sell Offer Plan

The Demand Resource Sell Offer Plan (DR Sell Offer Plan) is a PJM template document, requiring the information set forth below, together with an accompanying signed PJM Demand Resource Officer Certification Form (DR Officer Certification Form). A completed DR Sell Offer Plan (including a signed DR Officer Certification Form) must be submitted to PJM no later than 15 business days prior to the relevant RPM Auction by Curtailment Service Providers (CSPs) that intend to offer Demand Resources (DR) in RPM Auctions. The DR Sell Offer Plan must provide information that supports the CSP's intended DR Sell Offers and demonstrates that the DR is being offered with the intention that the MW quantity that clears the auction is reasonably expected to be physically delivered through DR registrations for the relevant Delivery Year.

The DR Sell Offer Plan encompasses both existing DR and Planned DR. Existing DR is identified as end-use customer sites that the CSP has under contract for the current Delivery Year (i.e. end-use customer sites registered in the PJM eLRS system for the current Delivery Year)² and that the CSP intends to have under contract for the auction Delivery Year. Planned DR is that quantity of the CSP's intended total DR Sell Offer in excess of the CSP's existing DR and is subject to an RPM Credit Requirement.

Both the signed DR Officer Certification Form and the completed DR Sell Offer template must be submitted to PJM via email to rpm_hotline@pjm.com no later than 15 business days prior to the relevant RPM auction. PJM will review the DR Sell Offer Plan and notify the CSP via email no later than 10 business days prior to the RPM Auction if another CSP has identified the same end-use customer site(s) in their DR Sell Offer Plan and request supporting documentation, such as a letter of support from the end-use customer indicating that the end-use customer and CSP are likely to execute a contract for the auction Delivery Year. Supporting documentation must be submitted via email to the rpm_hotline@pjm.com no later than 7 business days prior to the RPM Auction. PJM will notify all CSPs via the eRPM system of the approved DR MW quantity by zone/sub-zone that the CSP is permitted to offer into the RPM Auction no later than 5 business days prior to the RPM Auction.

I. PJM Demand Resource Officer Certification Form

A DR Officer Certification Form is located in Attachment D of Manual 18 and is posted on the PJM web site. A signed DR Officer Certification Form must accompany the DR Sell Offer Plan. The DR Officer Certification Form specifies that the signing officer has reviewed the DR Sell Offer Plan, that the information provided therein is true and correct, and that the MW quantity that clears the auction is reasonably expected to be physically delivered through DR registrations for the relevant Delivery Year.

² For a Base Residual Auction and a Third Incremental Auction, end-use customer sites registered in the PJM eLRS system for the subsequent Delivery Year may also be considered as existing DR provided the registrations are in "Confirmed" status by specified deadlines established by PJM and communicated to CSPs in advance of the DR Sell Offer Plan submittal deadline.



II. DR Sell Offer Plan Template

A DR Sell Offer Plan template (in Excel format) is provided on the PJM web site, and consists of the following three sections:

- A. DR Sell Offer Plan Summary
- B. Planned DR Details
- C. Schedule

A. DR Sell Offer Plan Summary

The DR Sell Offer Plan requires the following information to be provided:

- Company name
- Contact information (name, phone number and email address of submitter)
- Existing Nominated DR Value in ICAP MWs by zone/subzone that CSP intends to offer
- Planned Nominated DR Value in ICAP MWs by zone/subzone that CSP intends to offer

Existing DR is identified by the CSP as end-use customer sites that the CSP has under contract and registered in the PJM eLRS System for the current Delivery Year and that the CSP also intends to have under contract for the auction Delivery Year. Planned DR is identified by the CSP as described in the Planned DR Details section of the DR Sell Offer Plan template. Based on the information provided above, a total Nominated DR Value in MWs will be calculated for each zone/sub-zone as the addition of the Nominated DR Value of existing DR plus the Nominated DR Value of Planned DR. The total Nominated DR Value represents the maximum MW amount that the CSP intends to offer for the zone/sub-zone. The actual MW value(s) submitted by a CSP in their Sell Offer(s) for a zone/sub-zone during the auction bidding window may be less than the total Nominated DR Value in their DR Sell Offer Plan Summary.

Certain zones/sub-zones will be pre-identified by PJM as zones for which DR Sell Offers may require additional information to support the plan. Additional information may be required to support DR Sell Offer Plans for zones/sub-zones for which the quantity of cleared zonal/sub-zonal DR from the last BRA exceeds a threshold determined for the applicable LDA group (EMAAC, SWMAAC, Rest of MAAC, or Rest of RTO) as the higher of the maximum DR/ILR quantity registered in eLRS over the past three Delivery Years for the zones in the LDA group or the zonal DR potential quantity for the zones in the LDA group estimated based on a June 2009 FERC Staff Report on "A National Assessment of Demand Response Potential", where DR quantities are expressed in all cases as a percent of the forecasted zonal peak load. This determination of the identified zones is made each year prior to each BRA and is applicable to all auctions conducted for that Delivery Year. Zones or sub-zones remain on the identified list unless the threshold is not exceeded for three consecutive years. Identified zones for a Delivery Year will be posted by PJM to the pjw website no later than December 1 prior to the Base Residual Auction for such Delivery Year. Updates, if any, made to the 2009 FERC Staff Report will be subject to stakeholder review and considered for use in the establishment of thresholds in the future.



For these pre-identified zones/sub-zones, a CSP sell offer threshold is determined for each CSP; and DR sell offer quantities in excess of the CSP sell offer threshold will require site-specific information, as this quantity in excess of the CSP sell offer threshold should reflect Planned DR associated with end-use customer sites that the CSP has a high degree of certainty that it will physically deliver for the Delivery Year. The CSP sell offer threshold is determined as the higher of [(the CSP's maximum DR quantity registered in eLRS for that zone/sub-zone over the past three Delivery Years) or (the CSP's maximum cleared DR quantity for the past three BRAs for that zone/sub-zone) or (10 MW)].

B. Planned DR Details

The Planned DR Details section describes the program or strategy for procuring end-use customers and provides the details and key assumptions behind the development of the Planned DR quantities contained in the CSP's DR Sell Offer Plan. The Planned DR Details section is comprised of three sub-sections.

1. Description and Key Assumptions of Planned DR

The CSP must describe the program(s) that the CSP plans to employ to achieve the Planned Nominated DR Value indicated on the DR Sell Offer Plan Summary. This section must describe key program attributes and assumptions used to develop the Planned Nominated DR Value. This section must include, but is not limited to, discussion of:

- Method(s) of achieving load reduction at customer site(s)
- Equipment to be controlled or installed at customer site(s), if any
- Plan and ability to acquire customers
- Types of customer targeted
- Support of market potential and market share for the target customer base, with adjustments for existing DR customers within this market and the potential for other CSPs targeting the same customers
- Assumptions regarding regulatory approval of program(s), if applicable
- If offering a Legacy Direct Load Control (LDLC) program³, the following additional LDLC program details must be provided:
 - Description of the cycling control strategy
 - A list of all load research studies⁴ (with study dates) used to develop the estimated nominated ICAP value (kW) per customer (i.e., the per-participant impact). A copy of all studies must be provided with the DR Sell Offer Plan. If the LDLC program employs a radio signal, the CSP may elect to either submit a load research study to support the estimated nominated ICAP value per customer or utilize the per-

³ ~~LDLC can only be used through May 31, 2016. Effective June 1, 2015, non-interval metered residential programs that use Direct Load Control technology may use statistical sampling to qualify for Firm Service Level or Guaranteed Load Drop in accordance with PJM Manual 19: Load Forecasting & Analysis, Attachment D.~~

⁴ Legacy Direct Load Control Research Study Guidelines are provided in PJM Load Forecasting and Analysis Manual, Manual 19, Attachment B.

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- participant impacts contained in the “Deemed Savings Estimates for Legacy Air Conditioning and Water Heating Direct Load Control Programs in the PJM Region” Report⁵.
- Assumptions regarding switch operability rate (%)

2. Planned Nominated DR Value by Customer Segment

For those Planned Nominated DR Values for which an end-use customer site is not identified in section 3 of the Planned DR Details, the CSP must identify the Planned Nominated DR values by zone/sub-zone and by end-use customer segment. End-use customer segments include residential, commercial, small industrial (less than 3 MW), medium industrial (between 3 MW and 10 MW) and large industrial (greater than 10 MW). If known, the CSP may identify more specific customer segments within the commercial and industrial category.

By zone/sub-zone and by end-use customer segment, the CSP must provide estimates of the following information regarding the Planned DR component of the DR Sell Offer Plan:

- Number of end-use customers to be registered for auction Delivery Year
- Average Peak Load Contribution (PLC) per end-use customer in kW
- Average Nominated DR Value per customer in kW

Based on the above provided information, a total Planned Nominated DR Value in MW will be calculated for each end-use customer segment and for each zone/sub-zone. The total Planned Nominated DR values identified by customer segment and aggregated for each zone/sub-zone in Section 2 of the Planned DR Details plus the total Planned Nominated DR Values identified by end-use customer site(s) and aggregated for each zone/sub-zone in Section 3 of the Planned DR Details must equal the total Planned Nominated DR Value for each zone-sub-zone as identified in the DR Sell Offer Plan Summary.

3. Planned Nominated DR Value by End-Use Customer Site

This section must be completed by the CSP when the end-use customer is known at the time of the submittal of the DR Sell Offer Plan. This section must also be completed for DR Sell Offer quantities identified in the DR Sell Offer Plan Summary as requiring site-specific information, since this identified quantity should reflect Planned DR associated with specific end-use customer sites for which the CSP has a high degree of certainty that it will physically deliver for the relevant Delivery Year.

⁵ “Deemed Savings Estimates for Legacy Air Conditioning and Water Heating Direct Load Control Programs in the PJM Region”, Final Report, RLW Analytics, March 2007, is available at <http://www.pjm.com/~media/documents/reports/20070406-deemed-savings-report-ac-heat.ashx>

The CSP must provide the following information:

- Customer EDC account number (if known)
- Customer name
- Customer premise address
- Zone/Sub-zone
- Customer segment
- Actual value (if known) or estimate of current PLC and estimate of expected auction Delivery Year PLC in kW
- Estimated Nominated DR Value in kW

In the event that multiple CSPs identify the same end-use customer site, the MWs associated with such site will not be approved for offering into the RPM auction by any of the CSPs, unless it can be supported by evidence, such as a letter of support from the end-use customer indicating that they have been in contact with the CSP and are likely to execute a contract with that CSP for the relevant Delivery Year. In the event that multiple letters of support indicating different CSPs are provided from the end use customer, the MWs associated with the end-use customer site will not be approved for offering into the RPM auction by any of the CSPs.

C. Schedule

The CSP must provide an approximate timeline for procuring end-use customer sites in order to physically deliver the total Nominated DR Value (existing and Planned DR) by zone/sub-zone in the DR Sell Offer Summary. For each zone/sub-zone and for each customer segment, the CSP must specify the cumulative number of customers and the cumulative Nominated DR Value associated with that group of customers that the CSP expects to have under contract by the beginning of each of the full Delivery Years occurring between the time of the auction and the auction Delivery Year.