

## ATTACHMENT C

### Methodology To Assess Available Transfer Capability

The Transmission Provider will be solely responsible for determinations of Available Transfer Capability (ATC). The Transmission Provider will post firm and non-firm ATC projections on the OASIS for interfaces between neighboring Balancing Authorities and the PJM Region, and other path locations of significant commercial interest will be added as appropriate.

ATC of a particular path is an approximate indication of the anticipated transmission transfer capability remaining on the transmission network that could be scheduled for further commercial activity relative to the designated path under the conditions studied. Specific study of conditions, including source and sink of generation and load, is required before firm transmission service commitments can be made.

Transfer capability of the transmission network is limited by physical and electrical characteristics of the system including thermal equipment loading, voltage, and stability considerations and provisions of coordination agreements. Transfer capability is evaluated based on base system loading and an assessment of critical contingencies on the transmission system. The critical contingencies will be defined as appropriate. The Transmission Provider's calculation of transfer capability will be consistent with the principles in the NERC standards. These calculations will be performed through a combination of planning and operational analyses, employing both Energy Management System real-time functionality and off-line analytical tools as appropriate. Firm and non-firm ATC will be determined consistent with NERC standards, taking into account the ~~transmission~~ Transmission reliability ~~Reliability~~ margin Margin (TRM), Existing Transmission Commitments (ETC) and Capacity Benefit Margin (CBM) (see below) in order to preserve the emergency capability of the PJM Region to serve load serving entities. Firm ATC on any path will be limited to assure that emergency import capability will be available to Network Customers when needed through the reservation of capacity benefit margin, equivalent to a firm point-to-point transmission service reservation for delivery from systems outside of the PJM Region to serve the load serving entities within such region.

Determination of ATC requires that base system conditions be identified and modeled for the period being analyzed. These conditions include projected demand, anticipated generation availability, anticipated transmission system facility availability, expected energy transactions, and information about neighboring regions that affect the transfer capability of the

Issued By: Craig Glazer  
Vice President, Federal Government Policy

Effective: October 11, 2007

Issued On: October 11, 2007

Filed to comply with order of the Federal Energy Regulatory Commission, Docket Nos. RM05-17-000, RM05-25-000, issued February 16, 2007, Preventing Undue Discrimination and Preference in Transmission Service, Order No. 890, III FERC Stats. & Regs., Regs. Preambles ¶ 31,241 (2007).

PJM Region. For hourly through monthly calculations, these conditions are based on the Transmission Provider's operational assessments of load trends, unit commitment profiles, maintenance schedules and ETC. Long-term calculations are based on planning loads, expected maintenance schedules, typical generation patterns, and ETC.

Any dispute regarding a determination of ATC by the Transmission Provider, or regarding the data used by the Transmission Provider in such a determination, shall be resolved pursuant to the dispute resolution procedures of Section 12 of this tariff.

### **ATC and AFC Calculations Using ~~Network-AFC~~ Flowgate Methodology**

The Available Flowgate Capability (AFC) calculation methodology used by the Transmission Provider is the Flowgate Methodology as described in the Available Transfer Capability Implementation Document (ATCID). The ATCID is included on the PJM OASIS page under ATC Information ~~network-AFC~~. The ~~network-AFC-Flowgate Methodology~~ uses ~~off-line~~ analytical tools to examine critical flowgates over the PJM Region and adjacent regions (per seams agreements)- and converts AFC values into particular path ATC values, which are posted on the PJM OASIS. For Firm and Non-firm Transmission Service ATC calculations the Transmission Provider shall account for ~~postbacks~~ Postbacks of redirected services, unscheduled service, and counterflows. PJM critical flowgates may include, but are not limited to thermal flowgates, voltage/stability flowgates, coordinated flowgates, and reciprocal coordinated flowgates.

### **Overview and Process Flow Diagram**

The process for the Transmission Provider's AFC/ATC calculation is illustrated in the Exhibit 1 flow diagram. The text that follows describes the inputs, outputs and processes performed within each of the sub-processes contained in Exhibit 1. The Transmission Provider calculates Firm and Non-firm Transmission Service ATC for the scheduling horizon (same day and real-time), operating horizon (day ahead and pre-schedule), and planning horizon (beyond the operating horizon).

Issued By: Craig Glazer  
Vice President, Federal Government Policy

Effective: October 11, 2007

Issued On: October 11, 2007

Filed to comply with order of the Federal Energy Regulatory Commission, Docket Nos. RM05-17-000, RM05-25-000, issued February 16, 2007, Preventing Undue Discrimination and Preference in Transmission Service, Order No. 890, III FERC Stats. & Regs., Regs. Preambles ¶ 31,241 (2007).

### AFC/ATC Process Flow Diagram

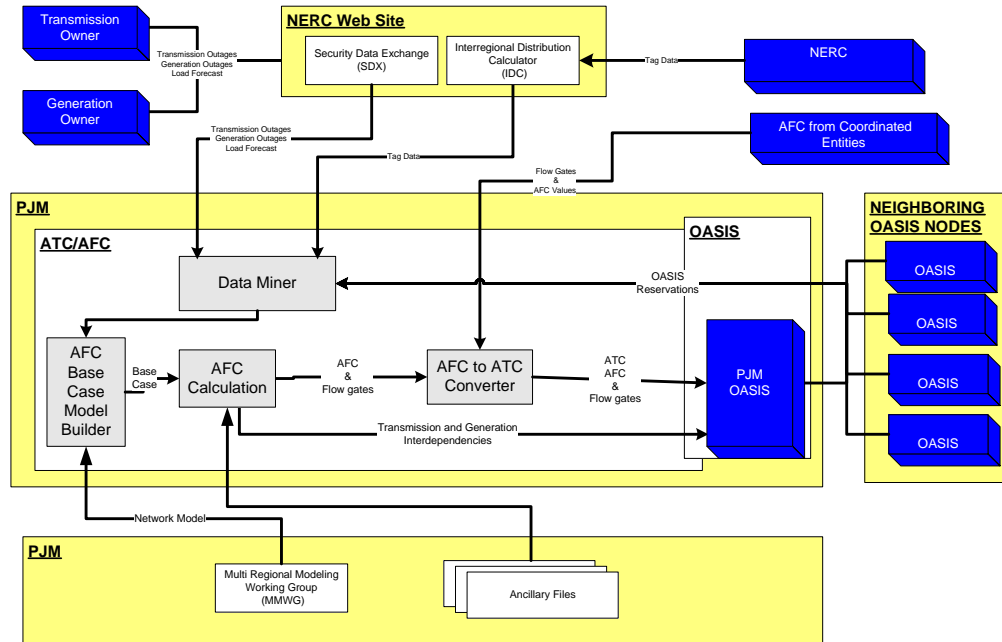


Exhibit 1

### Network AFC Flowgate Methodology

Determining AFC and ATC using network AFC the Flowgate methodology Methodology is a multi-step integrated process described in the ATCID. PJM uses the following mathematical algorithms to calculate AFC and ATC. The actual detailed AFC and ATC algorithms are available on the PJM OASIS website at the following link:

<ftp://ftp.pjm.com/oasis/afc-atc-algorithms.pdf>

$$\text{AFC} = \text{flowgate rating} - \text{ETC} - \text{TRM} - \text{CBM} + \text{Postbacks} + \text{counterflows}.$$

The AFC Calculation is the amount of unused transfer capability on a flowgate after accounting for base case conditions represented by solved base case flows and applying the impacts of non-base case commitments and flowgate specific margins.

$$\text{ATC} = \text{Minimum}\{\text{AFC}_1 / \text{Transfer Response Factor}, \dots, \text{AFC}_n / \text{Transfer Response Factor}\}$$

The AFC to ATC converter translates the flowgate AFC values into path ATC values for posting to the OASIS. The ATC calculation is the minimum AFC of a set of limiting flowgates divided

| by the transfer response factor or distribution factor on the respective flowgate for a specific Point of Receipt/Point

of Delivery pair. The Available Share of Total Flowgate Capability (ASTFC) as prescribed by a congestion management process agreement (e.g., the CMP included in the Joint Operating Agreement between the Midwest Independent Transmission System Operator, Inc. and PJM) may be less than the calculated AFC. The posted AFC is set by the ASTFC or the calculated AFC, whichever is most limiting.

An overview of the major components of this process is described below:

- The AFC to ATC converter process utilizes the coordination entity calculated AFC values for non-PJM flowgates. AFC values for coordination entity flowgates calculated by the coordination entity overwrite values that the Transmission Provider's process determines for these Flowgates.
- The Transmission Provider supplies coordination entities with similar values for PJM Flowgates for inclusion in the coordination entity's AFC process.
- Values provided to the OASIS from the AFC/ATC process are continually updated on the OASIS to reflect the reservations or schedules that were accepted or confirmed since the last complete calculation cycle.

#### Data Miner

Transmission Provider, through data miner process, gathers data from the Transmission Provider and external sources to use as inputs to the AFC/ATC process. These external sources are included in the Transmission Provider's ATCID.

#### Model Builder

The Transmission Provider develops and maintains seasonal models for the next 18 months. These seasonal models will be developed from the NERC MMWG case library modified for any known model updates. The Transmission Provider's AFC/ATC calculations are based on these seasonal models. The model builder portion of the AFC/ATC engine modifies these seasonal base cases to reflect anticipated conditions such as forecasted load levels, outages, generation dispatch files, and base case transfers (reservations and/or schedules as appropriate) for the AFC/ATC time horizon. The base case models are refined to reflect transmission outages and generation unavailability as provided by the NERC SDX data. Load levels are appropriately adjusted to reflect the modeled conditions using the NERC SDX data. Relevant balancing authorities external to the PJM footprint will be modeled at the appropriate load level with the generation scaled to match loads.

The Transmission Provider develops monthly, weekly, daily, and hourly AFC cases. These cases serve as the base case models for the AFC calculation for a specific period. Solved base case models for monthly, weekly, daily, and hourly time frames are developed multiple times each day consistent with NERC standards.

The Transmission Provider models some flowgates without contingencies and some with contingencies.

Issued By: Craig Glazer  
Vice President, Federal Government Policy

Effective: October 11, 2007

Issued On: June 16, 2008

Filed to comply with order of the Federal Energy Regulatory Commission, Docket No. OA08-9-000, issued May 15, 2008, 123 FERC ¶ 61,145 (2008).

The flowgates modeled without contingencies are the Power Transfer Distribution Factor (PTDF) flowgates, which are flowgates where a single facility or multiple transmission facilities are monitored for a limiting condition. The limiting condition can be due to thermal loading above 100% of the normal rating or due to a thermal rating above 100% of the surrogate rating representing an equivalent voltage or stability limit.

The flowgates modeled with contingencies are the Outage Transfer Distribution Factor (OTDF) flowgates, which are flowgates where a single facility or multiple transmission facilities are monitored for a limiting condition after a contingency event has been simulated to have occurred (one or multiple facilities for the loss of another facility or facilities). The limiting condition monitored can be due to thermal loading above 100% of the 4 hour emergency rating.

For flowgates owned by other parties, Transmission Provider uses the limit provided by that party, subject to the terms of the AFC Coordination and Congestion Management Process sections of the applicable agreements between Transmission Provider and the other parties.

Issued By: Craig Glazer  
Vice President, Federal Government Policy

Effective: October 11, 2007

Issued On: June 16, 2008

Filed to comply with order of the Federal Energy Regulatory Commission, Docket No. OA08-9-000, issued May 15, 2008, 123 FERC ¶ 61,145 (2008).

### AFC Calculation

The Transmission Provider's ~~network~~-AFC/ATC calculation implements the following principles for firm and non-firm ATC calculations: (1) for firm ATC calculations, the Transmission Provider shall account only for firm commitments; (2) for non-firm ATC calculations, the Transmission Provider shall account for both firm and non-firm commitments. Reservations from the PJM and non-PJM OASIS sites are utilized. Flow based analysis will be used to determine and update flowgate loadings for reservations not modeled in the base case and to determine response factors on each flowgate. Flowgate loadings and response factors will be used to determine the individual path ATC values.

- The Transmission Provider recognizes physical network limitations (i.e., flowgates) on PJM and appropriate non-PJM systems in the determination of the path ATC values.
- AFC values received from coordination entities are calculated by those entities according to their AFC methodology.

### AFC to ATC Conversion

To calculate ATC, which represents a transfer capability in MW available for sale between a specific Point of Delivery and Point of Receipt, the Transmission Provider will first calculate an AFC for each flowgate. An AFC is defined as follows:

- The available capability in MW on a flowgate, determined by the transmission-~~p~~rovider, that is available for further commercial activity. - The available capability determined will be dependent on the generation, loads and transmission configuration assumed for the time period studied.
- The AFC accounts for thermal, voltage and stability limits under both pre and post contingency conditions, along with any existing transmission commitments, TRM and CBM.
- The AFC is used to determine the amount of MWs that can be transferred between a specific set of source and sink points. An AFC is skipped using on-the-path logic if the flowgate owner is either the Point of Receipt or Point of Delivery on the path being calculated. The non-firm ATC calculation for the willing-to-pay congestion product on the OASIS includes only external flowgates.
- Counterflow and Postbacks are is considered in the calculation of AFC.

### Coordination with Neighboring Systems

The Transmission Provider exchanges data with neighboring systems. The Transmission Provider provides transmission reservations, AFC values for Transmission Provider flowgates, and other data. This coordination results in comparable inputs to the AFC calculations. The Transmission Provider utilizes similar information provided by coordinating entities.

Issued By: Craig Glazer  
Vice President, Federal Government Policy

Effective: October 11, 2007

Issued On: October 11, 2007

Filed to comply with order of the Federal Energy Regulatory Commission, Docket Nos. RM05-17-000, RM05-25-000, issued February 16, 2007, Preventing Undue Discrimination and Preference in Transmission Service, Order No. 890, III FERC Stats. & Regs., Regs. Preambles ¶ 31,241 (2007).

### **Treatment of Existing Transmission Commitments**

ETC is committed use of the transmission system, including: (1) Transmission Provider's reservations in accepted or confirmed status; (2) native load commitments; Network Integration Transmission Service; (3) grandfathered transmission rights; (4) Firm Point-To-Point Transmission Service reservations; and if required (5) rollover rights associated with long-term firm service (Point-To-Point Transmission Service and Network Integration Service or grandfathered transmission rights). Existing commitments modeled in the load flow base cases determine the initial flows on the facilities. To the extent there are existing transactions that qualify for rollover rights, they are incorporated in the committed usage.

PJM OASIS reservations that are withdrawn, retracted (not confirmed) or annulled are removed from the ETC and any resulting changes to ATC are incorporated in the next OASIS posting of ATC calculated values. The Transmission Provider's firm and non-firm ATC calculations also account for permanently redirected services, unscheduled service, and counterflows. In the scheduling and operating horizons, reservation impacts are substituted with scheduled impacts. That is, the reservation impact component of ETC is set to zero and the schedule impacts component of ATC is used. In the planning horizon, reservation impacts are used because requests to schedule are often not received in this horizon. That is, the reservation impact component of ETC is set based on Transmission Service Requests for which Transmission Provider has committed to provide service and the schedule impacts component of ATC is set to zero. [Additional information is included in the Transmission Provider's ATCID.](#)

### **External Flowgates**

Flowgates are used in the AFC and ATC calculations. PJM adds or eliminates external flowgates based on the Joint Operating Agreement Between the Midwest Independent Transmission System Operator, Inc. And PJM Interconnection, L.L.C. ("Midwest ISO JOA", Article V (FERC Electric Tariff, First Revised Rate Schedule No. 38, Original Sheet Nos. 27-35); Joint Operating Agreement Among And Between PJM Interconnection, L.L.C., And Progress Energy Carolinas ("PEC JOA"), Article Five (FERC Electric Tariff, First Revised Rate Schedule No. 40, Original Sheet Nos. 24-28); and Joint Reliability Coordination Agreement Among And Between Midwest Independent Transmission System Operator, Inc., PJM Interconnection, L.L.C., And Tennessee Valley Authority ("JRCA"), Article Five (the JRCA is not a filed FERC rate scheduled; however, Article Five of the JRCA is identical to Article V of the Midwest ISO JOA and Article Five of the PEC JOA). PJM adds or eliminates internal flowgates, at least annually, based on a review of historic operating constraints including flowgates that have been in Transmission Loading Relief (TLR) and other operating conditions as deemed appropriate.

Issued By: Craig Glazer  
Vice President, Federal Government Policy

Effective: April 15, 2008

Issued On: December 16, 2008

Filed to comply with order of the Federal Energy Regulatory Commission, Docket No. OA08-101-000, issued October 21, 2008.

### Internal Flowgates

Transmission Provider determines base case flows using the AFC engine. Transmission Provider runs the AFC engine hourly (except in the case of a technical error, system error or planned system outage). The base run includes native and network load (from the load forecast), transmission service that is expected to be scheduled (grandfathered, point-to-point and imports from designated Network Resources), outages and load forecast. Base case flow inputs are updated at least once per day. In the scheduling and operating horizons, Transmission Provider updates scheduled transmission service for each run of the AFC engine. Transmission Provider models all grandfathered agreements and other non-Tariff use of the transmission system as firm service or load. Transmission Provider does not segregate non-Tariff service in the AFC calculation.

On an annual basis (or sooner if required by NERC MOD Standards), PJM shall review internal flowgates using the following methodology:

- a. The Transmission Provider shall include all flowgates in its footprint that have initiated a TLR event in the 12 months prior to the annual review.
- b. The Transmission Provider shall include applicable System Operating Limit (SOL) and Interconnection Reliability Operating Limits (IROL) flowgates per NERC TOP-002 R-12 standards (or successor). Any facility that PJM monitors that is not considered an IROL facility is consider a SOL. Applicable SOL and IROL flowgates shall include at a minimum those flowgates identified in the TRM process described in this Attachment C AFC process.
- c. The Transmission Provider shall add or remove flowgates to its AFC process in accordance with NERC MOD standards.

The Transmission Provider may eliminate flowgates that do not continue to meet the criteria above.

A reservation with rollover rights is reflected in ETC in the amount of transmission service reserved as if the customer has exercised its rollover right. If the deadline for a customer to exercise its rollover right for a given reservation has passed, and the customer did not exercise its rollover right, the amount associated with the unexercised rollover right no longer is included in the amount of reservations.

Issued By: Craig Glazer  
Vice President, Federal Government Policy

Effective: April 15, 2008

Issued On: November 20, 2008

Filed to comply with order of the Federal Energy Regulatory Commission, Docket No. OA08-101-000, issued October 21, 2008.

## **Treatment of Capacity Benefit Margin**

### **Explanation of CBM**

Transmission Provider uses the NERC approved definition of CBM, which is the amount of firm transmission transfer capability preserved by Transmission Provider for Load-Serving Entities (LSEs), whose loads are located on that Transmission Provider's system, to enable access by the LSEs to generation from interconnected systems to meet generation reliability requirements. The transmission transfer capability preserved as CBM is intended to be used by an LSE only in times of emergency generation deficiencies. [Additional information is included in the Transmission Provider's Capacity Benefit Margin Implementation Document \(CBMID\) included on the PJM OASIS page under ATC Information.](#)

The CBM is a reliability margin applied to the flowgate in the AFC Calculation. CBM is only applied to firm ATC calculations where the PJM Region is the delivery point. The Transmission Provider consistently applies CBM in planning and operations and does not double count for this reliability margin (i.e., this margin is not included in TRM). For non-PJM flowgates, the Transmission Provider uses the CBM values provided by coordination entities for the AFC calculation on these flowgates.

Through the sharing of installed generating capacity via transmission interconnections, systems have relied on transmission import capability to reduce their required installed generating capacity necessary to provide reliable service to Network Customers. In order to ensure that PJM has the ability to import external generation for the purpose of serving Network Customers, a portion of the transfer capability will be set aside. CBM is set aside on paths based on the expected delivery of energy from entities with which the Transmission Provider has emergency energy agreements at the time of the Transmission Provider's forecast peak load. This capability, known as the Capacity Benefit Margin, is a reflection of the mutual benefit of interconnected operations and reservation of this margin allows a system to reduce its installed generating capacity below that which may have otherwise been required if transmission interconnections did not exist.

Issued By: Craig Glazer  
Vice President, Federal Government Policy

Effective: April 15, 2008

Issued On: November 20, 2008

Filed to comply with order of the Federal Energy Regulatory Commission, Docket No. OA08-101-000, issued October 21, 2008.

The CBM is determined through the auspicious of the Reliability Assurance Agreement Among Load Serving Entities in the PJM Region (PJM Rate Schedule FERC No. 44) (RAA). Capitalized terms in this section that are not defined in this section or section 1 of the Tariff are defined in the RAA.

CBM is determined through the Transmission Planning Evaluation of Import Capability. This evaluation establishes the amount of emergency power that can be reliably transferred to the PJM Region from adjacent regions in the event of a PJM Region generation capacity deficiency. To determine the import transfer limit, several emergency scenarios are replicated and the limit represents a normalization of expected values. This transfer limit determines the PJM Region tie benefit that is subsequently used in calculating the PJM Region reserve requirement. An annual recalculation of the PJM Region import capability is not required, since the import capability far exceeds the CBM value specified in Schedule 4 of the RAA.

CBM is a key input into the annual resource adequacy study performed by Transmission Provider. The purpose of this study is to determine the PJM Region Installed Reserve Margin (IRM) required by the PJM Region to satisfy a one day in 10 year Loss of Load Expectation (LOLE). Transmission Provider uses a probabilistic methodology to perform the resource adequacy study. The study assumptions and results are subject to stakeholder review and comment. The resulting IRM is expressed as a percentage of the forecasted annual peak load.

Issued By: Craig Glazer  
Vice President, Federal Government Policy

Effective: October 11, 2007

Issued On: September 29, 2008

Filed to comply with order of the Federal Energy Regulatory Commission, Docket No. OA08-9-000, issued May 15, 2008, 123 FERC ¶ 61,145 (2008).

The CBM assessment in the PJM Region is a unique method that is regionally specific because interface capability greatly exceeds CBM and because Transmission Provider centrally secures capacity for the PJM Region capacity market.

Transmission Provider's annual resource adequacy study is based on the probabilistic methods and criteria described in Schedule 11 of the RAA, the Operating Agreement and in the PJM Manuals. The resource adequacy study considers the following data and forecasts as necessary:

1. Seasonal peak load forecasts for each Planning Period as calculated by Transmission Provider in accordance with the PJM Manuals reflecting (a) load forecasts with a 50 percent probability of being too high or too low and (b) summer peak diversities determined by Transmission Provider from recent experience.
2. Forecasts of aggregate seasonal load shape of the parties bound by the RAA which are consistent with forecast averages of 52 weekly peak loads prepared by Transmission Provider.
3. Variability of loads within each week, due to weather, economic forecast uncertainty, and other recurring and random factors, as determined by Transmission Provider.
4. Generating unit capability and types for every existing and proposed unit.
5. Generator Forced Outage rates for existing mature generating units based on data submitted by generation owners, and for immature and proposed units based upon forecast rates related to unit types, capabilities and other pertinent characteristics.
6. Generator Maintenance Outage factors and planned outage requirements based on forecasts and historical data submitted by the generation owners.
7. Miscellaneous adjustments to capacity due to all causes, as determined by the Office of the Interconnection, based on forecasts submitted by the generation owners.
8. The emergency capacity assistance available due to interconnections of the PJM Region with other balancing authorities, as limited by the capacity benefit margin considered in the determination of available transfer capability and the probable availability of generation in excess of load requirements in such areas.

Issued By: Craig Glazer  
Vice President, Federal Government Policy

Effective: October 11, 2007

Issued On: September 29, 2008

Filed to comply with order of the Federal Energy Regulatory Commission, Docket No. OA08-9-000, issued May 15, 2008, 123 FERC ¶ 61,145 (2008).

The value of the capacity benefit margin as filed as part of the RAA periodically is reviewed by Transmission Provider, in consultation with the Members Committee, and can be modified, if necessary, to balance external emergency capacity assistance and internal installed capacity reserves so as to minimize the total cost of the capacity reserves of the RAA participants, consistent with the Reliability Principles and Standards.

#### Use of CBM in an Emergency

The procedures for the use of CBM in an emergency, are described in Section 2 of PJM Manual 13: Emergency Operations and are consistent with NERC and ReliabilityFirst Corporation's Energy Emergency Alert defined in NERC's EOP-002 standards. Transmission Provider is responsible for declaring the existence of an emergency, and for directing the operations of the PJM Members as necessary to manage, alleviate, or end a capacity shortage. Transmission Provider uses CBM in an emergency only on behalf of LSEs. LSEs only use CBM through the Transmission Provider's use of CBM on the LSEs behalf.

Emergency use of CBM will be considered use of Network Integration Transmission Service and there will be no additional charge for such use. Because an area is in an EEA 2 and Transmission Provider is taking steps to avoid shedding firm load, the use of CBM will have a NERC curtailment priority of 7 and will only be curtailed with other firm uses on a proportional basis.

Transmission Provider utilizes CBM on behalf of LSEs as described below.

- Transmission Provider reviews the level of dependency on external transactions to serve the load in the PJM Region. Transmission Provider shall log occurrences where CBM is implemented. Transmission Provider shall notify external systems via the Reliability Coordinator Information System (defined in NERC EOP-002) or successor, a communications tool located at the NERC website to post potential or actual alert information, and Transmission Provider Members via the Transmission Provider's website and issue appropriate NERC alert levels consistent with NERC EOP- 002.
- CBM shall be used only after the following steps have been taken: all non-firm sales have been terminated, direct-control load management has been implemented, and customer interruptible demands have been interrupted. Due to the nature of emergencies, Transmission Provider may skip or reorder the steps in accordance with Good Utility Practice. CBM may be used to reestablish Operating Reserves.

Issued By: Craig Glazer  
Vice President, Federal Government Policy

Effective: October 11, 2007

Issued On: September 29, 2008

Filed to comply with order of the Federal Energy Regulatory Commission, Docket No. OA08-9-000, issued May 15, 2008, 123 FERC ¶ 61,145 (2008).

- CBM shall only be used if the PJM Region is experiencing a generation deficiency to increase generation in the PJM Region. Transmission Provider shall use CBM, on behalf of an LSE, in order to exercise emergency energy agreements and to implement approved emergency energy bids. Transmission Provider does not displace Non-Firm Point-To-Point Transmission Service and/or secondary service, described in section 28.4 of the Tariff, imports until the Transmission System is constrained. If the Transmission System is constrained, CBM is used by Transmission Provider to displace such imports to provide more reliable service to load during capacity deficiencies.
- Unused CBM is included in the AFC/ATC calculations as Non-Firm Point-To-Point Transmission Service and/or secondary service, described in section 28.4.

Issued By: Craig Glazer  
Vice President, Federal Government Policy

Effective: October 11, 2007

Issued On: September 29, 2008

Filed to comply with order of the Federal Energy Regulatory Commission, Docket No. OA08-9-000, issued May 15, 2008, 123 FERC ¶ 61,145 (2008).

### **Transmission Planning Evaluation of Import Capability**

The Transmission Provider conducted an Expected Import Capability Study (EICS) to evaluate the emergency import limits of the Transmission Provider under summer peak conditions. That study showed the Transmission Provider's import capability limit. This limit is evaluated annually to assess whether the CBM value should be changed. This evaluation is discussed in the annual PJM Reserve Requirement Study (RRS). While the Transmission Provider can import more than the CBM value issued in the study, the additional import capability is reflected in ATC through the OASIS postings. This allows the additional import capability to be used in the marketplace. The reliability benefit of CBM saturates near the limit issued in the RRS.

Issued By: Craig Glazer  
Vice President, Federal Government Policy

Effective: October 11, 2007

Issued On: October 11, 2007

Filed to comply with order of the Federal Energy Regulatory Commission, Docket Nos. RM05-17-000, RM05-25-000, issued February 16, 2007, Preventing Undue Discrimination and Preference in Transmission Service, Order No. 890, III FERC Stats. & Regs., Regs. Preambles ¶ 31,241 (2007).

## Treatment of Transmission Reliability Margin (TRM)

The Transmission Reliability Margin (TRM) is a reliability margin applied to the flowgate in the AFC Calculation. TRM accounts for the inherent uncertainty in system conditions and its associated effects on ATC calculations and the need for operating flexibility to ensure reliable system operation as system conditions change. ~~TRM includes uncertainty of load forecasts, system topology, distribution factors, and loop flow sources. The Transmission Provider, following the NERC MOD-008-1 or successor, calculates TRM for flowgates and may include uncertainty items using a process described in Transmission Reliability Margin (TRMID). The flowgates are identified following NERC MOD-030-2 or successor through process described in ATCID. Both the TRMID and ATCID are included on the PJM OASIS page under ATC Information.~~

Transmission Provider calculates TRM using the following methodology:

1. TRM shall be set ~~to 2% using components of uncertainty identified in the TRMID~~ for all PJM flowgates ~~except as noted below.~~
2. *TLR and IROL.* TRM shall be ~~set considered using components of uncertainty identified in the TRMID, to 5%~~ for all flowgates that had TLR issued in the 12 months prior to Transmission Provider's annual TRM re-evaluation and are Interconnection Reliability Operating Limits (IROLs) located in PJM Manual 37: Reliability Coordination.
3. *Constrained Operations.* TRM may be set ~~to using components of uncertainty identified in the TRMID, 5%~~ for flowgates that were bound constrained in the 12 months prior to Transmission Provider's annual TRM re-evaluation.
4. *Current and Expected Operating Conditions.* During times of unusual circulation or other operating conditions, Transmission Provider may set a larger TRM than indicated in sections 1, 2, and 3.
5. *Historic Conditions.* Notwithstanding sections 1, 2, and 3 above, Transmission Provider may set TRM on specific flowgates consistent with ~~components of uncertainty identified in the TRMID and the NERC MOD-008-1 or successor, historic loading, load forecast and distribution error, variations in facility loadings, uncertainty in transmission system topology, loop flow impact, variations in generation dispatch, automatic sharing of reserves, and other uncertainties as identified through the NERC reliability standards.~~
6. For non-PJM flowgates, the Transmission Provider uses the TRM values provided by coordination entities for the PJM AFC calculation on these flowgates in accordance with applicable agreement with such entities.

Transmission Provider uses data from Transmission Provider's Energy Management System (EMS) historic database, IROL, ~~and NERC's Interchange Distribution Calculator (IDC), and the Locational Pricing Algorithm (LPA), a scheme inside of the data warehouse,~~ in the

calculation of TRM.

Transmission Provider uses TRM in all AFC calculations. Transmission Provider includes TRM in the AFC/ATC calculation to provide a reasonable level of assurance that the interconnected transmission network will be secure. TRM is not scheduled against or explicitly used for the delivery of energy. It is preserved as a reliability margin to reflect the uncertainty of the operation of the electric system (i.e., to prevent oversubscription of the transmission system). Transmission Provider flowgates with their TRM, CBM, and ratings are listed on the PJM OASIS page under ATC Information at <ftp://ftp.pjm.com/oasis/fgates-definitions-posting.csv>

### **Total Transfer Capability (TTC)**

The Total Transfer Capability (TTC) is the amount of transfers that can be reliably delivered across the interconnected transmission system for the forecasted conditions. The Transmission Provider uses the network AFC methodology to calculate ATC, which does not use TTC as an input. The flowgate rating is an equivalent starting point in the AFC calculation. However, a TTC value is derived as an output and is posted.