



**South Carolina Public Service Authority  
Transmission Reliability Margin  
Implementation Document  
(TRMID)**

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**Version 6.0**

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## Document Change History

Version	Date of Change	Description of Change
0.0	03/30/11	Original
1.0	06/14/11	Updated TRM Methodology
2.0	05/01/12	Review minor revisions to “ <i>TRM Calculation &amp; Process Overview</i> ” section.
3.0	05/15/14	Review. Revised contact information.
4.0	11/21/14	Changed Progress Energy to Duke Energy Progress. Added signature page.
4.0	10/30/15	Review. No changes needed.
5.0	04/01/17	Review. Updated signatories and TRM Methodology Contacts.
6.0	07/12/18	Review. Updated signatories and TRM Methodology Contacts.

## **TRMID**

### **Purpose**

The purpose of the Transmission Reliability Margin Implementation Document (TRMID) is to enhance the consistent and reliable calculation, verification, preservation, and use of Transmission Reliability Margin (TRM) to support analysis and system operations. TRM is the amount of transmission transfer capability necessary to provide reasonable assurance that the interconnected transmission network will be secure. TRM accounts for the inherent uncertainty in system conditions and the need for operating flexibility to ensure reliable system operation as system conditions change.<sup>1</sup>

The current TRMID is posted to Santee Cooper's OASIS home page making it available to any interested parties. Specifically it has been made available to Duke Energy Carolinas as the VACAR-South Reliability Coordinator Agent as well as Duke Energy Progress (DEP), Duke Energy Carolinas (DEC), South Carolina Electric & Gas (SCEG), and Southern Company as adjacent Planning Coordinators (PC), Transmission Operators (TOP), and Transmission Service Providers (TSP). If requested, Santee Cooper will also make the TRMID available upon request given the request falls within confidentiality and security requirement no more than 30 calendar days after receiving the request.<sup>2</sup>

### **Scope**

The VACAR Reserve Requirement is calculated and implemented in January of each calendar year. Santee Cooper honors its reserve sharing requirements under the VACAR Reserve Sharing Agreement. This arrangement requires each participating company to provide a Contingency Reserve commitment. Santee Cooper maintains at each import interface enough TRM to accommodate each participating company's reserve commitment. Additionally, Santee Cooper maintains an export TRM at each interface to accommodate Santee Cooper's reserve commitment. As a Transmission Operator (TOP), Santee Cooper applies TRM on a path-by-path basis. A path may consist of an entire interface or any other commercially viable transmission path posted on OASIS.

Santee Cooper may use only one or any combination of the components listed below in the determination of TRM values.<sup>3</sup> Santee Cooper does not include any of the components of CBM in determining TRM values.<sup>4</sup>

- Aggregate Load forecast.
- Load distribution uncertainty.
- Forecast uncertainty in Transmission system topology (including, but not limited to, forced or unplanned outages and maintenance outages).
- Allowances for parallel path (loop flow) impacts.
- Allowances for simultaneous path interactions.

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<sup>1</sup> NERC Glossary of Terms used in NERC Reliability Standards (March 15, 2011)

<sup>2</sup> Reference: MOD-008-1 R3

<sup>3</sup> Reference: MOD-008-1 R1

<sup>4</sup> Reference: MOD-008-1 R2

- Variations in generation dispatch (including, but not limited to, forced or unplanned outages, maintenance outages and location of future generation).
- Short-term System Operator response (Operating Reserve actions).
- Reserve sharing requirements.
- Inertial response and frequency bias.

Santee Cooper utilizes the variations in generation dispatch component in establishing its TRM values. Santee Cooper's treatment of TRM is the same across all horizons: Hourly, Daily, & Monthly. To minimize risk to system reliability, Santee Cooper does not allow TRM to be sold on a firm or non-firm basis.

### **TRM Calculation & Process Overview**

Santee Cooper establishes TRM by simulating the loss of generation at selected generating facilities and then conducting studies to simulate inrush response for the natural response of the interconnected system and the response based on simulated implementation of reserve sharing arrangements. The TRM is determined as the highest impact on each flowgate and is allocated as a MW value for each impacted flowgate.

#### **Inrush Response (Loss of Generation):**

Santee Cooper will calculate the impact on each Flowgate for the loss of Santee Cooper generator(s), as specified above, where the interconnection responds to that sudden loss of generation.

The inrush flow is determined by calculating the natural response on each Flowgate due to the outage of each specified generator(s) connected to Santee Cooper's system. The power lost from the outage of the generator(s) is naturally compensated for by contributions from Santee Cooper's interconnections and not from a specific source. The impact on each flowgate is then calculated by multiplying its response by the total power lost from the outage of the generator(s).

#### **Response based on Reserve Sharing Arrangements (Loss of Generation):**

Santee Cooper will calculate the impact on each Flowgate for the loss of Santee Cooper generator(s), as specified above, while simulating the implementation of reserves based on Santee Cooper's reserve sharing arrangements.

The power lost from the outage of the generator(s) is compensated for by contributions from each Balancing Area (BA) participating in the reserve sharing arrangements with Santee Cooper, proportionally based on the reserve sharing arrangements, up to the total generation lost due to the outage. The impact on each flowage is then calculated by multiplying its response by the total power lost from the outage of the generator(s).

The Flowgate-based TRM values will be established for any Flowgate added to the transfer capability calculation process. Santee Cooper's TRM values are determined annually or more frequently as system conditions warrant.<sup>5</sup>

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<sup>5</sup> Reference: MOD-008-1 R4

### **TRM Methodology Contacts**

For information on Santee Cooper's TRM Methodology please contact:

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