

## A. Introduction

1. **Title:** Capacity Benefit Margin
2. **Number:** MOD-004-1
3. **Purpose:** To promote the consistent and reliable calculation, verification, preservation, and use of Capacity Benefit Margin (CBM) to support analysis and system operations.
4. **Applicability:**
  - 4.1. Load-Serving Entities.
  - 4.2. Resource Planners.
  - 4.3. Transmission Service Providers.
  - 4.4. Balancing Authorities.
  - 4.5. Transmission Planners, when their associated Transmission Service Provider has elected to maintain CBM.
5. **Effective Date:** First day of the first calendar quarter that is twelve months beyond the date that this standard is approved by applicable regulatory authorities, or in those jurisdictions where regulatory approval is not required, the standard becomes effective on the first day of the first calendar quarter that is twelve months beyond the date this standard is approved by the NERC Board of Trustees.

## B. Requirements

- R1. The Transmission Service Provider that maintains CBM shall prepare and keep current a “Capacity Benefit Margin Implementation Document” (CBMID) that includes, at a minimum, the following information: [*Violation Risk Factor: Lower*] [*Time Horizon: Operations Planning, Long-term Planning*]
  - R1.1. The process through which a Load-Serving Entity within a Balancing Authority Area associated with the Transmission Service Provider, or the Resource Planner associated with that Balancing Authority Area, may ensure that its need for Transmission capacity to be set aside as CBM will be reviewed and accommodated by the Transmission Service Provider to the extent Transmission capacity is available.
  - R1.2. The procedure and assumptions for establishing CBM for each Available Transfer Capability (ATC) Path or Flowgate.
  - R1.3. The procedure for a Load-Serving Entity or Balancing Authority to use Transmission capacity set aside as CBM, including the manner in which the Transmission Service Provider will manage situations where the requested use of CBM exceeds the amount of CBM available.
- R2. The Transmission Service Provider that maintains CBM shall make available its current CBMID to the Transmission Operators, Transmission Service Providers, Reliability Coordinators, Transmission Planners, Resource Planners, and Planning Coordinators that are within or adjacent to the Transmission Service Provider’s area, and to the Load Serving Entities and Balancing Authorities within the Transmission Service Provider’s

area, and notify those entities of any changes to the CBMID prior to the effective date of the change. [*Violation Risk Factor: Lower*] [*Time Horizon: Operations Planning*]

- R3.** Each Load-Serving Entity determining the need for Transmission capacity to be set aside as CBM for imports into a Balancing Authority Area shall determine that need by: [*Violation Risk Factor: Lower*] [*Time Horizon: Operations Planning*]

**R3.1.** Using one or more of the following to determine the GCIR:

- Loss of Load Expectation (LOLE) studies
- Loss of Load Probability (LOLP) studies
- Deterministic risk-analysis studies
- Reserve margin or resource adequacy requirements established by other entities, such as municipalities, state commissions, regional transmission organizations, independent system operators, Regional Reliability Organizations, or regional entities

**R3.2.** Identifying expected import path(s) or source region(s).

- R4.** Each Resource Planner determining the need for Transmission capacity to be set aside as CBM for imports into a Balancing Authority Area shall determine that need by: [*Violation Risk Factor: Lower*] [*Time Horizon: Operations Planning*]

**R4.1.** Using one or more of the following to determine the GCIR:

- Loss of Load Expectation (LOLE) studies
- Loss of Load Probability (LOLP) studies
- Deterministic risk-analysis studies
- Reserve margin or resource adequacy requirements established by other entities, such as municipalities, state commissions, regional transmission organizations, independent system operators, Regional Reliability Organizations, or regional entities

**R4.2.** Identifying expected import path(s) or source region(s).

- R5.** At least every 13 months, the Transmission Service Provider that maintains CBM shall establish a CBM value for each ATC Path or Flowgate to be used for ATC or Available Flowgate Capability (AFC) calculations during the 13 full calendar months (months 2-14) following the current month (the month in which the Transmission Service Provider is establishing the CBM values). This value shall: [*Violation Risk Factor: Lower*] [*Time Horizon: Operations Planning*]

**R5.1.** Reflect consideration of each of the following if available:

- Any studies (as described in R3.1) performed by Load-Serving Entities for loads within the Transmission Service Provider's area
- Any studies (as described in R4.1) performed by Resource Planners for loads within the Transmission Service Provider's area

- Any reserve margin or resource adequacy requirements for loads within the Transmission Service Provider's area established by other entities, such as municipalities, state commissions, regional transmission organizations, independent system operators, Regional Reliability Organizations, or regional entities
- R5.2.** Be allocated as follows:
- For ATC Paths, based on the expected import paths or source regions provided by Load-Serving Entities or Resource Planners
  - For Flowgates, based on the expected import paths or source regions provided by Load-Serving Entities or Resource Planners and the distribution factors associated with those paths or regions, as determined by the Transmission Service Provider
- R6.** At least every 13 months, the Transmission Planner shall establish a CBM value for each ATC Path or Flowgate to be used in planning during each of the full calendar years two through ten following the current year (the year in which the Transmission Planner is establishing the CBM values). This value shall: [*Violation Risk Factor: Lower*] [*Time Horizon: Long-term Planning*]
- R6.1.** Reflect consideration of each of the following if available:
- Any studies (as described in R3.1) performed by Load-Serving Entities for loads within the Transmission Planner's area
  - Any studies (as described in R4.1) performed by Resource Planners for loads within the Transmission Planner's area
  - Any reserve margin or resource adequacy requirements for loads within the Transmission Planner's area established by other entities, such as municipalities, state commissions, regional transmission organizations, independent system operators, Regional Reliability Organizations, or regional entities
- R6.2.** Be allocated as follows:
- For ATC Paths, based on the expected import paths or source regions provided by Load-Serving Entities or Resource Planners
  - For Flowgates, based on the expected import paths or source regions provided by Load-Serving Entities or Resource Planners and the distribution factors associated with those paths or regions, as determined by the Transmission Planner.
- R7.** Less than 31 calendar days after the establishment of CBM, the Transmission Service Provider that maintains CBM shall notify all the Load-Serving Entities and Resource Planners that determined they had a need for CBM on the Transmission Service Provider's system of the amount of CBM set aside. [*Violation Risk Factor: Lower*] [*Time Horizon: Operations Planning*]
- R8.** Less than 31 calendar days after the establishment of CBM, the Transmission Planner shall notify all the Load-Serving Entities and Resource Planners that determined they

had a need for CBM on the system being planned by the Transmission Planner of the amount of CBM set aside. [*Violation Risk Factor: Lower*] [*Time Horizon: Operations Planning*]

**R9.** The Transmission Service Provider that maintains CBM and the Transmission Planner shall each provide (subject to confidentiality and security requirements) copies of the applicable supporting data, including any models, used for determining CBM or allocating CBM over each ATC Path or Flowgate to the following: [*Violation Risk Factor: Lower*] [*Time Horizon: Operations Planning, Long-term Planning*]

**R9.1.** Each of its associated Transmission Operators within 30 calendar days of their making a request for the data.

**R9.2.** To any Transmission Service Provider, Reliability Coordinator, Transmission Planner, Resource Planner, or Planning Coordinator within 30 calendar days of their making a request for the data.

**R10.** The Load-Serving Entity or Balancing Authority shall request to import energy over firm Transfer Capability set aside as CBM only when experiencing a declared NERC Energy Emergency Alert (EEA) 2 or higher. [*Violation Risk Factor: Lower*] [*Time Horizon: Same-day Operations*]

**R11.** When reviewing an Arranged Interchange using CBM, all Balancing Authorities and Transmission Service Providers shall waive, within the bounds of reliable operation, any Real-time timing and ramping requirements. [*Violation Risk Factor: Medium*] [*Time Horizon: Same-day Operations*]

**R12.** The Transmission Service Provider that maintains CBM shall approve, within the bounds of reliable operation, any Arranged Interchange using CBM that is submitted by an “energy deficient entity<sup>1</sup>” under an EEA 2 if: [*Violation Risk Factor: Medium*] [*Time Horizon: Same-day Operations*]

**R12.1.** The CBM is available

**R12.2.** The EEA 2 is declared within the Balancing Authority Area of the “energy deficient entity,” and

**R12.3.** The Load of the “energy deficient entity” is located within the Transmission Service Provider’s area.

### **C. Measures**

**M1.** Each Transmission Service Provider that maintains CBM shall produce its CBMID evidencing inclusion of all information specified in R1. (R1)

**M2.** Each Transmission Service Provider that maintains CBM shall have evidence (such as dated logs and data, copies of dated electronic messages, or other equivalent evidence) to show that it made the current CBMID available to the Transmission Operators, Transmission Service Providers, Reliability Coordinators, Transmission Planners, and Planning Coordinators specified in R2, and that prior to any change to the CBMID, it notified those entities of the change. (R2)

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<sup>1</sup> See Attachment 1-EOP-002-0 for explanation.

- M3.** Each Load-Serving Entity that determined a need for Transmission capacity to be set aside as CBM shall provide evidence (including studies and/or requirements) that it met the criteria in R3. (R3)
- M4.** Each Resource Planner that determined a need for Transmission capacity to be set aside as CBM shall provide evidence (including studies and/or requirements) that it met the criteria in R4. (R4)
- M5.** Each Transmission Service Provider that maintains CBM shall provide evidence (such as studies, requirements, and dated CBM values) that it established 13 months of CBM values consistent with the requirements in R5.1 and allocated the values consistent with the requirements in R5.2. (Note that CBM values may legitimately be zero.) (R5)
- M6.** Each Transmission Planner with an associated Transmission Service Provider that maintains CBM shall provide evidence (such as studies, requirements, and dated CBM values) that it established CBM values for years two through ten consistent with the requirements in R6.1 and allocated the values consistent with the requirements in R6.2. Inclusion of GCIR based on R6.1 and R6.2 within the transmission base case meets this requirement. (Note that CBM values may legitimately be zero.) (R6)
- M7.** Each Transmission Service Provider that maintains CBM shall provide evidence (such as dated e-mail, data, or other records) that it notified the entities described in R7 of the amount of CBM set aside. (R7)
- M8.** Each Transmission Planner with an associated Transmission Service Provider that maintains CBM shall provide evidence (such as e-mail, data, or other records) that it notified the entities described in R8 of the amount of CBM set aside. (R8)
- M9.** Each Transmission Service Provider that maintains CBM and each Transmission Planner shall provide evidence including copies of dated requests for data supporting the calculation of CBM along with other evidences such as copies of electronic messages or other evidence to show that it provided the required entities with copies of the supporting data, including any models, used for allocating CBM as specified in R9. (R9)
- M10.** Each Load-Serving Entity and Balancing Authority shall provide evidence (such as logs, copies of tag data, or other data from its Reliability Coordinator) that at the time it requested to import energy using firm Transfer Capability set aside as CBM, it was in an EEA 2 or higher. (R10)
- M11.** Each Balancing Authority and Transmission Service Provider shall provide evidence (such as operating logs and tag data) that it waived Real-time timing and ramping requirements when approving an Arranged Interchange using CBM (R11)
- M12.** Each Transmission Service Provider that maintains CBM shall provide evidence including copies of CBM values along with other evidence (such as tags, reports, and supporting data) to show that it approved any Arranged Interchange meeting the criteria in R12. (R12)

### **D. Compliance**

## **1. Compliance Monitoring Process**

### **1.1. Compliance Enforcement Authority (CEA)**

Regional Entity.

### **1.2. Compliance Monitoring Period and Reset Time Frame**

Not applicable.

### **1.3. Data Retention**

- The Transmission Service Provider that maintains CBM shall maintain its current, in force CBMID and any prior versions of the CBMID that were in force during the past three calendar years plus the current year to show compliance with R1.
- The Transmission Service Provider that maintains CBM shall maintain evidence to show compliance with R2, R5, R7, R9, and R12 for the most recent three calendar years plus the current year.
- The Load-Serving Entity shall each maintain evidence to show compliance with R3 and R10 for the most recent three calendar years plus the current year.
- The Resource Planner shall each maintain evidence to show compliance with R4 for the most recent three calendar years plus the current year.
- The Transmission Planner shall maintain evidence to show compliance with R6, R8, and R9 for the most recent three calendar years plus the current year.
- The Balancing Authority shall maintain evidence to show compliance with R10 and R11 for the most recent three calendar years plus the current year.
- The Transmission Service Provider shall maintain evidence to show compliance with R11 for the most recent three calendar years plus the current year.
- If an entity is found non-compliant, it shall keep information related to the non-compliance until found compliant.
- The Compliance Enforcement Authority shall keep the last audit records and all requested and subsequently submitted audit records.

### **1.4. Compliance Monitoring and Enforcement Processes:**

The following processes may be used:

- Compliance Audits
- Self-Certifications
- Spot Checking
- Compliance Violation Investigations
- Self-Reporting

- Complaints

**1.5. Additional Compliance Information**

**None.**

Violation Severity Levels

R #	Lower VSL	Moderate VSL	High VSL	Severe VSL
R1.	<p>The Transmission Service Provider that maintains CBM has a CBMID that does not incorporate changes that have been made within the last three months.</p>	<p>The Transmission Service Provider that maintains CBM has a CBMID that does not incorporate changes that have been made more than three, but not more than six, months ago.</p> <p style="text-align: center;"><b>OR</b></p> <p>The CBM maintaining Transmission Service Provider’s CBMID does not address one of the sub requirements.</p>	<p>The Transmission Service Provider that maintains CBM has a CBMID that does not incorporate changes that have been made more than six, but not more than twelve, months ago.</p> <p style="text-align: center;"><b>OR</b></p> <p>The CBM maintaining Transmission Service Provider’s CBMID does not address two of the sub requirements.</p>	<p>The Transmission Service Provider that maintains CBM has a CBMID that does not incorporate changes that have been made more than twelve months ago.</p> <p style="text-align: center;"><b>OR</b></p> <p>The Transmission Service Provider that maintains CBM does not have a CBMID;</p> <p style="text-align: center;"><b>OR</b></p> <p>The CBM maintaining Transmission Service Provider’s CBMID does not address three of the sub requirements.</p>
R2.	<p>The Transmission Service Provider that maintains CBM notifies one or more of the entities specified in R2 of a change in the CBM ID after the effective date of the change, but not more than 30 calendar days after the effective date of the change.</p>	<p>The Transmission Service Provider that maintains CBM notifies one or more of the entities specified in R2 of a change in the CBM ID 30 or more calendar days but not more than 60 calendar days after the effective date of the change.</p>	<p>The Transmission Service Provider that maintains CBM notifies one or more of the entities specified in R2 of a change in the CBM ID 60 or more calendar days but not more than 90 calendar days after the effective date of the change.</p> <p style="text-align: center;"><b>OR</b></p> <p>The Transmission Service Provider that maintains CBM made available the CBMID to at least one, but not all, of the entities specified in R2.</p>	<p>The Transmission Service Provider that maintains CBM notifies one or more of the entities specified in R2 of a change in the CBM ID more than 90 calendar days after the effective date of the change.</p> <p style="text-align: center;"><b>OR</b></p> <p>The Transmission Service Provider that maintains CBM made available the CBMID to none of the entities specified in R2.</p>

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R #	Lower VSL	Moderate VSL	High VSL	Severe VSL
R3.		<p>The Load-Serving Entity did not use one of the methods described in R3.1</p> <p style="text-align: center;"><b>OR</b></p> <p>The Load-Serving Entity did not identify paths or regions as described in R3.2</p>		<p>The Load-Serving Entity did not use one of the methods described in R3.1</p> <p style="text-align: center;"><b>AND</b></p> <p>The Load-Serving Entity did not identify paths or regions as described in R3.2</p>
R4		<p>The Resource Planner did not use one of the methods described in R4.1</p> <p style="text-align: center;"><b>OR</b></p> <p>The Resource Planner did not identify paths or regions as described in R4.2</p>		<p>The Resource Planner did not use one of the methods described in R4.1</p> <p style="text-align: center;"><b>AND</b></p> <p>The Resource Planner did not identify paths or regions as described in R4.2</p>
R5.	<p>The Transmission Service Provider that maintains CBM established CBM more than 13 months, but not more than 16 months, after the last time the values were established.</p>	<p>The Transmission Service Provider that maintains CBM established CBM more than 16 months, but not more than 19 months, after the last time the values were established.</p> <p style="text-align: center;"><b>OR</b></p> <p>The Transmission Service Provider that maintains CBM did not consider one or more of the items described in R5.1 that was available.</p> <p style="text-align: center;"><b>OR</b></p> <p>The Transmission Service Provider that maintains CBM did not base the allocation on one or more paths or regions as</p>	<p>The Transmission Service Provider that maintains CBM established CBM more than 19 months, but not more than 22 months, after the last time the values were established.</p>	<p>The Transmission Service Provider that maintains CBM established CBM more than 22 months after the last time the values were established.</p> <p style="text-align: center;"><b>OR</b></p> <p>The Transmission Service Provider that maintains CBM failed to establish an initial value for CBM.</p> <p style="text-align: center;"><b>OR</b></p> <p>The Transmission Service Provider that maintains CBM did not consider one or more of the items described in R5.1 that was available, and did not base the allocation on one or more</p>

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R #	Lower VSL	Moderate VSL	High VSL	Severe VSL
		described in R5.2.		paths or regions as described in R5.2
R6.	<p>The Transmission Planner with an associated Transmission Service Provider that maintains CBM established CBM for each of the years 2 through 10 more than 13 months, but not more than 16 months, after the last time the values were established.</p>	<p>The Transmission Planner with an associated Transmission Service Provider that maintains CBM established CBM for each of the years 2 through 10 more than 16 months, but not more than 19 months, after the last time the values were established.</p> <p style="text-align: center;"><b>OR</b></p> <p>The Transmission Planner with an associated Transmission Service Provider that maintains CBM did not consider one or more of the items described in R6.1 that was available.</p> <p style="text-align: center;"><b>OR</b></p> <p>The Transmission Planner with an associated Transmission Service Provider that maintains CBM did not base the allocation</p>	<p>The Transmission Planner with an associated Transmission Service Provider that maintains CBM established CBM for each of the years 2 through 10 more than 19 months, but not more than 22 months, after the last time the values were established.</p>	<p>The Transmission Planner with an associated Transmission Service Provider that maintains CBM established CBM for each of the years 2 through 10 more than 22 months after the last time the values were established.</p> <p style="text-align: center;"><b>OR</b></p> <p>The Transmission Planner with an associated Transmission Service Provider that maintains CBM failed to establish an initial value for CBM for each of the years 2 through 10.</p> <p style="text-align: center;"><b>OR</b></p> <p>The Transmission Planner with an associated Transmission Service Provider that maintains CBM did not consider one or more of the items described in</p>

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R #	Lower VSL	Moderate VSL	High VSL	Severe VSL
		on one or more paths or regions as described in R6.2		R6.1 that was available, and did not base the allocation on one or more paths or regions as described in R6.2
R7.	The Transmission Service Provider that maintains CBM notified all the entities as required, but did so in 31 or more days, but less than 45 days.	The Transmission Service Provider that maintains CBM notified all the entities as required, but did so in 45 or more days, but less than 60 days.	The Transmission Service Provider that maintains CBM notified all the entities as required, but did so in 60 or more days, but less than 75 days.  <b>OR</b> The Transmission Service Provider that maintains CBM notified at least one, but not all, of the entities as required.	The Transmission Service Provider that maintains CBM notified all the entities as required, but did so in 75 or more days,  <b>OR</b> The Transmission Service Provider that maintains CBM notified none of the entities as required.
R8.	The Transmission Planner with an associated Transmission Service Provider that maintains CBM notified all the entities as required, but did so in 31 or more days, but less than 45 days.	The Transmission Planner with an associated Transmission Service Provider that maintains CBM notified all the entities as required, but did so in 45 or more days, but less than 60 days.	The Transmission Planner with an associated Transmission Service Provider that maintains CBM notified all the entities as required, but did so in 60 or more days, but less than 75 days.  <b>OR</b> The Transmission Planner with	The Transmission Planner with an associated Transmission Service Provider that maintains CBM notified all the entities as required, but did so in 75 or more days,  <b>OR</b> The Transmission Planner with an associated Transmission

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R #	Lower VSL	Moderate VSL	High VSL	Severe VSL
			an associated Transmission Service Provider that maintains CBM notified at least one, but not all, of the entities as required.	Service Provider that maintains CBM notified none of the entities as required.
R9.	The Transmission Service Provider or Transmission Planner provided a requester specified in R9 with the supporting data, including models, used to allocate CBM more than 30, but not more than 45, days after the submission of the request.	The Transmission Service Provider or Transmission Planner provided a requester specified in R9 with the supporting data, including models, used to allocate CBM more than 45, but not more than 60, days after the submission of the request.	The Transmission Service Provider or Transmission Planner provided a requester specified in R9 with the supporting data, including models, used to allocate CBM more than 60, but not more than 75, days after the submission of the request. <b>OR</b> The Transmission Service Provider or Transmission Planner provided at least one, but not all, of the requesters specified in R9 with the supporting data, including models, used to allocate CBM.	The Transmission Service Provider or Transmission Planner provided a requester specified in R9 with the supporting data, including models, used to allocate CBM more than 75 days after the submission of the request. <b>OR</b> The Transmission Service Provider or Transmission Planner provided none of the requesters specified in R9 with the supporting data, including models, used to allocate CBM.
R10.	N/A	N/A	N/A	A Load-Serving Entity or Balancing Authority requested to schedule energy over CBM while not in an EEA 2 or higher.
R11.	N/A	N/A	N/A	A Balancing Authority or Transmission Service Provider denied an Arranged Interchange using CBM based on timing or ramping requirements without a reliability reason to do so.

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R #	Lower VSL	Moderate VSL	High VSL	Severe VSL
R12.	N/A	N/A	N/A	The Transmission Service Provider failed to approve an Arranged Interchange for CBM that met the criteria described in R12 without a reliability reason to do so.