OATT Attachment K Appendix

8.1 Emergency Load Response and Pre-Emergency Load Response Program Options

The Emergency Load Response Program and Pre-Emergency Load Response Program are designed to provide a method by which end-use customers may be compensated by PJM for reducing load immediately prior to an anticipated emergency event ("pre-emergency event") or during an emergency event. As used in the Emergency Load Response Program and Pre-Emergency Load Response Program, the term "end-use customer" refers to an individual location or aggregation of locations that consume electricity as identified by a unique electric distribution company account number. There are two options for participation in the Emergency Load Response Program and Pre-Emergency Load Response Program:

♦ Full Program Option

Participants in the Full Program Option receive, pursuant to Attachment DD of the Tariff and as applicable, (i) an energy payment for load reductions during a pre-emergency or emergency event, and (ii) a capacity payment for the ability to reduce load reductions during a pre-emergency event or emergency event measured as set forth in the Reporting and Compliance provisions below.

♦ Energy Only Option

Participants in the Energy Only Option receive only an energy payment for load reductions during an emergency event.

8.5 Pre-Emergency Operations

All participants in the Pre-Emergency Load Response Program shall be subject to the operation procedures herein, unless the participant can demonstrate its Demand Resource Registration: (1) relies on Behind the Meter generation to fulfill its load reduction obligations; (2) the Demand Resource Registration has environmental restrictions imposed on it by Applicable Laws and Regulations that limit the Demand Resource Registration's ability to operate only in emergency conditions; and (3) such limitation exists for any period of time. For the purposes of Section 8, emergency conditions shall be defined either by the express terms of the Applicable Law or Regulation, or if not set forth therein shall be deemed to exist if PJM has declared a NERC Emergency Alert Level 2, as defined in the applicable NERC Standards. If these three criteria are met, the participant shall be subject to the emergency operation procedures contained in Section 8.6. In such case, the Curtailment Service Provider shall submit a request for the relevant Demand Resource Registration(s) to be an emergency (versus pre-emergency) Demand Resource Registration to the Office of the Interconnection, at the time the registration is submitted in applicable PJM systemForm is submitted in accordance with this Agreement. A Curtailment Service Provider shall not submit a request for an exception unless it has done its due diligence to confirm that the Demand Resource Registration meets the requirements referenced herein and has obtained from the end-use customer documentation supporting the exception request. The Curtailment Service Provider shall provide the Office of the Interconnection with a copy of such supporting documentation within three (3) Business Days of a request therefor. Failure to provide such supporting documentation by the deadline shall result in the Demand Resource Registration being subject to the pre-emergency procedures herein.

PJM will initiate a pre-emergency event prior to the declaration of a Maximum Generation Emergency or an emergency event when practicable. A pre-emergency event is implemented when economic resources are not adequate to serve load and maintain reserves or maintain system reliability, and prior to proceeding into emergency procedures. Understanding the primary responsibility of the Office of the Interconnection to maintain system security, the Office of the Interconnection will strive to exhaust, but it is not obligated to exhaust, all economic resources prior to initiating a pre-emergency event. PJM will initiate an electronic message to Curtailment Service Providers notifying them of the pre-emergency event; Curtailment Service Providers are required to have the capability to retrieve this electronic message as described in the PJM Manuals. Additionally, PJM will post the pre-emergency event information on the PJM website and issue a separate All-Call message.

Following PJM's request to reduce load, (i) participants in the Energy Only Option voluntarily may reduce load; and (ii) participants in the Full Program Option are required to reduce load unless they already have reduced load pursuant to the Economic Load Response Program. PJM will dispatch the resources of all Emergency Load Response Program participants (not already dispatched under the Economic Load Response Program) based on the availability, location, minimum notification time, dispatch price and/or quantity of load reduction needed, subject to transmission constraints in the PJM Region. To give PJM dispatchers the flexibility to address reliability concerns in the most effective and timely manner and invoke the resources that offer the most assurance of effective relief of emergency conditions, the dispatch of Demand Resources Registrations may not be based solely on the least-cost resources since such dispatch

shall be based not only on price, but also on availability, location, minimum notification time and/or quantity of megawatts of load or load reduction needed.

The dispatch price of Full Program Option resources registrations and Energy Only Option resources registrations in the described Pre-Emergency Load Response Program are eligible to set the real time Locational Marginal Prices ("LMP") when the Office of the Interconnection has implemented pre-emergency procedures and such resources registrations are required to reduce demand in the PJM Region and as described in Section 2 of Schedule 1 of the PJM Operating Agreement and the parallel provisions of Attachment K-Appendix of the PJM Tariff. Energy Only Option resources registrations must also satisfy PJM's telemetry requirements.

Curtailment Service Providers with resources registered to participate Demand Resource registrations in the Emergency Load Response and Pre-Emergency Load Response Programs must provide real-time operational data regarding the availability and status of their resources to PJM, and comply with operational procedures, as described in detail in the PJM Manuals.

8.6 Emergency Operations

PJM will initiate the notification of a Load Management Event coincident with the declaration of Maximum Generation emergency. (Implementation of the Emergency Load Response Program can be used for regional emergencies.) The minimum duration of a load reduction request is one hour. A Load Management Event is implemented whenever economic generating capacity is not adequate to serve load and maintain reserves or maintain system reliability. PJM will initiate an electronic message to Curtailment Service Providers notifying them of the Load Management Event; Curtailment Service Providers are required to have the capability to retrieve this electronic message as described in the PJM Manuals. Additionally, PJM will post the Load Management Event information on the PJM website and issue a separate All-Call message.

Following PJM's request to reduce load, (i) participants in the Energy Only Option voluntarily may reduce load; and (ii) participants in the Full Program Option are required to reduce load unless they already have reduced load pursuant to the Economic Load Response Program. PJM will dispatch the resources of all Emergency Load Response Program participants (not already dispatched under the Economic Load Response Program) based on the availability, location, minimum notification time, dispatch price and/or quantity of load reduction needed, subject to transmission constraints in the PJM Region. To give PJM dispatchers the flexibility to address reliability concerns in the most effective and timely manner and invoke the resources that offer the most assurance of effective relief of emergency conditions, the dispatch of Demand Resource Registrations may not be based solely on the least-cost resources since such dispatch shall be based not only on price, but also on availability, location, minimum notification time and/or quantity of megawatts of load or load reduction needed.

The dispatch price of Full Program Option resources registrations and Energy Only Option resources registrations in the Emergency Load Response Program are eligible to set the real time LMP when the Office of the Interconnection has implemented Emergency procedures and such resources registrations are required to reduce demand in the PJM Region and as described in Section 2 of Schedule 1 of the PJM Operating Agreement and the parallel provisions of Attachment K-Appendix of the PJM Tariff. Energy Only Option resources registrations must also satisfy PJM's telemetry requirements.

Curtailment Service Providers with resources registered to participate Demand Resource Registrations in the Emergency Load Response and Pre-Emergency Load Response Programs must provide real-time operational data regarding the availability and status of their resources to PJM, as described in detail in the PJM Manuals. Operational procedures are described in detail in the PJM Manual for Emergency Operations.

8.8 Market Settlements

Payment for reducing load is based on the actual kWh relief provided plus the adjustment for losses, subject to the Reporting and Compliance provisions below. The magnitude of capacity relief provided by Full Program Option participants shall be the amount determined in accordance with the Reporting and Compliance provisions below. The magnitude of relief provided by Energy Only Option participants, and the magnitude of energy relief provided by Full Program Option participants, may be less than, equal to, or greater than the kW amount declared on the Emergency or Pre-Emergency Rregistration Form. Compensation will be provided for reductions in energy consumption during emergency events by Full Program Option participants and Energy Only Option participants regardless of whether the participant's load during the event exceeds its peak load contribution for the applicable Delivery Year.

PJMSettlement pays the applicable LMP to the PJM Member that nominates the load. Payment will be equal to the measured energy load reduction adjusted for losses times the applicable LMP. The measured energy load reduction for locations with approved Economic Load Response registrations prior to a Load Management Event that have an economic CBL different than the maximum base load as defined in the PJM Manuals will use the associated economic CBL to determine the energy load reduction unless the locations on the Emergency Load Response registration are not the same locations as those included on the Economic Load Response registration. If, at the time that a Load Management Event or emergency event is initiated by PJM, an end-use customer is already responding economically (i.e., pursuant to the Economic Load Response rules) and economic CBL is based on Symmetric Additive Adjustment, then the CBL calculated based on the Symmetric Additive Adjustment period prior to the economic event will be used. Locations that do not have an approved Economic Load Response registration prior to a Load Management Event will use the Customer Baseline Load as defined in section 3.3A.2 and associated Symmetric Additive Adjustment as defined in section 3.3A.2.01 of this schedule unless an alternative CBL is approved pursuant to section 3.3A.2.01 of this schedule as the CBL to determine the energy load reduction.

If, however, the sum of the hourly energy payments to a Curtailment Service Provider with a Demand Resource <u>Registration</u> dispatched by PJM for actual, achieved reductions is not greater than or equal to the offer value (i.e. Minimum Dispatch Price and shut down costs) then the Curtailment Service Provider will be made whole up to the offer value for its actual, achieved reductions for the Demand Resource <u>Registration</u>.

Locations on Economic Load Response registrations dispatched in the Real-time Energy Market or cleared in the Day-ahead Energy Market that are also included on an Emergency Load Response and Pre-Emergency Load Response registration as Full Program Option, and that have also been dispatched as part of an emergency event for the same hour (i.e., have an "overlapping dispatch hour") will be compensated for energy based on emergency energy settlement and cost allocation rules as set forth in this section and in the PJM Manuals. Overlapping dispatch hours will use shutdown costs based on what was considered for the economic event, and no balancing Operating Reserve charges will be assessed for deviations from real-time dispatch amounts or from cleared day-ahead commitments. To avoid duplicative energy payments, overlapping dispatch hours for an aggregate registration (i.e., multiple locations on the same registration) or

dispatch groups where locations on the Emergency Load Response and Pre-Emergency Load Response registration are not the same locations as those on the Economic Load Response registration will have hourly economic energy load reduction and/or hourly emergency energy load reduction prorated based on load reduction capability provided by the Curtailment Service Provider for the locations.

The Curtailment Service Provider will only submit energy settlements for Load Management Events that occur outside of the specific availability period defined in the Reliability Assurance Agreement for each Demand Resource type if the Curtailment Service Provider has confirmed that the customers on the registration did take action to reduce load or the registration reflects the entire group of mass market customers for which an energy settlement will either be submitted for all or none of the mass market customers, as approved by PJM. The Curtailment Service Provider will only submit energy settlements for each registration for Load Management Events that occur during the product specific availability period as defined for each product in the Reliability Assurance Agreement if the Curtailment Service Provider also provides associated load data for each registration in order to calculate that registration's capacity compliance.

Full Program Option participants that fail to provide a load reduction (as measured as set forth in the Reporting and Compliance provisions below) when dispatched by PJM shall be assessed penalties and/or charges as specified in Attachment DD of the PJM Tariff and the Reliability Assurance Agreement, as applicable.

During emergency conditions, costs for emergency purchases in excess of LMP are allocated among PJM Market Buyers in proportion to their increase in net purchases minus real-time dispatch reduction megawatts from the PJM energy market during the hour in the Real-time Energy Market compared to the Day-ahead Energy Market. Consistent with this pricing methodology, all charges under the Emergency Load Response and Pre-Emergency Load Response Programs are allocated to purchasers of energy, in proportion to their increase in net purchases minus real-time dispatch reduction megawatts from the PJM energy market during the hour from day-ahead to real-time.

Emergency Load Response and Pre-Emergency Load Response Program charges and credits will appear on the PJM Members monthly bill, as described in the *PJM Manual for Operating Agreement Accounting and the PJM Manual for Billing*.

8.9 Reporting and Compliance

Actual load reductions of Energy Only Option emergency <u>resources</u>registrations will be added back for the purpose of peak load calculations for capacity for the following Delivery Year.

Actual Emergency Load Response, Pre-Emergency Load Response and Economic Load Response load reductions for Load Management resourcesrDemand Resource Registrations in the registered as Emergency Load Response or Pre-Emergency Load Response Full Program Option or Capacity Only resourcesoOption which occur from June 1 through September 30, during a registration's product-type required availability window as set forth in PJM Reliability Assurance Agreement, Tariff and Manuals or which occur outside the availability window if such registration received Bonus Performance for Performance Assessment Interval(s) or responded to economic event will be added back for the purpose of calculating peak load for capacity for the following Delivery Year, as set forth in the PJM Manuals and consistent with the load response recognized for capacity compliance as set forth in the Reporting and Compliance provisions below. Capacity Only Optionresourcesregistrations are Full Program Option resourcesregistrations that do not receive an energy payment for load reductions during a preemergency or emergency event.

Actual load reductions of <u>Load Management resources registered as Demand Resource</u>

<u>Registrations in Emergency Load Response or Pre-Emergency Load Response Full Program</u>

Option or Capacity Only <u>Option resources</u> used to determine Load Management Event and test capacity compliance for Firm Service Level and Guaranteed Load Drop end-use customers shall be equal to the load reduction provided to the electric distribution company as follows and in accordance with the PJM Manuals:

<u>i)</u> <u>i)</u> <u>Guaranteed Load Drop compliance will be based on:</u>

a. the lesser of (a) comparison load used to best represent what the load would have been if PJM did not declare a Load Management Event or the CSP did not initiate a test as outlined in the PJM Manuals, minus the Load and then multiplied by the LF, or (b) For a summer event, the PLC minus the Load multiplied by the LF. A summer load reduction will only be recognized for capacity compliance if the Load multiplied by the LF is less than the PLC. For a non-summer event, the WPL multiplied the ZWWAF multiplied by LF, minus the Load multiplied by the LF. A non-summer load reduction will only be recognized for capacity compliance if the Load multiplied by the LF is less than the WPL multiplied by the ZWWAF multiplied by LF. Calculations are represented by:

<u>Summer: Minimum of {(comparison load – Load) * LF, PLC – (Load * LF)}</u>

<u>Non-summer: Minimum of {(comparison load – Load) * LF,</u> (WPL*ZWWAF*LF)-(Load*LF)}

b. Curtailment Service Providers must submit actual loads and comparison loads for all hours during the day of the Load Management Event or the Load Management

performance test, and for all hours during any other days as required by the Office of the Interconnection to calculate the load reduction. Comparison loads must be developed from the guidelines in the PJM Manuals, and note which method was employed.

- c. Methodologies for establishing comparison load for Guaranteed Load Drop end-use customers include the following:
 - ◆ Comparable Day
 - ♦ Same Day
 - ♦ Customer Baseline
 - **♦** Regression Analysis
 - **♦** Generation

Methodologies for establishing comparison load for Guaranteed Load Drop end-use customers are described in greater detail in Manual M-19, PJM Manual for Load Forecasting and Analysis, at Attachment A: Load Drop Estimate Guidelines.

For Guaranteed Load Drop end use customers, the lesser of (a) comparison load used to best represent what the load would have been if the Office of the Interconnection did not declare a Load Management Event or the CSP did not initiate a test as outlined in the PJM Manuals, minus the metered load ("Load") and then multiplied by the loss factor ("LF") or (b) the current Delivery Year peak load contribution ("PLC") minus the metered load multiplied by the loss factor ("LF"). A load reduction will only be recognized for capacity compliance if the metered load multiplied by the loss factor is less than the current Delivery Year peak load contribution. The calculation is represented by:

Minimum of {(comparison load Load) * LF, PLC (Load * LF)}

Methodologies for establishing comparison load for Guaranteed Load Drop end-use customers include the following:

- **←** Comparable Day
- **♦** Same Day
- **←** Customer Baseline
- **♦** Regression Analysis
- **♦** Generation

Each of these methodologies is described in greater detail in Manual M-19, *PJM Manual for Load Forecasting and Analysis*, at Attachment A: Load Drop Estimate Guidelines.

ii) Compliance for FSL will be based on:

For Firm Service Level end use customers the current Delivery Year PLC minus the Load multiplied by the LF. The calculation is represented by:

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PLC - (Load * LF)
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Summer (June through October and the following May of a Delivery Year) - End use customer's current Delivery Year peak load contribution ("PLC") minus the metered load ("Load") multiplied by the loss factor ("LF"). The calculation is represented by:

(PLC) - (Load *LF)

Winter (November through April of a Delivery Year)— End use customer's Winter Peak Load ("WPL") multiplied by Zonal Winter Weather Adjustment Factor ("ZWWAF") multiplied by LF, minus the metered load ("Load") multiplied by the LF. The calculation is represented by:

(WPL * ZWWAF * LF) - (Load * LF)

The capacity compliance of <u>Load Management resourcesDemand Resource Registrations</u> that are registered asin the Emergency Load Response and Pre-Emergency Load Response Full Program Option, as determined in accordance with these Reporting and Compliance provisions, shall not affect energy payments to such resources for load reductions during an emergency event, as provided in the Market Settlements provisions above and Attachment DD of the Tariff.

PJM will submit any required reports to FERC on behalf of the Emergency Load Response and Pre-Emergency Load Response Program participants. PJM will also post this document, as well as any other program-related documentation on the PJM website.

PJM will post on its website a report of demand response activity, and will provide a summary thereof to the PJM Markets and Reliability Committee on an annual basis.

As PJM receives evidence from the electric distribution companies pursuant to section 1.5A.3 of PJM's Economic Load Response Program, PJM will post on its website a list of those Relevant Electric Retail Regulatory Authorities that the electric distribution companies assert prohibit or condition retail participation in PJM's Emergency Load Response and Pre-Emergency Load Response Program together with a corresponding reference to the Relevant Electric Retail Regulatory Authority evidence that is provided to PJM by the electric distribution companies.

Attachment DD, Section 11

11. DEMAND RESOURCE COMPLIANCE PENALTY CHARGE

The provisions of this section 11 do not apply to Demand Resources committed as Capacity Performance Resources <u>or Base Capacity Demand Resources</u>. All references to Demand Resources in this section specifically exclude Demand Resources committed as Capacity Performance Resources or Base Capacity Demand Resources.

- The Office of the Interconnection shall separately evaluate compliance of each (a) Demand Resource committed for a Delivery Year, in accordance with procedures set forth in the PJM Manuals Manuals and, for Delivery Years through May 31, 20189, shall assess a Demand Resource Compliance Penalty Charge on Capacity Market Sellers that committed Demand Resources and Locational UCAP Sellers that sold Demand Resources that cannot demonstrate the hourly performance of such resource in real-time. The compliance is evaluated separately by Load Management Event in each CAA for Demand Resources Registrations dispatched by the Office of Interconnection. The Demand Resource Compliance Penalty Charges will not be assessed to resources that are dispatched on a subzonal basis for the 2012/2013 and 2013/2014 Delivery Years. For the 2014/2015 Delivery Year, tThe Demand Resource Compliance Penalty Charge will not be assessed to Demand resources Registrations that are dispatched on a subzonal basis unless such subzone is defined and publically posted the day before the Load Management Event as set forth in the PJM Manuals. To the extent a Demand Resource Registration cannot respond, another Demand Resource Registration in the same geographic location defined by the PJM dispatch instruction with the same designated lead time and comparable capacity commitment may be substituted. Any Demand Resource Registration used as a substitute during a Load Management Event will have the same obligation to respond to future Load Management Event(s) as if it did not respond to such Load Management Event. Capacity Market Sellers that committed Demand Resources and Locational UCAP Sellers that sold Demand Resources that cannot demonstrate the hourly performance of such Demand FResource Registration in real-time based on the capacity commitment shall be assessed a Demand Resource Compliance Penalty Charge; provided, however, that such under compliance shall be determined on an aggregate basis for all dispatched Demand Resources Registrations committed by the same Capacity Market Seller or same Locational UCAP Seller in a CAA.
- (b) The Demand Resource Compliance Penalty Charge for a Capacity Market Seller in a CAA for the on-peak period, which includes all hours specified in the Reliability Assurance Agreement definition of the Limited Demand Resource, shall equal the lesser of (1/the number of Load Management Events during the on-peak period for which such Demand Resources Registration werewas dispatched, or 0.50) times the weighted daily revenue rate for such seller's resources dispatched registration, multiplied by the net under-compliance for such registration in such on-peak period, if any, for such seller resulting from all dispatched resources registrations it has committed for such Delivery Year for such CAA for each Load Management Event called by the Office of the Interconnection. Net CAA under compliance for the Load Management Event will be prorated to individual under compliant registrations in the CAA based on performance of each registration in order to determine net under compliance(s) for each Demand Resource Registration dispatched. The Demand Resource Compliance Penalty Charge for a Capacity

Market Seller in a CAA for the off-peak period, which includes all hours specified in the Reliability Assurance Agreement definitions of Extended Summer Demand Resource or Annual Demand Resource, but does not include all hours in the on-peak period, shall equal 1/52 times the weighted daily revenue rate for such Demand #Resources Registration dispatched for such seller, multiplied by the net undercompliance for such registration in such off-peak period, if any, for such seller resulting from all dispatched resources registrations it has committed for such Delivery Year for such CAA for each Load Management Event called by the Office of the Interconnection. If a Load Management Event is comprised of both an on-peak period and an off-peak period then such Demand Resource Compliance Penalty Charge will be the higher of the charges calculated under the prior two sentences. The total Compliance Penalty Charges for the Delivery Year is not to exceed the annual revenue received for such Capacity Market Seller's Demand #Resources. The net CAA undercompliance for each such Load Management Event shall be the following megawatt quantity, converted to an Unforced Capacity basis using the applicable DR Factor and Forecast Pool Requirement: (i) the megawatts of load reduction capability committed by such seller on the day of the Load Management Event for all dispatched resources minus (ii) the megawatts of load reduction actually provided by all such dispatched Demand Resources during such Load Management Event. A seller's net undercompliance in a CAA shall be reduced by the seller's total amount of Capacity Resource deficiency shortfalls on the day of the Load Management Event, determined pursuant to section 8 of Attachment DD of this Tariff, in a CAA for the seller's committed Demand Resources that are the same product(s) dispatched. The daily revenue rate for a Demand Resource Registration shall be based on the Resource Clearing Price(s) that the Demand #Resource, for which such registration is linked, received in the auction(s) in which itthe Demand Resource cleared., including any adjustment pursuant to Attachment DD-1, section C of this Tariff. The weighted daily revenue rate for a Capacity Market Seller's <u>Demand Resource registration</u> shall be the average rate for <u>allthe</u> cleared Demand Resources for which such registration is linked, weighted by the megawatts cleared at each price. The total charge per megawatt that may be assessed on a Capacity Market Seller's Demand Resource Registration in a Delivery Year shall be capped at the weighted daily revenue rate the Capacity Market Seller's Demand Resource Registration would receive in the Delivery Year.

The Demand Resource Compliance Penalty Charges for a Load Management Event for Limited Demand Resources are assessed daily and initially billed by the later of the month of October during such Delivery Year or the third billing month following the Load Management Event that gave rise to such charge. The initial billing for a Load Management Event for Limited Demand Resources will reflect the amounts due from the start of the Delivery Year to the last day that is reflected in the initial billing. The remaining charges for such Load Management Event will be assessed daily and billed monthly through the remainder of the Delivery Year. The Demand Resource Compliance Penalty Charges for a Load Management Event for Annual or Extended Summer Demand Resources are assessed daily and billed by the later of the month of June following such Delivery Year or the third billing month following the Load Management Event that gave rise to such charge. The billing for the Load Management Event for Annual or Extended Summer Demand Resources will be in a lump sum and reflect the accrued charges for the entire Delivery Year.

c) Daily revenues from assessment of a Demand Resource Compliance Penalty Charge shall be distributed on a pro-rata basis to Demand Resource Providers and Locational

UCAP Sellers that provided load reductions in excess of the amount such <u>dispatched Demand</u> <u>rResources Registrations</u> were committed to provide. Such revenue distribution, however, shall not exceed for any Capacity Market Seller's <u>dispatched Demand Resource Registration</u> the quantity of excess megawatts provided by such Capacity Market Seller during a single Load Management Event times 0.20 times the weighted daily revenue rate for such Capacity Market Seller's <u>for resources</u> dispatched <u>Demand Resource Registration</u>. To the extent any such revenues remain after such distribution, the remaining revenues shall be distributed to LSEs based on each LSE's Daily Unforced Capacity Obligation.