



Capacity Benefit Margin Implementation Document (CBMID)

PJM Effective Date: January 21, 2021

1.0 Purpose

The purpose of this document is to describe how PJM establishes and allocates Capacity Benefit Margin (CBM) values for ATC calculations consistent with the requirements of NERC MOD-004-1 standard, FERC 890 Orders, and NAESB Business Practices.

2.0 NERC Functional Roles

PJM is registered as the Balancing Authority (BA), Resource Planner (RP), Transmission Planner (TP), and the Transmission Service Provider (TSP) for the PJM transmission system.

3.0 Process for Development and Allocation of CBM Values

3.1 PJM Process for establishing CBM (MOD-004-1 R1.1, R4, R7, R8)

The Reliability Assurance Agreement (RAA) is an agreement between PJM and the Load Servicing Entities (LSEs) describing that each Party is committing to share its Capacity Resources with the other Parties to reduce overall reserve requirements for the Parties while maintaining reliable service. PJM establishes Capacity Benefit Margin (CBM) at 3500 megawatts as required by the PJM Reliability Assurance Agreement (RAA) Schedule 4, section D “Capacity Benefit Margin”. Because CBM is set at the value of 3500MW in the RAA, PJM cannot modify the amount unless changed in the RAA pursuant to the applicable PJM stakeholder process, through which PJM would satisfy NERC MOD-004-1 R7 and R8 to provide 31 days notice if CBM is changed. The CBM value of 3500MW has not changed since the effective date of the NERC MOD-004-1 standard. The RAA is located on the PJM public website at the following location:

<http://www.pjm.com/directory/merged-tariffs/raa.pdf>

PJM, in its role as TSP for the PJM BA ensures that its need for transmission capacity is set aside as CBM by applying CBM as a margin to PJM flowgates for sale of firm service as described in PJM’s ATCID. For new flowgates, PJM applies a default CBM value of zero to the flowgate. CBM values are reviewed and allocated as described below.

3.2 Procedure for Allocating CBM to PJM Flowgates (MOD-004-1 R1.2, R5.1, R5.2)

PJM reevaluates CBM allocation on flowgates at least once every 13 months. PJM may also reevaluate CBM values on more frequent intervals for the following reasons:

1. Changes to the list of monitored flowgates due to additions or deletions of flowgates.

2. Modifying monitored flowgates due to operational concerns.
3. Modifying monitored flowgates at the request of other Entities due to coordination agreements
4. Major topology change such as the addition of EHV tie line

PJM allocates CBM values for PJM flowgates by calculating the impact of a 3500 MW transfer from the external world into PJM on each PJM flowgate.

Inputs:

AFC base case used for AFC/ATC calculations

Transfer amount equal to CBM of 3500MW

Subsystem files that describe the composition of the transfers

Monitor file of the flowgates used in the AFC/ATC calculations

Outputs:

Output files showing the flow on flowgates with and without CBM transfer applied, which is then used to develop flowgate definitions files posted on OASIS at the link below in this section.

Analysis:

PJM performs a transfer analysis to model the CBM amount of 3500 MW from the external world to assess the percent of the transfer that impacts each flowgate. The generation in the external areas is ramped up pro rata. The flowgate CBM allocation (in MW) is then calculated by multiplying the flowgate distribution factor as a result of the import by the 3500 MW total import amount. Changes in flow on a flowgate of less than 1 MW are disregarded. Changes in flow of 1MW or greater on a PJM flowgate are applied as the flowgate's CBM value. PJM applies CBM for the purpose of calculating Firm ATCs only. For flowgates not owned by PJM, PJM will apply flowgate parameters as provided by the coordination entities.

The final CBM calculated amount may be adjusted for the facilities that have Operating Procedure(s) defined in PJM Transmission Operations Manual 03, which may impact the amount of CBM for a flowgate.

The CBM values are provided in the flowgate definitions file, which is posted on the PJM OASIS page under ATC information; Flowgate Definitions, CBM and TRM (csv) at the following link:

<http://www.pjm.com/markets-and-operations/etools/oasis/atc-information.aspx>

ATC calculations are only performed up to 18 months into the future, therefore MOD-004-1 R6 does not apply for the purposes of ATC calculations for which this document is applicable.

4.0 Use of CBM (MOD-004-1 R1.3, R10, R11, R12)

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. (MOD-004-1 R1.3)

PJM as the Balancing Authority shall request to import energy set aside as Capacity Benefit Margin only when experiencing a declared NERC Energy Emergency Alert (EEA) 2 or higher as described in PJM Manual 2, Section 2.5.3. When reviewing an Arranged Interchange using CBM, PJM shall waive, within the bounds of reliable operation, any Real-time timing and ramping requirements as described in Manual 13, Section 2.3.2 as well as Manual 2, Section 2.5.3. Additional details of how PJM provides general assistance to adjacent control areas experiencing a generation deficiency is provided in Section 2.5 of Manual 13. (MOD-004-1 R10, R11, R12)

The Transmission Service 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.

In addition, PJM Dispatch would apply the PJM Actions per Manual 13, "Emergency Operations" section 2.3.1, "Advanced Notice Emergency Procedures: Alerts" and section 2.3.2 "Real-Time Emergency Procedures (Warnings and Actions)". The use of CBM would be reported to the Regional Reliability Organizations of RFC and SERC, and NERC using the NERC Reliability Coordinator Information System (RCIS) website. Transmission users are notified of CBM use via the PJM public website under OASIS Special Notices at the following location:

<http://www.pjm.com/markets-and-operations/etools/oasis/special-notice.aspx>

Additional information about the use of CBM is found in the PJM OATT, Attachment C, "Methodology To Assess Available Transfer Capability", Use of CBM in an Emergency.

5.0 Data Availability (MOD-004-1 R9.1, R9.2)

PJM is registered as the Transmission Service Provider, Transmission Planner and Transmission Operator and therefore CBM supporting data and models for determining and allocating CBM is all within a single entity and no need for an external request to satisfy NERC MOD-004-1 R9.1. Should an adjacent Transmission Service Provider, Reliability Coordinator, Transmission Planner, Resource Planner, or Planning Coordinator request CBM supporting data and model for establishing or allocating CBM, PJM would provide that data within 30 calendar days.

6.0 Document Control and Availability (MOD-004-1 R1, R2)

PJM's Capacity Benefit Margin Implementation Document (CBMID) is reviewed at least once every 13 months and is posted on PJM's public website at the link below.

<http://www.pjm.com/markets-and-operations/etools/oasis/atc-information.aspx>

This specific location is identified by NAESB Business Practice Standard WEQ001-13.1.5 ATC Information Link. Prior to the effective date of the CBMID, PJM will notify adjacent neighboring entities, including Transmission Operators, Transmission Service Providers, Reliability Coordinators, Transmission Planners, Resource Planners, and Planning Coordinators.

7.0 Questions:

If you have questions, please email PJMATCMethodologyContact@pjm.com

Revision History

Reviewed Jan 20, 2021

- *OASIS Hotline contact information was removed from Section 7, as the service has been discontinued.*

Reviewed Jan 13, 2020

- *No changes necessary*

Reviewed May 28, 2019

- *No changes necessary*

Reviewed September 5, 2018

- *No changes necessary*

Revised February 3, 2018

- *Removed language in section 4.0 and R3 in section 3.1 to reflect compliance bulletin CB004 retirement.*
- *Updated links and references.*

Reviewed June 13, 2017

- *No changes necessary*

Revised January 20, 2017

- *Added page headers*

Revised February 04, 2016

- *Minor wording change to section 3.2*

Revised September 25, 2015

- *Minor wording change to section 3.2*

Reviewed September 01, 2015

- *No changes necessary*

Reviewed February 26, 2015

- *No changes necessary*

Revised July 29, 2014

- *Minor wording changes to section 3.1 and 3.2 for clarity*

Revised December 6, 2013

- *Renumbered sections 4.0, 5.0, and 6.0 to sections 5.0, 6.0, and 7.0 respectively*
- *Minor wording additions to section 1.0 and 2.0 for clarity*
- *Changed the word ‘establish’ to ‘allocate’ in section 3.1 and 3.2 for consistency*

- Changed ‘annually’ to ‘every 13 months’ under section 3.2 and under the Document Control and Availability section
- Language modified in section 3.2 for clarification purposes
- Section 4.0: added additional references to Manual 13, section 2.3.2 (real-time emergency procedures)
- Changed the word ‘determining’ to ‘establishing’ in the Data Availability section

Revised May 14, 2013

- Modified document to merge CBM methodology document into the CBMID
- Modified format to describe how PJM complies with requirements not previously addressed in earlier version
- Added revision history