Standard: **051**

Title: **Transmission System Adequacy and Security**

051.1 System Performance Assessments Under Normal (No Contingency) Conditions (Category A)

051.2 System Performance Following Loss of a Single Bulk System Element (Category B)

051.3 System Performance Following Loss of Two or More Bulk System Elements (Category C)

051.4 System Performance Following Extreme Events Resulting in the Loss of Two or More Bulk System Elements (Category D)

Purpose: System simulations and associated assessments are needed periodically to ensure that reliable systems are developed that meet specified performance requirements, with sufficient lead time and continue to be modified or upgraded as necessary to meet present and future system needs.

Effective Date: February 8, 2005

Standard 051.1 System Performance ~~Assessment~~ Under Normal (No Contingency) Conditions (Category A)

Requirements:

R1-1. ~~Assessment Requirements - The Planning Authority and Transmission Planner shall each assess the performance of their systems in meeting this Reliability Standard. To be valid and compliant, assessments shall.~~The Planning Authority and Transmission Planner shall each demonstrate through a valid assessment that its portion of the interconnected transmission system is planned such that, with all transmission facilities in service and with normal (pre-contingency) operating procedures in effect, the network can deliver generator unit output to meet projected customer demands and projected firm (non-recallable reserved) transmission services, at all demand levels over the range of forecast system demands, under the conditions defined in Category A of Table I.

The Planning Authority's and Transmission Planner's valid assessment shall:

a) Be made annually,

b) Be conducted for near-term (years one through five) and longer-term (years six through ten) planning horizons,

c) Be supported by a current or past study and/or system simulation testing that addresses all of the elements in the following list, as accepted by the Regional Reliability Organization, showing system performance following Category A of Table 1 (no contingencies) that addresses the plan year being assessed,

- Cover critical system conditions and study years as deemed appropriate by the entity performing the study.
- Be conducted annually unless changes to system conditions do not warrant such analyses.
- Be conducted beyond the five-year horizon only as needed to address identified marginal conditions that may have longer lead-time solutions.
- Have established normal (pre-contingency) operating procedures in place.
- Have all projected firm transfers modeled.
- Be performed for selected demand levels over the range of forecast system demands.
- Demonstrate that system performance meets Table 1 for Category A (no contingencies).
- Include existing and planned facilities.
- Include reactive power resources to ensure that adequate reactive resources are available to meet system performance.

d) Address any planned upgrades needed to meet the performance requirements of Category A.

~~System Simulation Study/Testing Methods - System simulation studies/testing shall (as agreed to by the Region):~~

~~a)Cover critical system conditions and study years as deemed appropriate by the responsible entity.~~

~~b)Be conducted annually unless changes to system conditions do not warrant such analyses.~~

~~c)Be conducted beyond the five-year horizon only as needed to address identified marginal conditions that may have longer lead-time solutions.~~

~~d)Have established normal (pre-contingency) operating procedures in place.~~

~~e)Have all projected firm transfers modeled.~~

~~f)Be performed for selected demand levels over the range of forecast system demands.~~

~~g)Demonstrate that system performance meets Table 1 for Category A (no contingencies).~~

~~h)Include existing and planned facilities.~~

~~i)Include reactive power resources to ensure that adequate reactive resources are available to meet system performance.~~

R1-2 ~~Corrective Plan Requirements –~~ When system simulations indicate an inability of the systems to respond as prescribed in Reliability Standard 051.1-R1-1, the Planning Authority and Transmission Planner shall:

a) Provide a written summary of its plans to achieve the required system performance as described above throughout the planning horizon:
   – Including a schedule for implementation,
   – Including a discussion of expected required in-service dates of facilities,
   – Consider lead times necessary to implement plans.

b) For identified system facilities for which sufficient lead times exist, review in subsequent annual assessments for continuing need — detailed implementation plans are not needed.

R1-3. ~~Reporting Requirements –~~ The Planning Authority and Transmission Planner shall each ~~The~~ document~~ation of~~ the results of these reliability assessments and corrective plans and shall annually provide these ~~shall annually be provided~~ to its~~the entities'~~ respective NERC Regional Reliability Organization(s), as required by the Regional Reliability Organization.

~~Each Region, in turn, shall annually provide a report of its reliability assessments and corrective actions to NERC.~~

Measures:

M1-1. The Planning Authority and Transmission Planner shall provide evidence to its Compliance Monitor that it provided assessments and corrective plans for the system responses per Reliability Standard 051.1-R1-1 and 051.1-R1-2.

M1-2 The Planning Authority and Transmission Planner shall provide evidence to its Compliance Monitor that it reported documentation of results of its reliability assessments and corrective plans per Reliability Standard 051.1-R1-3.
None identified.

Regional Differences:
None identified.

Compliance Monitoring Process:

Timeframe:
Annually.

Compliance Monitoring Responsibility:

Compliance Monitor: Regional Reliability ~~Council~~Organization. Each ~~Region~~Compliance Monitor shall report compliance and violations to NERC via the NERC Compliance Reporting Process.

Levels of Non-compliance:
(If non-compliant at more than one Level, the highest Level applies.)

Level 1: Not applicable.

Level 2: A valid assessment and corrective plan for the longer-term planning horizon is not available.

Level 3: Not applicable.

Level 4: A valid assessment and corrective plan for the near-term planning horizon is not available.

Standard 051.2 System Performance Following Loss of a Single Bulk System Element (Category B)

Requirements:

R2-1. ~~Assessment Requirements - Planning Authorities and Transmission Planners shall assess the performance of their systems in meeting the requirements of this Reliability Standard.~~ ~~To be valid and compliant, assessments shall:~~The Planning Authority and Transmission Planner shall each demonstrate through a valid assessment that its portion of the interconnected transmission system is planned such that the network can be operated to supply projected customer demands and projected firm (non-recallable reserved) transmission services, at all demand levels over the range of forecast system demands, under the contingency conditions as defined in Category B of Table I.

The Planning Authority's and Transmission Planner's valid assessment shall:

a) Be made annually,

b) Be conducted for near-term (years one through five) and longer-term (years six through ten) planning horizons,

c) Be supported by a current or past study and/or system simulation testing that addresses all of the elements in the following list, as accepted by the ~~Region~~Regional Reliability Organization showing system performance following Category B contingencies that addresses the plan year being assessed,

- Be performed and evaluated only for those Category B contingencies that would produce the more severe system results or impacts:
  - The rationale for the contingencies selected for evaluation shall be available as supporting information,
  - An explanation of why the remaining simulations would produce less severe system results shall be available as supporting information.
- Cover critical system conditions and study years as deemed appropriate by the responsible entity.
- Be conducted annually unless changes to system conditions do not warrant such analyses.
- Be conducted beyond the five-year horizon only as needed to address identified marginal conditions that may have longer lead-time solutions.
- Have all projected firm transfers modeled.
- Be performed and evaluated for selected demand levels over the range of forecast system demands.
- Demonstrate that system performance meets Table 1 for Category B contingencies.
- Include existing and planned facilities.
- Include reactive power resources to ensure that adequate reactive resources are available to meet system performance.
- Include the effects of existing and planned protection systems, including any backup or redundant systems.

- Include the effects of existing and planned control devices.
- Include the planned (including -maintenance) outage of any bulk electric equipment (including protection systems or their components) at those demand levels for which planned (including maintenance) outages are performed.

d) Address any planned upgrades needed to meet the performance requirements of Category B,

e) Consider all contingencies applicable to Category B.

~~System Simulation Study/Testing Methods - System simulation studies/testing shall:~~

~~a)Be performed and evaluated only for those Category B contingencies that would produce the more severe system results or impacts:~~
- ~~The rationale for the contingencies selected for evaluation shall be available as supporting information,~~
- ~~An explanation of why the remaining simulations would produce less severe system results shall be available as supporting information.~~

~~b)Cover critical system conditions and study years as deemed appropriate by the responsible entity.~~

~~c)Be conducted annually unless changes to system conditions do not warrant such analyses.~~

~~d)Be conducted beyond the five-year horizon only as needed to address identified marginal conditions that may have longer lead-time solutions.~~

~~e)Have all projected firm transfers modeled.~~

~~f)Be performed and evaluated for selected demand levels over the range of forecast system demands.~~

~~g)Demonstrate that system performance meets Table 1 for Category B contingencies.~~

~~h)Include existing and planned facilities.~~

~~i)Include reactive power resources to ensure that adequate reactive resources are available to meet system performance.~~

~~j)Include the effects of existing and planned protection systems, including any backup or redundant systems.~~

~~k)Include the effects of existing and planned control devices.~~

~~l)Include the planned (including -maintenance) outage of any bulk electric equipment (including protection systems or their components) at those demand levels for which planned (including maintenance) outages are performed~~

R2-2. ~~Corrective Plan Requirements -~~ When system simulations indicate an inability of the systems to respond as prescribed in Reliability ~~Requirement~~ Standard 051.2-R2-1, Planning Authorities and Transmission ~~Owners~~ Planners responsible for planning the bulk electric system shall:

a) Provide a written summary of their plans to achieve the required system performance as described above throughout the planning horizon:
   - Including a schedule for implementation,
   - Including a discussion of expected required in-service dates of facilities,
   - Consider lead times necessary to implement plans.

b) For identified system facilities for which sufficient lead times exist, review in subsequent annual assessments for continuing need — detailed implementation plans are not needed.

R2-3 ~~Reporting Requirements – ~~The Planning Authority and Transmission Planner shall each ~~The ~~document~~ation of~~ the results of ~~these ~~its reliability assessments and corrective plans and shall annually ~~be ~~provide the results~~d~~ to its~~the entities'~~ respective ~~NERC ~~Regional Reliability Organization(s), as required by the Regional Reliability Organization.

~~Each Region, in turn, shall annually provide a report of its reliability assessments and corrective actions to NERC.~~

Measures:

M2-1 The Planning Authority and Transmission Planner shall provide evidence to its Compliance Monitor that it provided assessments and corrective plans for the system responses per Reliability Standard 051.2- R2-1 and 051.2-R2-2.

M2-2 The Planning Authority and Transmission Planner shall provide evidence to its Compliance Monitor that it reported documentation of results of its reliability assessments and corrective plans per Reliability Standard 051.2-R2-3.

Regional Differences:

None identified

Compliance Monitoring Process:

Timeframe:

Annually.

Compliance Monitoring Responsibility:

Compliance Monitor: Regional Reliability ~~Councils~~Organizations. Each Compliance Monitor~~Region~~ shall report compliance and violations to NERC via the NERC Compliance Reporting Process.

Levels of Non-compliance:

(If non-compliant at more than one Level, the highest Level applies.)

Level 1: Not applicable.

Level 2: A valid assessment and corrective plan for the longer-term planning horizon is not available.

Level 3: Not applicable.

Level 4: A valid assessment and corrective plan for the near-term planning horizon is not available.

Standard 051.3 System Performance Following Loss of Two or More Bulk System Elements (Category C)

Requirements:

R3-1. ~~Assessment Requirements - Planning Authorities and Transmission Planners shall assess the performance of their systems in meeting the requirements of this Reliability Standard.~~ ~~To be valid and compliant, assessments shall:~~The Planning Authority and Transmission Planner shall each demonstrate through a valid assessment that its portion of the interconnected transmission systems is planned such that the network can be operated to supply projected customer demands and projected firm (non-recallable reserved) transmission services, at all demand levels over the range of forecast system demands, under the contingency conditions as defined in Category C of Table I (attached). The controlled interruption of customer demand, the planned removal of generators, or the curtailment of firm (non-recallable reserved) power transfers maybe necessary to meet this standard.

The Planning Authority's and Transmission Planner's valid assessment shall:

a) Be made annually,

b) Be conducted for near-term (years one through five) and longer-term (years six through ten) planning horizons,

c) Be supported by a current or past study and/or system simulation testing that addresses all of the elements in the following list, as accepted by the Regional Reliability Organization showing system performance following Category C contingencies that addresses the plan year being assessed,

- Be performed and evaluated only for those Category C contingencies that would produce the more severe system results or impacts.
  - The rationale for the contingencies selected for evaluation shall be available as supporting information,
  - An explanation of why the remaining simulations would produce less severe system results shall be available as supporting information.
- Cover critical system conditions and study years as deemed appropriate by the responsible entity.
- Be conducted annually unless changes to system conditions do not warrant such analyses.
- Be conducted beyond the five-year horizon only as needed to address identified marginal conditions that may have longer lead-time solutions.
- Have all projected firm transfers modeled.
- Be performed and evaluated for selected demand levels over the range of forecast system demands.
- Demonstrate that system performance meets Table 1 for Category C contingencies.
- Include existing and planned facilities.
- Include reactive power resources to ensure that adequate reactive resources are available to meet system performance.
- Include the effects of existing and planned protection systems, including any backup or redundant systems.

- Include the effects of existing and planned control devices.
- Include the planned (including maintenance) outage of any bulk electric equipment (including protection systems or their components) at those demand levels for which planned (including maintenance) outages are performed

~~Cover critical system conditions and study years as deemed appropriate by the responsible entity.~~

~~Be conducted annually unless changes to system conditions do not warrant such analyses.~~

~~Be conducted beyond the five-year horizon only as needed to address identified marginal conditions that may have longer lead-time solutions.~~

~~Have established normal (pre-contingency) operating procedures in place.~~

~~Have all projected firm transfers modeled.~~

~~Be performed for selected demand levels over the range of forecast system demands.~~

~~Demonstrate that system performance meets Table 1 for Category A (no contingencies).~~

~~Include existing and planned facilities.~~

~~Include reactive power resources to ensure that adequate reactive resources are available to meet system performance.~~

d) Address any planned upgrades needed to meet the performance requirements of Category C,

e) Consider all contingencies applicable to Category C.

~~System Simulation Study/Testing Methods - System simulation studies/testing shall:~~

~~a)Be performed and evaluated only for those Category C contingencies that would produce the more severe system results or impacts.~~

- ~~The rationale for the contingencies selected for evaluation shall be available as supporting information,~~
- ~~An explanation of why the remaining simulations would produce less severe system results shall be available as supporting information.~~

~~b)Cover critical system conditions and study years as deemed appropriate by the responsible entity.~~

~~c)Be conducted annually unless changes to system conditions do not warrant such analyses.~~

~~d)Be conducted beyond the five-year horizon only as needed to address identified marginal conditions that may have longer lead-time solutions.~~

~~e)Have all projected firm transfers modeled.~~

~~f)Be performed and evaluated for selected demand levels over the range of forecast system demands.~~

~~g)Demonstrate that system performance meets Table 1 for Category C contingencies.~~

~~h)Include existing and planned facilities.~~

~~i)Include reactive power resources to ensure that adequate reactive resources are available to meet system performance.~~

~~j)Include the effects of existing and planned protection systems, including any backup or redundant systems.~~

~~k)Include the effects of existing and planned control devices.~~

~~l)Include the planned (including maintenance) outage of any bulk electric equipment (including protection systems or their components) at those demand levels for which planned (including maintenance) outages are performed~~

R3-2. ~~Corrective Plan Requirements –~~ When system simulations indicate an inability of the systems to respond as prescribed in Reliability Standard~~Requirement~~ 051.3- R3-1, the Planning ~~Authorities~~ Authority and Transmission ~~Owners~~ Planner responsible for planning the bulk electric system shall:

a) Provide a written summary of ~~their~~ its plans to achieve the required system performance as described above throughout the planning horizon:
   - Including a schedule for implementation,
   - Including a discussion of expected required in-service dates of facilities,
   - Consider lead times necessary to implement plans.

b) For identified system facilities for which sufficient lead times exist, review in subsequent annual assessments for continuing need — detailed implementation plans are not needed.

R3-3. ~~Reporting Requirements –~~The Planning Authority and Transmission Planner shall each document~~ation~~ the~~of~~ results of its~~these~~ reliability assessments and corrective plans ~~shall annually~~ and shall annually provide these~~ be provided~~ to ~~the~~its~~ entities'~~ respective NERC Regional Reliability Organization(s), as required by the Regional Reliability Organization.

~~Each Region, in turn, shall annually provide a report of its reliability assessments and corrective actions to NERC.~~

Measures:

M3-1 The Planning Authority and Transmission Planner shall provide evidence to its Compliance Monitor that it provided assessments and corrective plans for the system responses per Reliability Standard 051.3-R3-1 and 051.3-R3-2.

M3-2 The Planning Authority and Transmission Planner shall provide evidence to its Compliance Monitor that it reported documentation of results of its reliability assessments and corrective plans per Reliability Standard 051.3 R3-3.

Regional Differences:
None identified.

Compliance Monitoring Process:

Timeframe:

Annually.

Compliance Monitoring Responsibility:

Compliance Monitor: Regional Reliability ~~Councils~~Organizations.

Levels of Non-compliance:
(If non-compliant at more than one Level, the highest Level applies.)

Level 1: Not applicable.

Level 2: A valid assessment and corrective plan for the longer-term planning horizon is not available.

Level 3: Not applicable.

Level 4: A valid assessment and corrective plan for the near-term planning horizon is not available.

Standard 051.4 System Performance Following Extreme Events Resulting in the Loss of Two or More Bulk System Elements (Category D)

Requirements:

R4-1. The Planning Authority and Transmission Planner shall each demonstrate through a valid assessment that its portion of the interconnected transmission system is evaluated for the risks and consequences of a number of each of the extreme contingencies that are listed under Category D of Table I. The controlled interruption of customer demand, the planned removal of generators, or the curtailment of firm (non-recallable reserved) power transfers maybe necessary to meet this standard.

~~R4-1. Assessment Requirements – Planning Authorities and Transmission Planners shall assess the performance of their systems in meeting the requirements of this Reliability Standard.~~

~~To be valid and compliant, assessments shall:~~

~~The Planning Authority and Transmission Planner shall each demonstrate through a valid assessment that its portion of the interconnected transmission systems is evaluated for the risks and consequences of a number of each of the extreme contingencies that are listed under Category D of Table I.~~

The Planning Authority's and Transmission Planner's valid assessment shall:

a) Be made annually,

b) Be conducted for near-term (years one through five),

c) Be supported by a current or past study and/or system simulation testing that addresses all of the elements in the following list, as accepted by the ~~Region~~Regional Reliability Organization showing system performance following Category D contingencies that addresses the plan year being assessed,

- Be performed and evaluated only for those Category D contingencies that would produce the more severe system results or impacts.
  - The rationale for the contingencies selected for evaluation shall be available as supporting information,
  - An explanation of why the remaining simulations would produce less severe system results shall be available as supporting information.
- Cover critical system conditions and study years as deemed appropriate by the responsible entity.
- Be conducted annually unless changes to system conditions do not warrant such analyses.
- Have all projected firm transfers modeled.
- Include existing and planned facilities.
- Include reactive power resources to ensure that adequate reactive resources are available to meet system performance.
- Include the effects of existing and planned protection systems, including any backup or redundant systems.
- Include the effects of existing and planned control devices.

- Include the planned (including maintenance) outage of any bulk electric equipment (including protection systems or their components) at those demand levels for which planned (including maintenance) outages are performed.

  ~~Cover critical system conditions and study years as deemed appropriate by the responsible entity.~~

  ~~Be conducted annually unless changes to system conditions do not warrant such analyses.~~

  ~~Be conducted beyond the five-year horizon only as needed to address identified marginal conditions that may have longer lead-time solutions.~~

  ~~Have established normal (pre-contingency) operating procedures in place.~~

  ~~Have all projected firm transfers modeled.~~

  ~~Be performed for selected demand levels over the range of forecast system demands.~~

  ~~Demonstrate that system performance meets Table 1 for Category A (no contingencies).~~

  ~~Include existing and planned facilities.~~

  ~~Include reactive power resources to ensure that adequate reactive resources are available to meet system performance.~~

d) Consider all contingencies applicable to Category D.

~~System Simulation Study/Testing Methods - System simulation studies/testing shall (as agree to by the Region) :~~

~~a)Be performed and evaluated only for those Category d contingencies that would produce the more severe system results or impacts.~~

- ~~The rationale for the contingencies selected for evaluation shall be available as supporting information,~~
- ~~An explanation of why the remaining simulations would produce less severe system results shall be available as supporting information.~~

~~b)Cover critical system conditions and study years as deemed appropriate by the responsible entity.~~

~~c)Be conducted annually unless changes to system conditions do not warrant such analyses.~~

~~d)Have all projected firm transfers modeled.~~

~~e)Include existing and planned facilities.~~

~~f)Include reactive power resources to ensure that adequate reactive resources are available to meet system performance.~~

~~g)Include the effects of existing and planned protection systems, including any backup or redundant systems.~~

~~h)Include the effects of existing and planned control devices.~~

~~i)Include the planned (including maintenance) outage of any bulk electric equipment (including protection systems or their components) at those demand levels for which planned (including maintenance) outages are performed~~

R4-2. ~~Reporting Requirements –~~The Planning Authority and Transmission Planner shall each ~~The~~ document~~ation~~ the ~~of~~ results of ~~these~~ its reliability assessments and~~shall~~ shall annually ~~be~~ provide the results ~~d~~ to ~~the~~ its entities' respective NERC Regional Reliability Organization(s), as required by the Regional Reliability Organization.

Measures:

M4-1. The Planning Authority and Transmission Planner shall provide assessments to its Compliance Monitor for ~~the~~ its system responses per Reliability Standard 051.4-~~R3~~R4-1.

~~M3~~M4-2. The Planning Authority and Transmission Planner shall provide evidence to its Compliance Monitor that it reported documentation of results of its reliability assessments per Reliability Standard 051.4-R4-1.

Regional Differences:

None identified.

Compliance Monitoring Process:

Timeframe:

Annually.

Compliance Monitoring Responsibility:

Compliance Monitor: Regional Reliability Organization ~~Councils~~. Each Compliance Monitor~~Region~~ shall report compliance and violations to NERC via the NERC Compliance Reporting Process.

Levels of Non-compliance:

Level 1: A valid assessment, as defined above, for the near-term planning horizon is not available.

Level 2: Not applicable.

Level 3: Not applicable.

Level 4: Not applicable.

Table I. Transmission System Standards – Normal and Emergency Conditions*

Category	Contingencies		System Limits or Impacts				
	Initiating Event(s) and Contingency Element(s)	Elements Out of Service	Thermal Limits	Voltage Limits	System Stable	Loss of Demand or Curtailed Firm Transfers	Cascading Outages [c]
A - No Contingencies	All Facilities in Service	None	Applicable Rating [a] (A/R)	Applicable Rating [a] (A/R)	Yes	No	No
B - Event resulting in the loss of a single element.	Single Line Ground (SLG) or 3-Phase (3Ø) Fault, with Normal Clearing: 1. Generator 2. Transmission Circuit 3. Transformer Loss of an Element without a Fault.	Single Single Single Single	A/R A/R A/R A/R	A/R A/R A/R A/R	Yes Yes Yes Yes	No [b] No [b] No [b] No [b]	No No No No
	Single Pole Block, Normal Clearing [f]: 4. Single Pole (dc) Line	Single	A/R	A/R	Yes	No[b]	No
C - Event(s) resulting in the loss of two or more (multiple) elements.	SLG Fault, with Normal Clearing [f]: 1. Bus Section 2. Breaker (failure or internal fault)	Multiple Multiple	A/R A/R	A/R A/R	Yes Yes	Planned/Controlled[d] Planned/Controlled[d]	No No
	SLG or 3Ø Fault, with Normal Clearing [f], Manual System Adjustments, followed by another SLG or 3Ø Fault, with Normal Clearing [f]: 3. Category B (B1, B2, B3, or B4) contingency, manual system adjustments, followed by another Category B (B1, B2, B3, or B4) contingency	Multiple	A/R	A/R	Yes	Planned/Controlled[d]	No
	Bipolar Block, with Normal Clearing [f]: 4. Bipolar (dc) Line Fault (non 3Ø), with Normal Clearing [f]: 5. Any two circuits of a multiple circuit towerline[g]	Multiple Multiple	A/R A/R	A/R A/R	Yes Yes	Planned/Controlled[d] Planned/Controlled[d]	No No
	SLG Fault, with Delayed Clearing [f] (stuck breaker or protection system failure): 6. Generator 7. Transmission Circuit 8. Transformer 9. Bus Section	Multiple Multiple	A/R A/R	A/R A/R	Yes Yes	Planned/Controlled[d] Planned/Controlled[d]	No No

Table I. Transmission System Standards – Normal and Emergency Conditions*

~~* Any Region may implement standards that are more stringent, but not inconsistent with NERC's industry-wide standards~~

Table I. Transmission System Standards – Normal and Emergency Conditions*

D [e] - Extreme event resulting in two or more (multiple) elements removed or cascading out of service	3Ø Fault, with Delayed Clearing [f] (stuck breaker or protection system failure): 1. Generator 2. Transmission Circuit 3. Transformer 4. Bus Section - 3Ø Fault, with Normal Clearing [f]: 5. Breaker (failure or internal fault) - Other: 6. Loss of towerline with three or more circuits 7. All transmission lines on a common right-of way 8. Loss of a substation (one voltage level plus transformers) 9. Loss of a switching station (one voltage level plus transformers) 10. Loss of all generating units at a station 11. Loss of a large load or major load center 12. Failure of a fully redundant special protection system (or remedial action scheme) to operate when required 13. Operation, partial operation, or misoperation of a fully redundant special protection system (or remedial action scheme) in response to an event or abnormal system condition for which it was not intended to operate 14. Impact of severe power swings or oscillations from disturbances in another Regional Reliability Organization~~Council~~.	Evaluate for risks and consequences. ▪ May involve substantial loss of customer demand and generation in a widespread area or areas. ▪ Portions or all of the interconnected systems may or may not achieve a new, stable operating point. ▪ Evaluation of these events may require joint studies with neighboring systems.

a) Applicable rating (A/R) refers to the applicable normal and emergency facility thermal rating or system voltage limit as determined and consistently applied by the system or facility owner. Applicable ratings may include emergency ratings applicable for short durations as required to permit operating steps necessary to maintain system control. All ratings must be established consistent with applicable NERC Planning Standards addressing facility ratings.

b) Planned or controlled interruption of electric supply to radial customers or some local network customers, connected to or supplied by the faulted element or by the affected area, may occur in certain areas without impacting the overall security of the interconnected transmission systems. To prepare for the next contingency, system adjustments are permitted, including curtailments of contracted firm (non-recallable reserved) electric power transfers.

c) Cascading is the uncontrolled successive loss of system elements triggered by an incident at any location. Cascading results in widespread service interruption which cannot be restrained from sequentially spreading beyond an area predetermined by appropriate studies.

d) Depending on system design and expected system impacts, the controlled interruption of electric supply to customers (load shedding), the planned removal from service of certain generators, and/or the curtailment of contracted firm (non-recallable reserved) electric power transfers may be necessary to maintain the overall security of the interconnected transmission systems.

e) A number of extreme contingencies that are listed under Category D and judged to be critical by the transmission planning entity(ies) will be selected for evaluation. It is not expected that all possible facility outages under each listed contingency of Category D will be evaluated.

f) Normal clearing is when the protection system operates as designed and the fault is cleared in the time normally expected with proper functioning of the installed protection systems. Delayed clearing of a fault is due to failure of any protection system component such as a relay, circuit breaker, or current transformer (CT), and not because of an intentional design delay.

g) System assessments may exclude these events where multiple circuit towers are used over short distances (e.g., station entrance, river crossings) in accordance with Regional Reliability Organization exemption criteria.

Standard: 052

Title: System Adequacy and Security Reliability Assessment

052.1 Regional and Interregional Self-Assessment Reliability Reports.

052.2 Data from the Regional Reliability Organizations Needed to Assess Reliability.

Purpose: To ensure that each Regional Reliability ~~Council~~ Organization complies with ~~the NERC Planning Standards and its own Regional~~ planning criteria, ~~NERC needs to review and~~for assessing the overall reliability (adequacy and security) of the interconnected bulk electric systems, both existing and as planned.

Effective Date: February 8, 2005

Standard 052.1 Regional and Interregional Self-Assessment Reliability Reports.

Requirements:

R1-1. Each Regional Reliability ~~Council~~ Organization shall annually conduct reliability assessments of its respective existing and planned Regional bulk electric system (generation and transmission facilities) for:

a) Current year:
   - Winter
   - Summer
   - Other system conditions as deemed appropriate by the region

b) Near-term planning horizons (years one through five) detailed assessments shall be conducted.

c) Longer-term planning horizons (years six through ten). Assessment shall focus on the analysis of trends in resources and transmission adequacy, other industry trends and developments, and reliability concerns.

d) Interregional reliability assessments to ensure that the Regional bulk electric systems are planned and developed on a coordinated or joint basis.

The Regional Reliability ~~Council's~~ Organization's Regional and interregional reliability assessments shall demonstrate that the performance of these systems is in compliance with NERC Reliability Standard 051 and respective Regional transmission and generation criteria. These assessments shall also identify key reliability issues and the risks and uncertainties affecting adequacy and security.

R1-2. The Regional Reliability Organization shall provide its Regional and interregional seasonal, near-term, and longer-term reliability assessments shall ~~be provided~~ to NERC on an annual basis.

R1-3. ~~In addition,~~The Regional Reliability ~~Councils~~ Organization shall perform special reliability assessments as requested by ~~the~~ NERC ~~Planning Committee~~ or the NERC Board of Trustees under their specific directions and criteria. Such assessments may include, but are not limited to:

- Security assessments.
- Operational assessments.
- Evaluations of emergency response preparedness.
- Adequacy of fuel supply and hydro conditions.
- Reliability impacts of new or proposed environmental rules and regulations.
- Reliability impacts of new or proposed legislation that affects, has affected, or has the potential to affect the adequacy of the interconnected bulk electric systems in North America.

Measures:

M1-1 The ~~Regional Reliability Council~~Regional Reliability Organization shall provide evidence to its Compliance Monitor that annual regional and interregional assessments of reliability for seasonal, near-term, and longer-term planning horizons, and special assessments, were developed and provided as requested by other Regional Reliability Organizations or NERC.

Regional Differences:

None identified.

Compliance Monitoring Process:

Timeframe:

Annually or as requested by ~~NERC~~NERC.

Compliance Monitoring Responsibility:

Compliance Monitor: ~~NERC~~Unaffiliated Third Party.

Levels of Non-compliance:

Level 1: Regional, interregional, and/or special reliability assessments were provided as requested, but were incomplete.

Level 2: Not applicable.

Level 3: Not applicable.

Level 4: Regional, interregional, and/or special reliability assessments were not provided.

Standard 052.2 Data From the Regional Reliability Organizations Needed to Assess Reliability.

Requirements:

R2-1. Each ~~Regional Reliability Council~~Regional Reliability Organization shall provide, as requested (seasonally, annually, or as otherwise specified) by NERC, system data, including past, existing, and future facility and bulk electric system data, reports, and system performance information, necessary to assess reliability and compliance with the NERC Reliability Standards and the respective ~~Regional Reliability Council~~Regional planning criteria.

The facility and bulk electric system data, reports, and system performance information shall include, but not be limited to, one or more of the following types of information as outlined below:

a) Electric Demand and Net Energy for Load (actual and projected demands and net energy for load, forecast methodologies, forecast assumptions and uncertainties, and treatment of demand-side management.)

b) Resource Adequacy and Supporting Information (Regional assessment reports, existing and planned resource data, resource availability and characteristics, and fuel types and requirements.)

c) Demand-Side Resources and their characteristics (program ratings, effects on annual system loads and load shapes, contractual arrangements, and program durations.)

d) Supply-Side Resources and their characteristics (existing and planned generator units, ratings, performance characteristics, fuel types and availability, and real and reactive capabilities.)

e) Transmission System and supporting information (thermal, voltage, and stability limits, contingency analyses, system restoration, system modeling and data requirements, and protection systems.)

f) System Operations and supporting information (extreme weather impacts, interchange transactions, and congestion impacts on the reliability of the interconnected bulk electric systems.)

g) Environmental and Regulatory Issues and Impacts (air and water quality issues, and impacts of existing, new, and proposed regulations and legislation.)

Measures:

M2-1. The ~~Regional Reliability Council~~Regional Reliability Organization~~s~~ shall provide evidence to its Compliance Monitor that it provided Regional system data, reports, and system performance information per Reliability Standard 052.2-R2-1.

Regional Differences:

None identified.

Compliance Monitoring Process:

Timeframe:

Seasonally (winter and summer), annually, or as otherwise requested.

Compliance Monitoring Responsibility:

Compliance Monitor: Unaffiliated Third Party.~~NERC~~

Levels of Non-compliance:

Level 1: Requested Regional system data, reports, or system performance information were incomplete.

Level 2: Not applicable.

Level 3: Not applicable.

Level 4: Requested Regional system data, reports, or system performance information were not provided.

Standard: **053**

Title: Facility Connection Requirements

053.1 Facility Connection Requirements.

053.2 Coordination of Plans for New Generation, Transmission, and End-User Facilities.

Purpose: To avoid adverse impacts on reliability, ~~generation~~ Generator Owners and Ttransmission Oowners and electricity end-users must meet facility connection and performance requirements ~~as specified by those responsible for the reliability of the interconnected transmission systems~~.

Effective Date: February 8, 2005

Standard 053.1 Facility Connection Requirements

Requirements:

R1-1. The Transmission Owner shall document, maintain, and publish facility connection requirements for

- Generation facilities,
- Transmission facilities, and
- End-user facilities

to ensure compliance with NERC Reliability Standards and applicable Regional Reliability Organization, subregional, power pool, and individual T~~t~~ransmission O~~o~~wner planning criteria and facility connection requirements.

R1-2. The Transmission Owner's facility connection requirements shall address, but are not limited to, the following items:

a) Procedures for coordinated joint studies of new facilities and their impacts on the interconnected transmission systems.

b) Procedures for notification of new or modified facilities to others (those responsible for the reliability of the interconnected transmission systems) as soon as feasible.

c) Voltage level and MW and ~~Mvar~~ MVAR capacity or demand at point of connection.

d) Breaker duty and surge protection.

e) System protection and coordination.

f) Metering and telecommunications.

g) Grounding and safety issues.

h) Insulation and insulation coordination.

i) Voltage, reactive power, and power factor control.

j) Power quality impacts.

k) Equipment ratings.

l) Synchronizing of facilities.

m) Maintenance coordination.

n) Operational issues (abnormal frequency and voltages).

o) Inspection requirements for existing or new facilities.

p) Communications and procedures during normal and emergency operating conditions.

R1-3. The Transmission Owner shall maintain and update its facility connection requirements as required. The Transmission Owner shall make documentation of these requirements available to the users of the transmission systems, the Regional Reliability ~~Council~~Organizations, and NERC on request (five business days).

Measures:

M1-1. The Transmission Owner shall make available (to its Compliance Monitor) for inspection evidence that it met all the requirements stated in Reliability Standard 053.1-R1-1 for generation facilities, transmission facilities, and end-user facilities.

M1-2. The Transmission Owner shall make available (to its Compliance Monitor) for inspection evidence that they it met all 16 requirements stated in Reliability Standard 053.1-R1-2 for generation facilities, transmission facilities, and end-user facilities.

M1-3. The Transmission Owner shall make available (to its Compliance Monitor) for inspection evidence that it met all the requirements stated in Reliability Standard 053.1-R1-3.

Regional Differences:
None identified.

Compliance Monitoring Process:

Timeframe:
On request (five business days).

Compliance Monitoring Responsibility:
Compliance Monitor: Regional Reliability ~~Councils~~Organization.

Levels of Non-compliance:

Level 1: Facility connection requirements were provided for generation, transmission, and end-user facilities, per Reliability Standard 053.1-R1-1, but the document(s) do not address all of the requirements of Reliability Standard 053.1-R1-2.

Level 2: Facility connection requirements were not provided for all three categories (generation, transmission, or end-user) of facilities, per Reliability Standard 053.1-R1-1, but the document(s) provided address all of the requirements of Reliability Standard 053.1-R1-2.

Level 3: Facility connection requirements were not provided for all three categories (generation, transmission, or end-user) of facilities, per Reliability Standard 053.1-R1-1, and the document(s) provided do not address all of the requirements of Reliability Standard 053.1-R1-2.

Level 4: No document on facility connection requirements was provided per Reliability Standard 053.1-R1-3.

Standard 053.2 Coordination of Plans For New Generation, Transmission, and End-User Facilities

Requirements:

R2-1. The Generator Owner, Transmission Owner, Distribution Provider, or Load Serving Entity seeking to integrate generation facilities, transmission facilities, and electricity end-user facilities shall coordinate and cooperate on their respective assessments to evaluate the reliability impact of the new facilities and their connections on the interconnected transmission systems. The assessment shall include:

a) Evaluation of the reliability impact of the new facilities and their connections on the interconnected transmission systems.

b) Ensurance of compliance with NERC ~~Planning~~ Reliability Standards and applicable Regional, subregional, power pool, and individual system planning criteria and facility connection requirements.

c) Evidence that the parties involved in the assessment have cooperated on the assessment of the reliability impacts of new facilities on the interconnected transmission systems. While these studies may be performed independently, the results shall be jointly evaluated and coordinated by the entities involved.

d) Evidence that the assessment included steady-state, short-circuit, and dynamics studies as necessary to evaluate system performance in accordance with ~~under~~ Reliability Standard 051.

e) Documentation that the assessment included study assumptions, system performance, alternatives considered, and jointly coordinated recommendations.

R2-2. The Planning Authority, Transmission Planner, Generator Owner, Transmission Owner, Load Serving Entity, and Distribution Provider shall retain its documentation (of its evaluation of the reliability impact of the new facilities and their connections on the interconnected transmission systems) for three years and shall provide the documentation to the Regional Reliability Council Organizations and NERC on request (within 30 calendar days).

Measures:

M2-1. The Planning Authority, Transmission Planner, Generator Owner, Transmission Owner, Load Serving Entity, and Distribution Provider's documentation of its assessment of the reliability impacts of new facilities shall address all items in Reliability Standard 053.2-R2-1.

M2-2. The Planning Authority, Transmission Planner, Generator Owner, Transmission Owner, Load Serving Entity, and Distribution Provider shall have evidence its assessment of the reliability impacts of new facilities and their connections on the interconnected transmission systems is retained and provided to other entities in accordance with Reliability Standard 053.2- R2-2.

Regional Differences:

None identified.

Compliance Monitoring Process:

Timeframe:

On request (within 30 calendar days).

Compliance Monitoring Responsibility:

Compliance Monitor: Regional Reliability ~~Councils~~Organization

Levels of Non-compliance:

Level 1: Assessments of the impacts of new facilities were provided, but were incomplete in one or more requirements of Reliability Standard 053.2-R2-1.

Level 2: Not applicable.

Level 3: Not applicable.

Level 4: Assessments of the impacts of new facilities were not provided.

Standard: **054**

Title: Documentation and Review of Available Transfer Capability/Total Transfer Capability Methodologies and Calculations

054.1 Documentation of Total Transfer Capability and Available Transfer Capability Calculation Methodologies

054.2 Review of Transmission Service Provider Total Transfer Capability and Available Transfer Capability Calculations and Results

054.3 Regional Procedure for Input on Total Transfer Capability and Available Transfer Capability Methodologies and Values.

Purpose: To promote the consistent and uniform application of transfer capability calculations among transmission system users, the Regional Reliability ~~Council~~Organizations shall develop methodologies for calculating Total Transfer Capability and Available Transfer Capability that comply with NERC definitions for Total Transfer Capability and Available Transfer Capability, the NERC Reliability Standards, and applicable Regional ~~Reliability Council~~ criteria. Methodologies and resulting values shall be made available to all participants of the electricity market. (To ensure that methodologies and resulting values are available to all participants in the electricity market.)

Effective Date: February 8, 2005

Standard 054.1 Documentation of Total Transfer Capability and Available Transfer Capability Calculation Methodologies

Requirements:

R1-1 Each Regional Reliability ~~Council~~Organization, in conjunction with its members, shall develop and document a Regional Total Transfer Capability and Available Transfer Capability methodology. (Certain systems that are not required to post Available Transfer Capability values are exempt from this Standard.) The Regional Reliability ~~Council~~Organization's Total Transfer Capability and Available Transfer Capability methodology shall include each of the following nine items, and shall explain its use in determining Total Transfer Capability and Available Transfer Capability value:

a) ~~Include a~~A narrative explaining how Total Transfer Capability and Available Transfer Capability values are determined.

b) An ~~A~~accounting for how the reservations and schedules for firm (non-recallable) and non-firm (recallable) transfers, both within and outside the T~~t~~ransmission Service ~~p~~Provider's system, are included.

c) An ~~A~~accounting for the ultimate points of power injection (sources) and power extraction (sinks) in Total Transfer Capability and Available Transfer Capability calculations.

d) A ~~D~~description ~~be~~ of ~~how~~ incomplete or so-called partial path transmission reservations are addressed. (Incomplete or partial path transmission reservations are those for which all transmission reservations necessary to complete the transmission path from ultimate source to ultimate sink are not identifiable due to differing reservation priorities, durations, or that the reservations have not all been made.)

e) A re~~Re~~quirement that Total Transfer Capability and Available Transfer Capability values and posting within the current week be determined at least once per day, that daily Total Transfer Capability and Available Transfer Capability values and postings for day 8 through the first month be determined at least once per week, and that monthly Total Transfer Capability and Available Transfer Capability values and postings for months 2 through 13 be determined at least once per month.

f) Indication that~~e the~~ treatment and level of customer demands, including interruptible demands.

g) Specification~~y~~ of how system conditions, limiting facilities, contingencies, transmission reservations, energy schedules, and other data needed by transmission providers for the calculation of Total Transfer Capability and Available Transfer Capability values are shared and used within the Region Reliability ~~Council~~Organization and with neighboring interconnected electric systems, including adjacent systems, subregions, and Regional Reliability ~~Council~~Organizations. In addition, specify how this information is to be used to determine Total Transfer Capability and Available Transfer Capability values. If some data is not used, provide an explanation.

h) A ~~D~~description of~~be~~ how the assumptions for and the calculations of Total Transfer Capability and Available Transfer Capability values change over different time (such as hourly, daily, and monthly) horizons.

i) A ~~D~~description of~~be~~ the Regional Reliability ~~Council~~Organization's practice on the netting of transmission reservations for purposes of Total Transfer Capability and Available Transfer Capability determination.

R1-2. The Regional Reliability ~~Council~~Organization shall make the most recent version of the documentation of its Total Transfer Capability and Available Transfer Capability methodology available on a web site accessible by NERC, the Regional Reliability ~~Council~~Organizations, and the transmission users in the electricity market.

Measures:
M1-1. The Regional Reliability ~~Council~~Organization shall provide evidence that its most recent Total Transfer Capability and Available Transfer Capability methodology documentation meets Reliability Standard 054.1-R1-1.

M1-2 The Regional Reliability ~~Council~~Organization shall provide evidence that its Total Transfer Capability and Available Transfer Capability methodology is available on a web site accessible by NERC, the Regional Reliability ~~Council~~Organizations, and the transmission users in the electricity market.

Regional Differences:
None identified.

Compliance Monitoring Process:

Timeframe:
Available on a website accessible by NERC, the Regional Reliability Organizations, and transmission users.

Compliance Monitoring Responsibility:
Compliance Monitor: Unaffiliated Third Party.~~NERC~~

Levels of Non-compliance:

Level 1: The Regional Reliability ~~Council~~Organization's documented Total Transfer Capability and Available Transfer Capability methodology does not address one or two of the nine items required for documentation under Reliability Standard 054.1-R1-1.

Level 2: Not applicable.

Level 3: Not applicable.

Level 4: The Regional Reliability ~~Council~~Organization's documented Total Transfer Capability and Available Transfer Capability methodology does not address three or more of the nine items required for documentation under Reliability Standard 054.1-R1-1 or the Regional Reliability ~~Council~~Organization does not have a documented Total Transfer Capability and Available Transfer Capability methodology available on a web site in accordance with Reliability Standard 054.1-R1-2.

Standard 054.2 Review of Transmission Service Provider Total Transfer Capability and Available Transfer Capability Calculations and Results

Requirements:
R2-1. Each Regional Reliability ~~Council~~Organization, in conjunction with its members, shall develop and implement a procedure to periodically review (at least annually) and ensure that the Total Transfer Capability and Available Transfer Capability calculations and resulting values of member Transmission Service Providers comply with the Regional Total Transfer Capability and Available Transfer Capability methodology and applicable Regional criteria.

R2-2. Each Regional Reliability ~~Council~~Organization shall document the results of its periodic reviews of Total Transfer Capability and Available Transfer Capability.

R2-3. The Regional Reliability ~~Council~~Organization shall provide the results of its most current reviews of Total Transfer Capability and Available Transfer Capability to NERC on request (within 30 calendar days).

Measures:
M2-1. The Regional Reliability ~~Council~~Organization's written procedure for the performance of periodic reviews of Regional Total Transfer Capability and Available Transfer Capability calculations shall comply with Reliability Standard 054.2-R2-1.
.
M2-2 The Regional Reliability ~~Council~~Organization shall have evidence it provided documentation of the results of its periodic reviews of Total Transfer Capability and Available Transfer Capability to NERC within 30 calendar days.

Regional Differences:
None identified.

Compliance Monitoring Process:

Timeframe:

Procedure on Request (within 30 calendar days).
Documentation provided to NERC on request (within 30 calendar days).

Compliance Monitoring Responsibility:

Compliance Monitor: Unaffiliated Third Party.~~NERC~~

Levels of Non-compliance:

Level 1: Not applicable.

Level 2: The Regional Reliability ~~Council~~Organization did not perform a review of all Transmission Service Providers within its Region for consistency with its Total Transfer Capability and Available Transfer Capability methodology on an annual basis.

Level 3: Not applicable.

Level 4: The Regional Reliability ~~Council~~Organization does not have a procedure for performing a Total Transfer Capability and Available Transfer Capability methodology consistency review of all Transmission Service Providers within its Regional Reliability ~~Council~~Organization, or has not performed any such reviews on an annual basis.

Standard 054.3 Regional Procedure for Input on Total Transfer Capability and Available Transfer Capability Methodologies and Values

Requirements:
R3-1. Each Regional Reliability ~~Council~~Organization, in conjunction with its members, shall develop and document a procedure on how transmission users can input their concerns or questions regarding the Total Transfer Capability and Available Transfer Capability methodology and values of the Transmission Service Provider(s), and how these concerns or questions will be addressed. The Regional Reliability ~~Council~~Organization's procedure shall specify the following:

a) The name, telephone number and email address of a contact person to whom concerns are to be addressed.

b) The amount of time it will take for a response.

c) The manner in which the response will be communicated (e.g., email, letter, telephone, etc.)

d) What recourse a customer has if the response is deemed unsatisfactory.

R3-2. The Regional Reliability ~~Council~~Organization shall post on a web site that is accessible by the Regional Reliability Organizations, NERC, and the transmission users in the electricity market, its procedure which addresses receiving and addressing concerns about the Total Transfer Capability and Available Transfer Capability methodology and Total Transfer Capability and Available Transfer Capability values of member Transmission Service Providers.

Measures:
M3-1 The Regional Reliability ~~Council~~Organization shall have evidence that its procedure for receiving input for Available Transfer Capability and Total Transfer Capability methodologies and values meets Reliability Standard 054.3-R3-1.

M3-2 The Regional Reliability ~~Council~~Organization shall have evidence that its procedure for receiving input for Available Transfer Capability and Total Transfer Capability methodologies and values is available on a web site accessible by the Regional Reliability Organizations, NERC, and transmission users.

Regional Differences:
None identified.

Compliance Monitoring Process:

Timeframe:

Procedure available on a web site accessible by the Regional Reliability Organizations, NERC, and transmission users.

Compliance Monitoring Responsibility:

Compliance Monitor: Unaffiliated Third Party.~~NERC~~

Levels of Non-compliance:

Level 1: Not applicable.

Level 2: The Regional Reliability ~~Council~~Organization does not have a procedure available on an accessible web site, or the procedure does not incorporate all required elements of Reliability Standard 054.3-R3-1.

Level 3: Not applicable.

Level 4: The Regional Reliability ~~Council~~Organization has no procedure available.

Standard: **055**

Title: Documentation and Review of Capacity Benefit Margin Methodologies and Calculations

055.1 Documentation of Regional Reliability ~~Council~~Organization Capacity Benefit Margin Methodologies.

055.2 Procedure for Verifying Capacity Benefit Margin Values.

055.3 Procedures for the Use of Capacity Benefit Margin Values.

055.4 Documentation of the Use of Capacity Benefit Margin.

Purpose: To promote the consistent and uniform application of transfer capability margin calculations among transmission system users, by developing methodologies for calculating Capacity Benefit Margin (CBM). This methodology shall comply with NERC definitions for Capacity Benefit Margin, the NERC Reliability Standards, and applicable Regional criteria. Regional Capacity Benefit Margin methodologies and the resulting Capacity Benefit Margin values shall be available to all participants of the electricity market, in order to facilitate intra- and inter-Regional transactions.

Effective Date: February 8, 2005

Standard 055.1 Documentation of Regional Reliability ~~Council~~Organization Capacity Benefit Margin Methodologies

Requirements:

R1-1. Each Regional Reliability ~~Council~~Organization, in conjunction with its members, shall develop and document a Regional Capacity Benefit Margin methodology. The Regional Reliability ~~Council~~Organization's Capacity Benefit Margin methodology shall include each of the following ten items, and shall explain its use in determining Capacity Benefit Margin value. Other items that are Regional Reliability ~~Council~~Organization specific or that are considered in each respective Regional Reliability ~~Council~~Organization methodology shall also be explained along with their use in determining Capacity Benefit Margin values.

a) Specify that the method used by each Regional ~~Reliability Council~~Organization member to determine its generation reliability requirements as the basis for Capacity Benefit Margin shall be consistent with its generation planning criteria.

b) Specify the frequency of calculation of the generation reliability requirement and associated Capacity Benefit Margin values.

c) Require that generation unit outages considered in a Transmission Service Provider's Capacity Benefit Margin calculation be restricted to those units within the Transmission Service Provider's system.

d) Require that Capacity Benefit Margin be preserved only on the Transmission Service Provider's system where the Load-Serving Entity's load is located (i.e., Capacity Benefit Margin is an import quantity only).

e) Describe the inclusion or exclusion rationale for generation resources of each Load Serving Entity including those generation resources not directly connected to the transmission provider's system but serving Load Serving Entity loads connected to the Transmission Service Provider's system.

f) Describe the inclusion or exclusion rationale for generation connected to the transmission provider's system but not obligated to serve native/network load connected to the Transmission Service Provider's system.

g) Describe the formal process and rationale for the Regional Reliability ~~Council~~Organization to grant any variances to individual transmission providers from the Regional Reliability ~~Council~~Organization's Capacity Benefit Margin methodology.

h) Specify the relationship of Capacity Benefit Margin to the generation reliability requirement and the allocation of the Capacity Benefit Margin values to the appropriate transmission facilities. The sum of the Capacity Benefit Margin values allocated to all interfaces shall not exceed that portion of the generation reliability requirement that is to be provided by outside resources.

i) Describe the inclusion or exclusion rationale for the loads of each Load Serving Entity, including interruptible demands and buy-through contracts (type of service contract that offers the customer the option to be interrupted or to accept a higher rate for service under certain conditions).

j) Describe the inclusion or exclusion rationale for generation reserve sharing arrangements in the Capacity Benefit Margin values.

R1-2. The Regional Reliability ~~Council~~Organization shall make the most recent version of the documentation of its Capacity Benefit Margin methodology available on a web site accessible by NERC, the Regional Reliability ~~Council~~Organizations, and the transmission users in the electricity market.

Measures:
M1-1. The Regional Reliability ~~Council~~Organization's most recent Capacity Benefit Margin methodology documentation shall meet Reliability Standard 055.1-R1-1.

M1-2 The Regional Reliability ~~Council~~Organization's Capacity Benefit Margin methodology shall be available on a web site accessible by NERC, the Regional Reliability ~~Council~~Organizations, and the transmission users in the electricity market.

Regional Differences:
None identified.

Compliance Monitoring Process:

Timeframe:

Available on a website accessible by NERC, the Regional Reliability ~~Council~~Organizations, and transmission users.

Compliance Monitoring Responsibility:

Compliance Monitor: ~~NERC~~Unaffiliated Third Party.

Levels of Non-compliance:

Level 1: The Regional Reliability ~~Council~~Organization's documented Capacity Benefit Margin methodology does not address one or two of the ten items required for documentation under Reliability Standard 055.1-R1-1.

Level 2: Not applicable.

Level 3: Not applicable.

Level 4: The Regional Reliability ~~Council~~Organization's documented Capacity Benefit Margin methodology does not address three or more of the ten items required for documentation under Reliability Standard 055.1-R1-1, or the Regional Reliability ~~Council~~Organization does not have a documented Capacity Benefit Margin methodology available on a web site in accordance with Reliability Standard 055.1-R1-2.

Standard 055.2 Procedure for Verifying Capacity Benefit Margin Values

Requirements:

R2-1. Each Regional Reliability ~~Council~~Organization, in conjunction with its members, shall develop and implement a procedure to review (at least annually) the Capacity Benefit Margin calculations and the resulting values of member Transmission Service Providers to ensure that they comply with the Regional Reliability ~~Council~~Organization's Capacity Benefit Margin methodology. The procedure shall include the following four requirements:

a) Indicate the frequency under which the verification review shall be implemented.

b) Require review of the process by which Capacity Benefit Margin values are updated, and their frequency of update, to ensure that the most current Capacity Benefit Margin values are available to transmission users.

c) Require review of the consistency of the Transmission Service Provider's Capacity Benefit Margin components with its published planning criteria. A Capacity Benefit Margin value is considered consistent with published planning criteria if the ~~same~~ components that comprise Capacity Benefit Margin are ~~also~~ addressed in the planning criteria. The methodology used to determine and apply Capacity Benefit Margin does not have to involve the same mechanics as the planning process, but the same uncertainties must be considered and any simplifying assumptions explained. It is recognized that Available Transfer Capability determinations are often time constrained and thus will not permit the use of the same mechanics employed in the more rigorous planning process.

d) Require Capacity Benefit Margin values to be periodically updated (at least annually) and available to the Regional Reliability Organizations, NERC, and transmission users in the electricity markets.

R2-2. Each Regional Reliability ~~Council~~Organization shall document the results of its periodic Capacity Benefit Margin reviews and shall make the results available to NERC on request (within 30 calendar days).

R2-3 The Regional Reliability ~~Council~~Organization shall provide documentation of the results of the most current implementation of its Capacity Benefit Margin procedure to NERC on request (within 30 calendar days).

Measures:

M2-1. The Regional Reliability ~~Council~~Organization's written procedure for the performance of periodic reviews of Regional Capacity Benefit Margin calculations shall comply with Reliability Standard 055.2-R2-1.

M2-2 The Regional Reliability ~~Council~~Organization shall have documentation of the results of its periodic reviews of Capacity Benefit Margin calculations, in accordance with Reliability Standard 055.2-R2-~~1~~2 and R2-~~2~~3.

M2-3 The Regional Reliability ~~Council~~Organization shall have evidence it provided documentation of ~~the~~ its Capacity Benefit Margin procedure and the results of the most current implementation of the procedure to NERC as requested (within 30 calendar days).

Regional Differences:

None identified.

Compliance Monitoring Process:

Timeframe:

The documentation of the Regional Reliability ~~Council~~Organization's Capacity Benefit Margin procedure shall be available to NERC on request (within 30 calendar days). Documentation of the results of the most current implementation of the procedure shall be available to NERC on request (within 30 calendar days).

Compliance Monitoring Responsibility:

Compliance Monitor: ~~NERC~~Unaffiliated Third Party.

Levels of Non-compliance:

Level 1: Not applicable.

Level 2: The Regional Reliability ~~Council~~Organization did not perform a review of all Transmission Service Providers within its Regional Reliability ~~Council~~Organization for consistency with the Regional Reliability ~~Council~~Organization's Capacity Benefit Margin methodology on an annual basis.

Level 3: Not applicable.

Level 4: The Regional Reliability ~~Council~~Organization does not have a procedure for performing a Capacity Benefit Margin methodology consistency review of all Transmission Service Providers within its Regional Reliability ~~Council~~Organization, or has not performed any such reviews on an annual basis.

Standard 055.3 Procedures for the Use of Capacity Benefit Margin Values

Requirements:
R3-1. Each Transmission Service Provider shall document a procedure on the use of Capacity Benefit Margin (scheduling of energy against a Capacity Benefit Margin preservation), which shall include the following three components:

a) Require that Capacity Benefit Margin is to be used only after the following steps have been taken (as time permits): all non-firm sales have been terminated, direct-control load management has been implemented, and customer interruptible demands have been interrupted. Capacity Benefit Margin may be used to reestablish operating reserves.

b) Require that Capacity Benefit Margin shall only be used if the Load ~~Service~~ Serving Entity calling for its use is experiencing a generation deficiency and its Transmission Service Provider is also experiencing transmission constraints relative to imports of energy on its transmission system.

c) Describe the conditions under which Capacity Benefit Margin may be available as non-firm transmission service.

R3-2. Each Transmission Service Provider shall make their Capacity Benefit Margin use procedure available on a web site accessible by the Regional Reliability ~~Council~~Organizations, NERC, and the transmission users in the electricity market.

Measures:
M3-1 The Transmission Service Provider's procedure for the use of Capacity Benefit Margin (scheduling of energy against a Capacity Benefit Margin preservation) shall meet Reliability Standard 055.3-R3-1.

M3-2 The Transmission Service Provider's procedure for the use of Capacity Benefit Margin (scheduling of energy against a Capacity Benefit Margin preservation) shall be available on a web site accessible by the Regional Reliability Organizations, NERC, and the transmission users in the electricity market.

Regional Differences:
None identified.

Compliance Monitoring Process:

Timeframe:
Each Regional Reliability Organization shall report compliance and violations to NERC via the NERC Compliance Reporting process.

Compliance Monitoring Responsibility:
Compliance Monitor: Regional Reliability ~~Council~~Organizations.

Levels of Non-compliance:

Level 1: The Transmission Service Provider's Capacity Benefit Margin use procedure is available and addresses only two of the three requirements for such documentation as listed above under Reliability Standard 055.3-R3-1.

Level 2: Not applicable.

Level 3: Not applicable.

Level 4: The Transmission Service Provider's Capacity Benefit Margin use procedure addresses one or none of the three requirements as listed above under Reliability Standard 055.3-R3-1, or is not available.

Standard 055.4 Documentation of the Use of Capacity Benefit Margin

Requirements:

R4-1. Each Transmission Service Provider that uses Capacity Benefit Margin shall report (to the Regional Reliability Organization, NERC and the transmission users) the use of Capacity Benefit Margin by the Load Serving Entities' loads on its system, except for Capacity Benefit Margin sales as non-firm transmission service. (The use of Capacity Benefit Margin shall be consistent with the Transmission Service Provider's Capacity Benefit Margin use procedures.)

R4-2. The Transmission Service Provider shall post the following three items within ~~15~~ 15 calendar days after the use of Capacity Benefit Margin for emergency purposes, on a web site accessible by the Regional Reliability Organizations, NERC, and the transmission users in the electricity market.

a) Circumstances.

b) Duration.

c) Amount of Capacity Benefit Margin used.

Measures:

M4-1. The Transmission Service Provider shall have evidence it posted an after-the-fact disclosure that energy was scheduled against a Capacity Benefit Margin preservation (for purposes other than non-firm transmission sales) on a website accessible by the Regional Reliability Organizations, NERC, and the transmission users in the electricity market.

M4-2 If the Transmission Service Provider had energy scheduled against a Capacity Benefit Margin preservation (for purposes other than non-firm transmission sales) the Transmission Service Provider shall have evidence it posted an after-the-fact disclosure that includes the elements required by Reliability Standard 055.4-R4-2.

Regional Differences:

None identified.

Compliance Monitoring Process:

Timeframe:

Within 15 calendar days of the use of Capacity Benefit Margin (excluding non-firm sales.)

Compliance Monitoring Responsibility:

Compliance Monitor: Regional Reliability ~~Council~~Organizations.

Levels of Non-compliance:

Level 1: Not applicable.

Level 2: Information pertaining to the use of Capacity Benefit Margin during an energy emergency was provided, but was not made available on a web site accessible by the Regional Reliability ~~Council~~Organizations, NERC, and transmission users in the electricity market, or meets only two of the three requirements as listed in Reliability Standard 055.4-R4-2.

Level 3: Not applicable.

Level 4: After the use of Capacity Benefit Margin (excluding non-firm sales), information pertaining to the use of Capacity Benefit Margin was provided but meets one or none of the three requirements as listed above under Reliability Standard 055.4-R2 or no information was provided.

Standard: **056**

Title: Documentation and Review of Transmission Reliability Margin Methodologies and Calculations

056.1 Documentation and Content of Each Regional Transmission Reliability Margin Methodology.

056.2 Procedure for Verifying Transmission Reliability Margin Values.

Purpose: To promote the consistent ~~and uniform~~ application of transfer capability margin calculations among ~~transmission~~ Transmission S~~s~~ystem Providers and Transmission Owners~~users~~, by developing methodologies for calculating Transmission Reliability Margin. This methodology shall comply with NERC definitions for Transmission Reliability Margin, the NERC Reliability Standards, and applicable Regional criteria. Regional Transmission Reliability Margin methodologies and the resulting Transmission Reliability Margin values shall be available to all participants of the electricity market, in order to facilitate intra- and inter-regional ~~transactions~~transmission service.

Effective Date: February 8, 2005

Standard 056.1 Documentation and Content Of Each Regional Transmission Reliability Margin Methodology

Requirements:

R1-1. Each Regional Reliability ~~Council~~Organization, in conjunction with its members, shall develop and document a Regional Transmission Reliability Margin methodology. The Region's Transmission Reliability Margin methodology shall specify or describe each of the following five items, and shall explain its use, if any, in determining Transmission Reliability Margin values. Other items that are Regional specific or that are considered in each respective Regional methodology shall also be explained along with their use in determining Transmission Reliability Margin values.

a) Specify the update frequency of Transmission Reliability Margin calculations.

b) Specify how Transmission Reliability Margin values are incorporated into Available Transfer Capability calculations.

c) Specify the uncertainties accounted for in Transmission Reliability Margin and the methods used to determine their impacts on the Transmission Reliability Margin values. The following components of uncertainty, if applied, shall be accounted for solely in Transmission Reliability Margin and not Capacity Benefit Margin:
   - Aggregate load forecast error (not included in determining generation reliability requirements), load distribution error,
   - Variations in facility loadings due to balancing of generation within a control area,
   - Forecast uncertainty in transmission system topology,
   - Allowances for parallel path (loop flow) impacts,
   - Allowances for simultaneous path interactions,
   - Variations in generation dispatch, and
   - Short-term operator response (operating reserve actions not exceeding a 59-minute window).

   Any additional components of uncertainty shall benefit the interconnected transmission systems, as a whole, before they shall be permitted to be included in Transmission Reliability Margin calculations.

d) Describe the conditions, if any, under which Transmission Reliability Margin may be available to the market as non-firm transmission service.

e) Describe the formal process for the Regional Reliability Organization to grant any variances to individual ~~transmission provider~~Transmission Service Providers from the Regional Transmission Reliability Margin methodology.

R1-2 The Regional Reliability ~~Council~~Organization shall make its most recent version of the documentation of its Transmission Reliability Margin methodology available on a web site accessible by NERC, the Regional Reliability ~~Council~~Organizations, and the transmission users in the electricity market.

Measures:

M1-1. The Regional Reliability ~~Council~~Organization's most recent version of the documentation of its Transmission Reliability Margin methodology is available on a website accessible by NERC, the Regional Reliability ~~Council~~Organizations, and the transmission users in the electricity market.

M1-2. The Regional Reliability ~~Council~~Organization's most recent version of the documentation of its Transmission Reliability Margin contains all items in Reliability Standard 056.1-R1-1.

Regional Differences:
None identified

Compliance Monitoring Process:

Timeframe:

Each Regional Reliability ~~Council~~Organization shall report compliance and violations to NERC via the NERC Compliance Reporting process.

Compliance Monitoring Responsibility:

~~NERC~~Compliance Monitor: Unaffiliated Third Party.

Levels of Non-compliance:

Level 1: The Regional Reliability ~~Council~~Organization's documented Transmission Reliability Margin ~~Total Transfer Capability and Available Transfer Capability methodology~~ does not address one of the five items required for documentation under Reliability Standard 056.1-R1-1.

Level 2: Not applicable.

Level 3: Not applicable.

Level 4: The Regional Reliability ~~Council~~Organization's documented Transmission Reliability Margin~~Total Transfer Capability and Available Transfer Capability~~ methodology does not address two or more of the five items required for documentation under Reliability Standard 056.1-R1-1.

Or

The Regional Reliability Organization does not have a documented Transmission Reliability Margin methodology.

Standard 056.2 Procedure for Verifying Transmission Reliability Margin Values

Requirements:

R2-1. Each Regional Reliability ~~Council~~Organization, shall develop and implement a procedure to review Transmission Reliability Margin calculations and resulting values of member ~~transmission provider~~Transmission Service Providers to ensure they comply with the Regional Transmission Reliability Margin methodology, and are periodically updated and available to transmission users.

This procedure shall include the following four required elements:

a) Indicate the frequency under which the verification review shall be implemented.

b) Require review of the process by which Transmission Reliability Margin values are updated, and their frequency of update, to ensure that the most current Transmission Reliability Margin values are available to transmission users.

c) Require review of the consistency of the ~~transmission provider~~Transmission Service Provider's Transmission Reliability Margin components with its published planning criteria. A Transmission Reliability Margin value is considered consistent with published planning criteria if the same components that comprise Transmission Reliability Margin are also addressed in the planning criteria. The methodology used to determine and apply Transmission Reliability Margin does not have to involve the same mechanics as the planning process, but the same uncertainties must be considered and any simplifying assumption explained. It is recognized that Available Transfer Capability determinations are often time constrained and thus will not permit the use of the same mechanics employed in the more rigorous planning process.

d) Require Transmission Reliability Margin values to be periodically updated (at least prior to each season — winter, spring, summer, and fall), as necessary, and made available to the Regional Reliability ~~Council~~Organizations, NERC, and transmission users in the electricity market.

R2-2. The Regional Reliability Organization shall make ~~D~~documentation of its~~the~~ Regional ~~Reliability Council's~~ Transmission Reliability Margin procedure ~~shall be~~ available to NERC on request (within 30 calendar days).

R2-3. The Regional Reliability Organization shall make ~~D~~documentation of the results of the most current implementation of ~~the~~ its Transmission Reliability Margin procedure ~~shall be~~ available to NERC on request (within 30 calendar days).

Measures:

M2-1. The Regional Reliability ~~Council~~Organization shall have evidence it provided to NERC upon request (within 30 calendar days) a copy of the written procedure developed for the performance of periodic reviews of Regional Transmission Reliability Margin calculations.

M2-2. The Regional Reliability ~~Council~~Organization shall have evidence it provided to NERC on request (within 30 calendar days) documentation of the results of the most current implementation of the procedure.

Regional Differences:

None identified.

Compliance Monitoring Process:

Timeframe:

Each Regional Reliability ~~Council~~Organization shall report compliance and violations to NERC via the NERC Compliance Reporting process.

Compliance Monitoring Responsibility:

~~NERC~~Compliance Monitor: Unaffiliated Third Party.

Levels of Non-compliance:

Level 1: Not applicable.

Level 2: The Regional Reliability ~~Council~~Organization did not perform a review of all Transmission Service Providers within its Regional Reliability ~~Council~~Organization for consistency with its Transmission Reliability Margin methodology on an annual basis.

Level 3: Not applicable.

Level 4: The Regional Reliability ~~Council~~Organization does not have a procedure for performing a Transmission Reliability Margin methodology consistency review of all ~~transmission provider~~Transmission Service Providers within its Region, or has not performed any such reviews on an annual basis.

Standard: 057

Title: Requirements for the Installation and Reporting of Disturbance Monitoring Equipment

057.1 Define and Document Disturbance Monitoring Equipment Requirements.

~~057.2 Disturbance monitoring equipment list~~

~~057.3 Disturbance monitoring data reporting requirements~~

~~057.4 Disturbance data~~

~~057.5 Use of disturbance data to develop and maintain models~~

Purpose: To ensure that disturbance monitoring equipment is installed in a uniform manner to facilitate development of models and analyses of events.

Effective Date: February 8, 2005

Standard 057.1 Define and Document Disturbance Monitoring Equipment Requirements

Requirements:

R1-1 The Regional Reliability ~~Council~~Organization shall develop comprehensive requirements for the installation of disturbance monitoring equipment to ensure data is available to determine system performance and the causes of system disturbances. The comprehensive requirements shall include all of the following:

a) Type of data recording capability (e.g., sequence-of-event, fault recording, dynamic disturbance recording).

b) Equipment characteristics including but not limited to:
   - Recording duration requirements.
   - Time synchronization requirements.
   - Data format requirements.
   - Event triggering requirements.

c) Monitoring, recording, and reporting capabilities of the equipment
   - Voltage.
   - Current.
   - Frequency.
   - MW and/or ~~Mvar~~MVAR, as appropriate.

d) Data retention capabilities (e.g., length of time data is to be available for retrieval).

e) Regional coverage requirements (e.g., by voltage, geographic area, electric area or subarea).

f) Installation requirements:
   - Substations.
   - Transmission lines.
   - Generators.

g) Responsibility for maintenance and testing.

h) Documentation Requirements: Requirements for periodic (at least every five years) updating, review, and approval of the Regional requirements.

R1-2. The Regional Reliability ~~Council~~Organization shall provide its requirements for the installation of disturbance monitoring equipment ~~shall be provided~~ to other Regional Reliability ~~Council~~Organizations and NERC on request (30 calendar days).

Measures:

M1-1. The Regional Reliability ~~Council~~Organization's requirements for the installation of disturbance monitoring equipment shall address all elements listed in Standard 057.1-R1-1

M1-2. The Regional Reliability ~~Council~~Organization shall have evidence it provided its requirements for the installation of disturbance monitoring equipment to other Regional Reliability ~~Council~~Organizations and NERC on request (30 calendar days).

Regional Differences:
None identified.

Compliance Monitoring Process:

Timeframe:

On request by NERC (30 ~~business~~ calendar days.)

Compliance Monitoring Responsibility:

Compliance Monitor: ~~NERC~~Unaffiliated Third Party.

Levels of Non-compliance:

Level 1: The Regional Reliability ~~Council~~Organization's disturbance monitoring requirements do not address one of the eight requirements contained in Reliability Standard 057.1-R1-1.

Level 2: The Regional Reliability ~~Council~~Organization's disturbance monitoring requirements do not address two of the eight requirements contained in Reliability Standard 057.1-R1-1.

Level 3: The Regional Reliability ~~Council~~Organization's disturbance monitoring requirements do not address three of the eight requirements contained in Reliability Standard 057.1-R1-1.

Level 4: The Regional Reliability ~~Council~~Organization's disturbance monitoring requirements were not provided or do not address four or more of the eight requirements contained in Reliability Standard 057.1-R1-1.

~~Standard 057.2 Define and document disturbance monitoring equipment requirements~~

~~Requirements:~~

~~R2-1 The Generation Owner, and Transmission Owner, shall install disturbance monitoring equipment to meet the Regional requirements in Standard 057-R1-1.~~

~~R2-2 The Generator Owner and Transmission Owner shall maintain the following data on the disturbance monitoring installations:~~

~~a)Type of equipment~~
~~b)Make and model of equipment~~
~~c)Installation location~~
~~d)Monitored facilities (lines, buses, etc.) and associated quantities (MW, Mvar, etc.)~~
~~e)Operational status~~
~~f)Date last tested~~

~~R2-3. The Generator Owner and Transmission Owner shall provide current data on its disturbance monitoring equipment installations to its Regional Reliability Council and NERC on request (30 business days).~~

~~Measures:~~

~~M1.The Transmission Owner, and Generator Owner shall have documentation that its disturbance monitoring equipment was installed in accordance with its Regional Reliability Council's(s') requirements.~~

~~M2 The Transmission Owner, and Generator Owner shall provide data on its disturbance monitoring equipment installations to Regional Reliability Councils and NERC on request (30 business days) that shows the equipment's operational status is in conformance with Standard 057-R2-2.~~

~~Regional Differences:~~
~~None identified~~

~~Compliance Monitoring Process:~~
~~Timeframe:~~
~~On request by NERC (30 business days).~~

~~Compliance Monitoring Responsibility:~~
~~Regional Reliability Council~~

~~Levels of Non-compliance:~~
~~Level 1: Disturbance monitoring equipment is installed at all required locations in accordance with Standard 057-R2-1, however data provided was incomplete and did not meet one of the six requirements listed in Reliability Standard 057-R2-2.~~
~~Level 2: Disturbance monitoring equipment is installed at all required locations in accordance with Standard 057- R2-1, however data provided was incomplete and did not meet two of the six requirements listed in Reliability Standard 057-R2-2.~~
~~Level 3: Disturbance monitoring equipment is installed at all required locations in accordance with Standard 057-R2-1, however data provided was incomplete and did not meet three, for or five of the six requirements listed in Reliability Standard 057-R2-2.~~
~~Level 4: Disturbance monitoring equipment is not installed at all required locations in accordance with Reliability Standard 057-R2-1, or data for the disturbance monitoring equipment installations was not provided.~~

~~Standard 057.3 Disturbance monitoring data reporting requirements~~

~~Requirements:~~
~~R3-1 Each Regional Reliability Council shall establish requirements for entities to provide disturbance monitoring data to ensure that data is available to determine system performance and the causes of system disturbances. The data reporting requirements shall include:~~
~~a)Definition of "disturbance"~~
~~b)General requirements for data format~~
~~c)Data content requirements and guidelines~~
~~d)Timetable for response to data request~~
~~e)Requirements for the storage and retention of the disturbance data~~
~~f)The process for the periodic review and approval of the Regional Reliability Council's disturbance monitoring data reporting requirements.~~

~~R3-2 Each Regional Reliability Council shall provide its Regional disturbance data reporting requirements to other Regional Reliability Councils and NERC on request (five business days).~~

~~Measures:~~
~~M3-1. The Regional Reliability Council's documented disturbance monitoring data reporting requirements shall include all six elements identified in Reliability Standard 057-R3-1.~~

~~M3-2. The Regional Reliability Council shall have evidence it provided its disturbance monitoring data reporting requirements to other Regional Reliability Councils and NERC as specified in Reliability Standard 057-R3-2.~~

~~Regional Differences:~~
~~None identified~~

~~Compliance Monitoring Process:~~
~~Timeframe:~~
~~On request by NERC (30 business days)~~

~~Compliance Monitoring Responsibility:~~
~~NERC~~

~~Levels of Non-compliance:~~
~~Level 1: The Regional Reliability Council's requirements for providing disturbance monitoring data do not address one of the six areas listed in Standard 057-R3-1.~~

~~Level 2: The Regional Reliability Council's requirements for providing disturbance monitoring data do not address two of the six areas listed in Standard 057-R3-1.~~

~~Level 3: Not applicable.~~

~~Level 4: The Regional Reliability Council's requirements for providing disturbance monitoring data were not provided, or the Regional Reliability Council's requirements for providing disturbance monitoring data do not address three or more of the six areas listed in Standard 057-R3-1.~~

~~Standard 057.4 Disturbance data~~

~~Requirements:~~
~~R4-1 The Generator Owner, and Transmission Owner shall each provide its system disturbance data to its Regional Reliability Council(s) in compliance with the respective Regional requirements identified in Standard 057-R3-1.~~

~~R4-2 The Generator Operator and Transmission Operator shall each provide its current system disturbance data to NERC on request (30 business days).~~

~~Measures:~~
~~M4-1 The Transmission Owner and Generator Owner's disturbance data shall meet its Regional Reliability Council's disturbance monitoring data reporting requirements identified in Standard 057-R3-1.~~

~~M4-2 The Transmission Operator, and Generator Operator shall have evidence it provided current system disturbance data to NERC on request (30 business days).~~

~~Regional Differences:~~
~~None identified~~

~~Compliance Monitoring Process:~~
~~Timeframe:~~
~~On request by NERC (30 business days)~~

~~Compliance Monitoring Responsibility:~~
~~Regional Reliability Council~~

~~Levels of Non-compliance:~~

~~Level 1: Disturbance data from the disturbance monitoring equipment was provided, however, the data was incomplete and did not meet all of the requirements of the respective Regional Reliability Council's requirements.~~

~~Level 2: Not applicable.~~

~~Level 3: Not applicable.~~

~~Level 4: Disturbance data from the disturbance monitoring equipment was not provided.~~

~~Standard 057.5 Use of disturbance data to develop and maintain models~~

~~Requirements:~~
~~R5-1 The Planning Authority, Transmission Planner and Generator Owner shall use recorded data from disturbance monitoring equipment to develop, maintain, and enhance steady-state and dynamic system models and generator performance models.~~

~~Measures:~~
~~M5-1. The Planning Authority, Transmission Planner and Generator Owner's steady state and dynamic system models and generator performance models shall reflect use of data from disturbance monitoring equipment.~~

~~Regional Differences:~~
~~None identified~~

~~Compliance Monitoring Process:~~
~~Timeframe:~~
~~On request (30 days)~~

~~Compliance Monitoring Responsibility:~~
~~Regional Reliability Council~~

~~Levels of Non-compliance:~~
~~None identified~~

Standard: **058**

Title: Requirements for the Submittal of Steady-State and Dynamics Data ~~and Development of System Models~~

058.1 Steady-State Data for Modeling and Simulation of the Interconnected Transmission System.

058.2 Maintenance and Distribution of Steady-State Data Requirements and Reporting Procedures.

058.3 Dynamics Data for Modeling and Simulation of the Interconnected Transmission System.

058.4 Maintenance and Distribution of Dynamics Data Requirements and Reporting Procedures.

058.5 Development of Steady-State System Models.

058.6 Development of Dynamics System Models.

Purpose: To establish consistent data requirements, reporting procedures, and system models to be used in the analysis of the reliability of the interconnected transmission systems.

Effective Date: February 8, 2005

Standard 058.1 Steady-State Data for Modeling and Simulation of the Interconnected Transmission System

Requirements:

R1-1 The Responsible Entity (as specified within the applicable reporting procedures in Reliability Standard 058.2-R2-1) shall provide appropriate equipment characteristics, system data, and existing and future interchange transactions in compliance with its respective Interconnection-wide Regional data requirements and reporting procedures for the modeling and simulation of the steady-state behavior of the NERC Interconnections: Eastern, Western, and ERCOT.

R1-2 The Responsible Entity (as specified within the applicable reporting procedures in Reliability Standard 058.2-R2-1) shall provide this data to the Regional Reliability ~~Council~~Organizations, NERC, and those entities responsible for the reliability of the interconnected transmission systems, as specified within the applicable reporting procedures (Reliability Standard 058.2-R2-1). If no schedule exists, then the Responsible Entity shall provide on request (30 ~~business~~ calendar days).

Measures:

M1-1 The Responsible Entity (as specified within the applicable reporting procedures in Standard 058.2-R2-1), shall have evidence that it provided equipment characteristics, system data, and interchange transactions for steady-state simulation to the Regional Reliability ~~Council~~Organizations and NERC as specified in (Standard 058.1-R1-1 and 058.1-R1-2).

Regional Differences:

None identified.

Compliance Monitoring Process:

Timeframe:

As specified within the applicable reporting procedures (Reliability Standard 058.2-R2-M1). If no schedule exists, then on request (30 ~~business~~ calendar days.)

Compliance Monitoring Responsibility:

Compliance Monitor: Regional Reliability ~~Council~~Organizations.

Levels of Non-compliance:

Level 1: Steady-state data was provided, but was incomplete in one of the seven areas identified in Reliability Standard 058.2-R2-1.

Level 2: Not Applicable.

Level 3: Steady-state data was provided, but was incomplete in two or more of the seven areas identified in Reliability Standard 058.2-R2-1.

Level 4: Steady-state data was not provided.

Standard 058.2 Maintenance and Distribution of Steady-State Data Requirements and Reporting Procedures

Requirements:

R2-1. The Regional Reliability ~~Council~~Organizations within an Interconnection, in conjunction with the entities responsible for the reliability of the interconnected transmission systems, shall develop comprehensive steady-state data requirements and reporting procedures needed to model and analyze the steady-state conditions for each of the NERC Interconnections: Eastern, Western, and ERCOT. Within an Interconnection, the Regional Reliability ~~Council~~Organizations shall jointly coordinate on the development of the data requirements and reporting procedures for that Interconnection. The Interconnection-wide requirements shall include the following steady-state data requirements:

a) Bus (substation and switching station): name, nominal voltage, electrical demand (load) supplied (consistent with the aggregated and dispersed substation demand data supplied per Reliability Standard 061.), and location.

b) Generating Units (including synchronous condensers, pumped storage, etc.): location, minimum and maximum ratings (net real and reactive power), regulated bus and voltage set point, and equipment status.

c) AC Transmission Line or Circuit (overhead and underground): nominal voltage, impedance, line charging, normal and emergency ratings (consistent with methodologies defined and ratings supplied per Reliability Standard 060) equipment status, and metering locations.

d) DC Transmission Line (overhead and underground): Line parameters, normal and emergency ratings, control parameters, rectifier data, and inverter data.

e) Transformer (voltage and phase-shifting): nominal voltages of windings, impedance, tap ratios (voltage and/or phase angle or tap step size), regulated bus and voltage set point, normal and emergency ratings (consistent with methodologies defined and ratings supplied per Reliability Standard 060.), and equipment status.

f) Reactive Compensation (shunt and series capacitors and reactors): nominal ratings, impedance, percent compensation, connection point, and controller device.

g) Interchange Transactions: Existing and future interchange transactions and/or assumptions.

R2-2 The Regional Reliability ~~Council~~Organizations within an Interconnection shall document their Interconnection's data requirements and reporting procedures, shall review those data requirements and reporting procedures (at least every five years), and shall make the data requirements and reporting procedures available on request (within five business days) to Regional Reliability ~~Council~~Organizations, NERC, and all users of the interconnected transmission systems ~~on request (five business days).~~.

Measures:

M2-1 The Regional Reliability ~~Council~~Organization shall have documentation of its Interconnection's steady-state data requirements and reporting procedures and shall provide the documentation as specified in Reliability Standard 058.2-R2-2.

Regional Differences:
None identified.

Compliance Monitoring Process:

Timeframe:

Periodic review of data requirements and reporting procedures: at least every five years.

Compliance Monitoring Responsibility:

Compliance Monitor: ~~NERC~~Unaffiliated Third Party.

Levels of Non-compliance:

Level 1: Data requirements and reporting procedures for steady-state data were provided, but were incomplete in one of the seven areas defined in Reliability Standard 058.2- R2-1.

Level 2: Data requirements and reporting procedures for steady-state data were provided, but were incomplete in two of the seven areas defined in Reliability Standard 058.2-R2-1.

Level 3: Not applicable.

Level 4: Data requirements and reporting procedures for steady-state data were not provided, or the data requirements and reporting procedures provided were incomplete in three or more of the seven areas defined in Reliability Standard 058.2-R2-1

Standard 058.3 Dynamics Data for Modeling and Simulation of the Interconnected Transmission System

Requirements:

R3-1. The Responsible Entity (as specified in the reporting procedures of Reliability Standard 058.4-R4) shall provide appropriate equipment characteristics and system data in compliance with the respective Interconnection-wide Regional data requirements and reporting procedures as defined in Reliability Standard 058-R4, for the modeling and simulation of the dynamic behavior of the NERC Interconnections: Eastern, Western, and ERCOT.

R3-2. This Responsible Entity shall provide data to its Regional Reliability ~~Council~~Organization(s), NERC, and those entities responsible for the reliability of the interconnected transmission systems as specified within the applicable reporting procedures (Reliability Standard 058.4-R4). If no schedule exists, then the Responsible Entity shall provide data on request (30 ~~business~~ calendar days).

Measures:

M3-1. The Responsible Entity shall have evidence that it provided equipment characteristics and system data in accordance with Reliability Standard 058.3-R3-1 and Reliability Standard 058.3-R3-2.

Regional Differences:

None identified.

Compliance Monitoring Process:

Timeframe:

As specified within the applicable reporting procedures (Reliability Standard 058-R4). If no schedule exists, then on request (30 ~~business~~ calendar days.)

Compliance Monitoring Responsibility:

Compliance Monitor: Regional Reliability ~~Council~~Organization.

Levels of Non-compliance:

Level 1: Dynamics data was provided, but was incomplete in one of the four areas identified in Reliability Standard 058-R4.

Level 2: Not Applicable.

Level 3: Dynamics data was provided, but was incomplete in two or more of the four areas identified in Reliability Standard 058-R4.

Level 4: Dynamics data was not provided.

Standard 058.4 Maintenance and Distribution of Dynamics Data Requirements and Reporting Procedures

Requirements:

R4-1. The Regional Reliability ~~Council~~Organization, in coordination with the entities responsible for the reliability of the interconnected transmission systems, shall develop comprehensive dynamics data requirements and reporting procedures needed to model and analyze the dynamic behavior or response of each of the NERC Interconnections: Eastern, Western, and ERCOT. Within an Interconnection, the Regional Reliability ~~Council~~Organizations shall jointly coordinate on the development of the data requirements and reporting procedures for that Interconnection. Each set of Interconnection-wide dynamics data requirements shall address the following:

a) Unit-specific dynamics data shall be reported for generators and synchronous condensers (including, as appropriate to the model, items such as inertia constant, damping coefficient, saturation parameters, and direct and quadrature axes reactance~~'~~s and time constants), excitation systems, voltage regulators, turbine-governor systems, power system stabilizers, and other associated generation equipment.

   However, estimated or typical manufacturer's dynamics data, based on units of similar design and characteristics, may be submitted when unit-specific dynamics data cannot be obtained. In no case shall other than unit-specific data be reported for generator units installed after 1990.

   The Interconnection-wide requirements shall specify unit size thresholds for permitting:
   - The use of non-detailed vs. ~~D~~detailed models,
   - The netting of small generating units with bus load, and
   - The combining of multiple generating units at one plant.

b) Device specific dynamics data shall be reported for dynamic devices, including, among others, static VAR controls, high voltage direct current systems, flexible AC transmission systems, and static compensators.

c) Dynamics data representing electrical demand (load) characteristics as a function of frequency and voltage.

d) Dynamics data shall be consistent with the reported steady-state (power flow) data supplied per Reliability Standard 058.1-R1.

R4-2 The Regional Reliability ~~Council~~Organization shall participate in the documentation of its Interconnection's data requirements and reporting procedures and, shall participate in the review of those data requirements and reporting procedures (at least every five years), and shall provide those data requirements and reporting procedures on request (within five business days) to Regional Reliability ~~Council~~Organizations, NERC, and all users of the interconnected systems on request (five business days).

Measures:

M4-1 The Regional Reliability ~~Council~~Organizations within each Interconnection shall have documentation of their Interconnection's dynamics data requirements and reporting procedures.

Regional Differences:
None identified.

Compliance Monitoring Process:

Timeframe:

Data requirements and reporting procedures: on request (5 business days).
Periodic review of data requirements and reporting procedures: at least every five years.

Compliance Monitoring Responsibility:

Compliance Monitor: ~~NERC~~Unaffiliated Third Party.

Levels of Non-compliance:

Level 1: Data requirements and reporting procedures for dynamics data were provided, but were incomplete in one of the four areas defined in Reliability Standard 058.4-R4-1.

Level 2: Not applicable.

Level 3: Not applicable.

Level 4: Data requirements and reporting procedures for dynamics data were not provided, or the data requirements and reporting procedures provided were incomplete in two or more of the four areas defined in Reliability Standard 058.4-R4-1.

Standard 058.5 Development of Steady-State System Models

Requirements:

R5-1 ~~Each of the NERC~~The Regional Reliability Organization(s) within each ~~Interconnections~~Interconnection shall coordinate and jointly develop and maintain a library of solved (converged) Interconnection-specific steady-state system models. The~~Each~~ Interconnection-specific ~~shall develop~~ models shall include~~for the~~ near- and longer-term planning horizons that are representative of system conditions for projected seasonal peak, minimum, and other appropriate system demand levels. ~~Within the Eastern Interconnection, the Regional Reliability Councils shall coordinate and jointly develop the steady-state system models for that Interconnection.~~

The Regional Reliability Organization(s) within ~~E~~each Interconnection shall coordinate and jointly develop steady-state system models annually for selected study years, as determined by ~~that~~ the Regional Reliability Organizations within its Interconnection. The ~~Interconnection~~ Regional Reliability Organization shall provide the most recent solved (converged) Interconnection-specific steady-state models to ~~Regional Reliability Councils and~~ NERC on request (30 calendar days).

Measures:

M5-1 Each Regional Reliability Organization ~~Interconnection~~ shall have evidence it contributed to the development of its Interconnection-specific steady-state system models.

Regional Differences:

None identified.

Compliance Monitoring Process:

Timeframe:

Development of steady-state system models: annually.
Most recent steady-state system models: 30 calendar days.

Compliance Monitoring Responsibility:

Compliance Monitor: ~~NERC~~Unaffiliated Third Party.

Levels of Non-compliance:

An assessment of non-compliance will only be considered if a posting date[1] is not met. Violations will not be assessed for Data Sets posted by the scheduled dates.

Level 1: One of a Regional Reliability ~~Council~~Organization's cases was either not submitted by the data submission deadlines, or was submitted by the data submission deadline but was not fully solved/ initialized or had other identified errors, or corrections were not submitted by the correction submittal deadline.

Level 2: Two of a Regional Reliability ~~Council~~Organization's cases were either not submitted by the data submission deadlines, or were submitted by the data submission deadline but were not fully solved/ initialized or had other identified errors, or corrections were not submitted by the correction submittal deadline (or a combination thereof).

[1] The posting date is established by the Multi-regional Modeling Working Group

Level 3: Three of a Regional Reliability ~~Council~~Organization's cases were either not submitted by the data submission deadlines, or were submitted by the data submission deadline but were not fully solved/ initialized or had other identified errors, or corrections were not submitted by the correction submittal deadline (or a combination thereof).

Level 4: Four or more of a Regional Reliability ~~Council~~Organization's cases were either not submitted by the data submission deadlines, or were submitted by the data submission deadline but were not fully solved/ initialized or had other identified errors, or corrections were not submitted by the correction submittal deadline (or a combination thereof).

Standard 058.6 Development of Dynamics System Models

Requirements:

R6-1 ~~Each of t~~The Regional Reliability Organization(s) within each Interconnection~~s~~ shall coordinate and jointly develop and maintain a library of initialized (with no faults or system disturbances) Interconnection-specific dynamics system models linked to the steady-state system models, as appropriate, of reliability Standard 058.5-R5-1.
The Regional Reliability Organization(s) shall develop Interconnection-specific dynamics system ~~M~~models ~~shall be developed~~ for at least two timeframes (present or near-term model and a future or longer-term model), ~~.~~ send ~~A~~additional seasonal and demand level models ~~shall be developed~~, as necessary, to analyze the dynamic response of each of ~~the NERC~~that Interconnection~~s: Eastern, Western, and ERCOT. These dynamics system models shall be linked to the steady-state system models, as appropriate, of Standard II.A.M5. Within the Eastern Interconnection, the Regions shall coordinate and jointly develop the dynamics system models for that Interconnection.~~

R6-2 The Regional Reliability ~~Council~~Organization(s) within each Interconnection shall develop Interconnection dynamics system models for their Interconnection annually for selected study years as determined by the Regional Reliability Organization(s) within each Interconnection~~Interconnection~~ and shall provide the most recent initialized (approximately 25 seconds, no-fault) models ~~shall be provided~~ to ~~the Regions and~~ NERC on request (30 calendar days).

Measures:

M6-1 The Regional Reliability ~~Council~~Organization shall have evidence that it contributed to the development of its Interconnection-specific dynamics system models in accordance with Reliability Standard 058.6-R6-1.

Regional Differences:

None identified.

Compliance Monitoring Process:

Timeframe:

Development of dynamics system models: annually.
Most recent dynamics system models: 30 calendar days.

Compliance Monitoring Responsibility:

Compliance Monitor: ~~NERC~~Unaffiliated Third Party.

Levels of Non-compliance:

An assessment of non-compliance will only be considered if a posting date[2] is not met. Violations will not be assessed for Data Sets posted by the scheduled dates.

Level 1: One of a Regional Reliability ~~Council~~Organization's cases was either not submitted by the data submission deadlines, or was submitted by the data submission deadline but was not fully solved/ initialized or had other identified errors, or corrections were not submitted by the correction submittal deadline.

[2] The posting date is established by the Multi-regional Modeling Working Group

Level 2: Two of a Regional Reliability ~~Council~~Organization's cases were either not submitted by the data submission deadlines, or were submitted by the data submission deadline but were not fully solved/ initialized or had other identified errors, or corrections were not submitted by the correction submittal deadline (or a combination thereof).

Level 3: Three of a Regional Reliability ~~Council~~Organization's cases were either not submitted by the data submission deadlines, or were submitted by the data submission deadline but were not fully solved/ initialized or had other identified errors, or corrections were not submitted by the correction submittal deadline (or a combination thereof).

Level 4: Four or more of a Regional Reliability ~~Council~~Organization's cases were either not submitted by the data submission deadlines, or were submitted by the data submission deadline but were not fully solved/ initialized or had other identified errors, or corrections were not submitted by the correction submittal deadline (or a combination thereof).

Standard: 060

Title: Facility Ratings

060.1 Methodology(ies) for Determining Electrical Facility Ratings.

060.2 Electrical Facility Ratings for System Modeling.

Purpose: To ensure that electrical facilities used in the transmission and storage of electricity are rated in compliance with applicable Regional Reliability ~~Council~~Organization requirements.

Effective Date: February 8, 2005

Standard 060.1 Methodology(ies) for Determining Electrical Facility Ratings

Requirements:

R1-1. The Transmission Owner and Generator Owner shall document the methodology(s) used to determine its electrical facility and equipment rating. Further, the methodology(s) shall comply with applicable Regional Reliability ~~Council~~Organization requirements. The documentation shall address and include:

a) The methodology(s) used to determine facility and equipment rating of the items listed for both normal and emergency conditions:
   - Transmission circuits.
   - Transformers.
   - Series and shunt reactive elements.
   - Terminal equipment (e.g., switches, breakers, current transformers, etc.)
   - VAR compensators. ~~(SVC)~~
   - High voltage direct current ~~(HVDC)~~ converters.
   - Any other device listed as a limiting element.

b) The rating of a facility shall not exceed the rating(s) of the most limiting element(s) in the circuit, including terminal connections and associated equipment.

c) In cases where protection systems and control settings constitute a loading limit on a facility, this limit shall become the rating for that facility.

d) Ratings of jointly-owned and jointly-operated facilities shall be coordinated among the joint owners and joint operators resulting in a single set of ratings.

e) The documentation shall identify the assumptions used to determine each of the facility and equipment ratings, including references to industry rating practices and standards (e.g., ANSI, IEEE, etc.). Seasonal ratings and variations in assumptions shall be included.

R1-2. The Transmission Owner and Generator Owner shall provide documentation of the methodology(ies) used to determine its transmission facility and equipment ratings to the Regional Reliability ~~Council~~Organization(s) and NERC on request (~~five~~ 30 calendar ~~business~~ days).

Measures:

M1-1. The Transmission Owner or Generator Owner shall provide documentation that the methodology(ies) used for determining facility and equipment ratings meets the requirements of Standard 060.1-R1-1 as specified in Standard 060.1-R1-2.

Regional Differences:

None identified.

Compliance Monitoring Process:

Timeframe:

On request (~~five business~~30 calendar days.)

Compliance Monitoring Responsibility:

Compliance Monitor: Regional Reliability ~~Council~~Organization.

Levels of Non-compliance:

Level 1: Facility and equipment rating methodology(s) do not address one of the five elements (1-5) listed in Reliability Standard 060.1-R1-1.

Level 2: N/A.

Level 3: Facility and equipment rating methodology(s) do not address two of the five elements (1-5) listed in Reliability Standard 060.1-R1-1.

Level 4: Facility and equipment rating methodology(s) do not address three or more of the five elements (1-5) listed in Reliability Standard 060.1-R1-1, or no facility and equipment rating methodology was provided.

Standard 060.2 Electrical Facility Ratings for System Modeling.

Requirements:
R2-1. The Transmission O~~o~~wner, and Generator Owner shall have on file or be able to readily provide, a document or database identifying the normal and emergency ratings of all of their transmission facilities (e.g., lines, transformers, terminal equipment, and storage devices) that are part of the bulk interconnected transmission systems. Seasonal variations in ratings shall be included as appropriate.

The ratings shall be consistent with the methodologies for determining facility ratings and shall be updated as facility changes occur.

R2-2. The Transmission Owner and Generator Owner shall provide the normal and emergency facility ratings of all its transmission facilities to the Regional Reliability ~~Council~~Organization(s) and NERC on request (30 ~~business~~ calendar days).

Measures:
M2-1. The Transmission Owner and Generator Owner shall provide documentation of its facility ratings as specified in Reliability Standard 060.2-R2-1 and Standard 060.2-R2-2.

Regional Differences:
None identified.

Compliance Monitoring Process:

Timeframe:

On request (30 calendar days.)

Compliance Monitoring Responsibility:

Compliance Monitor: Regional Reliability ~~Council~~Organization.

Levels of Non-compliance:

Level 1: Facility ratings were incomplete or the methodology(ies) inconsistently applied in one facility type.

Level 2: Facility ratings were incomplete or the methodology(ies) inconsistently applied in two facility types.

Level 3: Facility ratings were incomplete or the methodology(ies) inconsistently applied in three or more facility types.

Level 4: Facility ratings were not provided.

Standard: 061

Title: Actual and Forecast Demands

061.1 Documentation of Data Reporting Requirements for Actual and Forecast Demands, Net Energy for Load, and Controllable Demand-side Management.

~~061.2 Reporting Procedures to Ensure Against Double Counting or the Omission of Customer Demand Data~~

~~061.3 Consistency of Actual and Forecast Demands and Controllable Demand-Side Management Data Reported for Reliability and to Government Agencies~~

061.4 Aggregated Actual and Forecast Demands and Net Energy for Load.

061.5 Treatment of Nonmember Demand Data and How Uncertainties are Addressed in the Forecasts of Demand and Net Energy for Load.

061.6 Reporting of Interruptible Demands and Direct Control Load Management.

061.7 Providing Interruptible Demands and Direct Control Load Management Data to System Operators and Security Center Coordinators.

061.8 Documentation of the Accounting Methodology for the Effects of Controllable Demand-Side Management in Demand and Energy Forecasts.

Purpose: To ensure that assessments and validation of past events and databases can be performed, reporting of actual demand data is needed. Forecast demand data is needed to perform future system assessment to identify the need for system reinforcement for the continued reliability. In addition to assist in proper real time operating, load information related to controllable demand-side management programs is needed.

Effective Date: February 8, 2005

Standard 061.1 Documentation of Data Reporting Requirements for Actual and Forecast Demands, Net Energy for Load, and Controllable Demand-Side Management

Requirements:

R1-1. The Planning Authority and Regional Reliability ~~Council~~Organization shall have documentation identifying the scope and details of the actual and forecast (a) demand data, (b) net energy for load data, and (c) controllable demand-side management data to be reported for system modeling and reliability analyses.

The aggregated and dispersed data submittal requirements shall ensure that consistent data is supplied for Reliability Standards 052, 058, and 061.

R1-2. The documentation of the scope and details of the data reporting requirements shall be available on request (five business days).

Measures:

M1-1 The Planning Authority and Regional Reliability ~~Council~~Organization shall each provide evidence to its Compliance Monitor that it provided data and reporting procedures per Reliability Standard 061.1 R1-1 and R1-2.

Regional Differences:

None identified.

Compliance Monitoring Process:

Timeframe:

On request (five business days.)

Compliance Monitoring Responsibility:

Compliance Monitor for Planning Authority: Regional Reliability Organization.

Compliance Monitor for Regional Reliability ~~Council~~Organization: ~~and~~ Unaffiliated Third Party.~~NERC.~~

Levels of Non-compliance:

Level 1: ~~The Region and the entities responsible for the reliability of the interconnected transmission systems have i~~Identified the scope and details of demand, net energy for load, and controllable demand-side management data to be reported and the reporting procedures but ~~have~~did not ~~specified~~ specify that consistent data is to be supplied for Reliability Standards 052, 058, and 061.

Level 2: Not applicable.

Level 3: Not applicable.

Level 4: ~~The Region and the entities responsible for the reliability of the interconnected transmission systems have~~Did not ~~identified~~ identify the scope and details of demand, net energy for load, and controllable demand-side management data to be reported and the reporting procedures.

~~Standard 061.2 Reporting Procedures to Ensure Against Double Counting or the Omission of Customer Demand Data~~

~~Requirements:~~

~~R2-1. The Planning Authority and Regional Reliability Council reporting procedures that are developed shall ensure that customer demands are not double counted or omitted in reporting actual or forecast demand data on either an aggregated or dispersed basis within an area or Region.~~

~~R2-2. The Planning Authority and Regional Reliability Council data reporting procedures shall be available on request (five business days) to the Regions and NERC.~~

~~Measures:~~

~~M2-1 The Planning Authority and Regional Reliability Council shall provide evidence that it provided data reporting procedures per Reliability Standard 061 R2-1 and R2-2.~~

~~Regional Differences:~~

~~None identified~~

~~Compliance Monitoring Process:~~

~~Timeframe:~~

~~On request (five business days)~~

~~Compliance Monitoring Responsibility:~~

~~NERC and the Regional Reliability Council~~

~~Levels of Non-compliance:~~

~~Level 1:~~ ~~Reporting procedures that address double counting and the omission of data were provided on schedule, but were incomplete in one or more areas.~~

~~Level 2~~: ~~Reporting procedures that address double counting and the omission of data were not provided on schedule, but were complete when submitted.~~

~~Level 3~~: ~~Reporting procedures that address double counting and the omission of data were not provided on schedule, and were incomplete in one or more areas when submitted.~~

~~Level 4~~: ~~Reporting procedures that address double counting and the omission of data were not provided.~~

~~Standard 061.3 Consistency of Actual and Forecast Demands and Controllable Demand-Side Management Data Reported for Reliability and to Government Agencies~~

~~Requirements:~~

~~R3-1. (No translation attempted)~~

~~Measures:~~

~~M3-1 (No translation attempted)~~

~~Regional Differences:~~

~~None identified~~

~~Compliance Monitoring Process:~~

~~**Timeframe:**~~

~~Annually or as specified in the documentation (Reliability Standard 061-R1-1)~~

~~**Compliance Monitoring Responsibility:**~~

~~Regional Reliability Council~~

~~**Levels of Non-compliance:**~~

~~(No translation attempted)~~

Standard 061.4 Aggregated Actual and Forecast Demands and Net Energy for Load

Requirements:

R4-1. The Load Serving Entity, Planning Authority and Resource Planner shall each provide the following information annually on an aggregated Regional, subregional, power pool, individual system, or load serving entity basis to NERC, the Regional Reliability Organizations, and those entities ~~entities responsible for the reliability of the interconnected transmission systems as~~ specified by the documentation in Standard 061.1-R1-1.~~, Section 1.~~

a) Integrated hourly demands in megawatts (MW) for the prior year.

b) Monthly and annual peak hour actual demands in MW and net energy for load in gigawatthours (GWh) for the prior year.

c) Monthly peak hour forecast demands in MW and net energy for load in GWh for the next two years.

d) Annual peak hour forecast demands (summer and winter) in MW and annual net energy for load in GWh for at least five years and up to ten years into the future, as requested.

Measures:

M4-1 Load Serving Entity, Planning Authority and Resource Planner shall each provide evidence to its Compliance Monitor that it provided load data per Standard 061.4-R4-1.

Regional Differences:

None identified.

Compliance Monitoring Process:

Timeframe:

Annually or as specified in the documentation (Standard 061.1-R1-1.~~, Section 1~~)

Compliance Monitoring Responsibility:

Regional Reliability ~~Council~~Organization.

Levels of Non-compliance:

Level 1: ~~Entities required by the Region to report actual and forecast demands d~~Did not provide actual and forecast demands and net energy for load data in one of the four areas as required in ~~the above Measurement M4~~Reliability Standard 061.4-R4-1.

Level 2: ~~Entities required by the Region to report actual and forecast demands d~~Did not provide actual and forecast demands and net energy for load data in two of the four areas as required in~~ the above Measurement M4~~.Reliability Standard 061.4-R4-1.

Level 3: ~~Entities required by the Region to report actual and forecast demands d~~Did not provide actual and forecast demands and net energy for load data in three of the four areas as required in Reliability Standard 061.4-R4-1.~~the above Measurement M4.~~

Level 4: ~~Entities required by the Region to report actual and forecast demands d~~Did not provide actual and forecast demands and net energy for load data in any of the areas as required in Reliability Standard 061.4-R4-1.~~the above Measurement M4.~~

Standard 061.5 Treatment of Nonmember Demand Data and How Uncertainties are Addressed in the Forecasts of Demand and Net Energy for Load

Requirements:

R5-1. The Load Serving Entity, Planning Authority and Resource Planner's report of actual and forecast demand data (reported on either an aggregated or dispersed basis) shall:

a) Indicate whether the demand data of nonmember entities within an area or Regional Reliability ~~Council~~Organization are included, and

b) Address assumptions, methods, and the manner in which uncertainties are treated in the forecasts of aggregated peak demands and net energy for load.

c) ~~Full compliance requires i~~Items (R5-1-~~1~~a) and (R5-1-~~2~~b) ~~to~~ shall be addressed as described in the reporting procedures developed for Standard 061.1-R1-1~~, Section 1~~.

R5-2. The Load Serving Entity, Planning Authority and Resource Planner shall each report data associated with ~~Requirement~~ Reliability Standard 061.5-R5-1 to NERC, the Regional Reliability ~~Council~~Organization, Load Serving Entity, Planning Authority, and Resource Planner on request (within 30 calendar days).

Measures:

M5-1 The Load Serving Entity, Planning Authority and Resource Planner shall each provide evidence to its Compliance Monitor that its actual and forecast demand data was addressed as described in the reporting procedures developed for Reliability Standard 061.1-R1-1.~~, Section 1.~~

M5-2 The Load Serving Entity, Planning Authority and Resource Planner shall each report current information for Reliability Standard 061.5-R5 -1 to NERC, the Regional Reliability ~~Council~~Organization, Load Serving Entity, Planning Authority, and Resource Planner on request (within 30 calendar days).

Regional Differences:

None identified.

Compliance Monitoring Process:

Timeframe:

On Request (within 30 calendar days.)

Compliance Monitoring Responsibility:

Regional Reliability ~~Council~~Organizations.

Levels of Non-compliance:

Level 1: Information ~~on~~for ~~items~~ Reliability Standard 061.5-R51- items a) or 061.5-R51- b) was not provided.

Level 2: Information ~~on~~for ~~items~~Reliability Standard 061.5-R51- items a) and 061.5-R51- b) was not provided.

Level 3: Not applicable.

Level 4: Not applicable.

Standard 061.6 Reporting of Interruptible Demands and Direct Control Load Management

Requirements:

R6-1 The Load Serving Entity, Planning Authority and Resource Planner shall each provide annually its ~~F~~fo~~o~~recasts of interruptible demands and direct control load management data ~~shall be provided annually~~ for at least five years and up to ten years into the future, as requested, for summer and winter peak system conditions to NERC, the Regions, and other entities (Load Serving Entity, Planning Authority and Resource Planner) as specified by the documentation in Reliability Standard 061.1-R1-1~~, Section 1.~~

.

Measures:

M6-1 The Load Serving Entity, Planning Authority and Resource Planner shall each provide evidence to its Compliance Monitor that ~~they~~ it provided forecasts of interruptible demands and direct control load management data per Reliability Standard 061.6-R6-1.

Regional Differences:

None identified.

Compliance Monitoring Process:

Timeframe:

Annually or as specified in the documentation (Reliability Standard 061.1-R1-1.~~, Section 1~~)

Compliance Monitoring Responsibility:

Each Regional Reliability ~~Council~~Organization.

Levels of Non-compliance:

Level 1: Not applicable.

Level 2: Not applicable.

Level 3: Not applicable.

Level 4: ~~The Load Serving Entity, Planning Authority or Resource Planner d~~Did not provide the controlled demand-side management data as required in Standard 061.6-R6-1~~, Section 1, above~~.

Standard 061.7 Providing Interruptible Demands and Direct Control Load Management Data to System Operators and Security Center Coordinators

Requirements:

R7-1 The Load Serving Entity, Planning Authority and Resource Planner shall each ~~be made~~ make known its amount of interruptible demands and direct control load management to system operators and security center coordinators on request within 30 calendar days.

Measures:

M7-1 The Load Serving Entity, Planning Authority and Resource Planner each ma~~d~~ke known its amount of interruptible demands and direct control load management to ~~system operators and security center coordinators~~ Reliability Authority(ies) and Transmission Operator(s) on request within 30 calendar days.

Regional Differences:

None identified.

Compliance Monitoring Process:

Timeframe:

On request (within 30 calendar days.)

Compliance Monitoring Responsibility:

Regional Reliability ~~Council~~Organization.

Levels of Non-compliance:

Level 1: Interruptible demands and direct control load management data were provided to the ~~to system operators and security center coordinators~~Reliability Authority(ies) and Transmission Operator(s), but were incomplete.

Level 2: Not applicable.

Level 3: Not applicable.

Level 4: Interruptible demands and direct control load management data were not provided to the ~~system operators and security center coordinators~~Reliability Authority(ies) and Transmission Operator(s).

Standard 061.8 Documentation of the Accounting Methodology for the Effects of Controllable Demand-Side Management in Demand and Energy Forecasts

Requirements:

R8-1 The Load Serving Entity's, Planning Authority's and Resource Planner's forecasts shall each clearly document how the demand and energy effects of demand-side management programs (such as conservation, time-of-use rates, interruptible demands, and direct control load management) are addressed.

R8-2 The Load Serving Entity, Planning Authority and Resource Planner shall each include information detailing how demand-side management measures are addressed in the forecasts of its peak demand and annual net energy for load ~~shall be included~~ in the data reporting procedures of Standard 061.1-R1-1.

R8-3 The Load Serving Entity, Planning Authority and Resource Planner shall each make documentation on the treatment of its demand-side management programs ~~shall be~~ available to NERC on request (within 30 calendar days).

Measures:

M8-1 The Load Serving Entity, Planning Authority and Resource Planner forecasts clearly document how the demand and energy effects of demand-side management programs (such as conservation, time-of-use rates, interruptible demands, and direct control load management) are addressed.

M8-2 The Load Serving Entity, Planning Authority and Resource Planner information detailing how demand-side management measures are addressed in the forecasts of peak demand and annual net energy for load are included in the data reporting procedures of Reliability Standard 061.1-R1-1.

M8-3 The Load Serving Entity, Planning Authority and Resource Planner shall each provide~~d~~ evidence to its Compliance Monitor that it provided documentation on the treatment of demand-side management programs to NERC as requested (within 30 calendar days).

Regional Differences:
None identified.

Compliance Monitoring Process:

Timeframe:
On request (within 30 calendar days.)

Compliance Monitoring Responsibility:
Compliance Monitor: Regional Reliability ~~Council~~Organization.

Levels of Non-compliance:

Level 1: Documentation on the treatment of demand-side management programs in the demand and energy forecasts was provided, but was incomplete.

Level 2: Not applicable.

Level 3: Not applicable.

Level 4: Documentation on the treatment of demand-side management programs in the demand and energy forecasts was not provided.

Standard: **063**

Title: **Transmission Protection System**

063.1 Regional Procedure for Transmission Protection System Misoperations.

063.2 Analysis and Reporting of Transmission Protection System Misoperations.

063.3 Transmission Protection System Maintenance and Testing.

Purpose: To ensure all transmission protection system misoperations are analyzed for cause and corrective action and maintenance and testing programs are developed and implemented.

Effective Date: February 8, 2005

Standard 063.1 Regional Procedure for Transmission Protection System Misoperations.

Requirements:
R1-1. Each Regional Reliability ~~Council~~Organization shall have a procedure for the monitoring, review, analysis, and correction of all transmission protection system misoperations. Each Regional Reliability ~~Council~~Organization's procedure shall include the following elements:

a) Requirements for monitoring and analysis of all transmission protective device misoperations.

b) Description of the data reporting requirements (periodicity and format) for those misoperations that adversely affects the reliability of the bulk electric systems as specified by the Regional Reliability ~~Council~~Organization.

c) Process for review, follow up, and documentation of corrective action plans for misoperations.

d) Identification of the Regional Reliability ~~Council~~Organization group responsible for the procedure and the process for Regional Reliability ~~Council~~Organization approval of the procedure.

e) Regional Reliability ~~Council~~Organization definition of misoperations.

R1-2. Each Regional Reliability ~~Council~~Organization shall maintain documentation of its procedure and provide it to NERC on request (within 30 calendar days).

Measures:
M1-1. The Regional Reliability ~~Council~~Organization shall have a procedure for the monitoring, review, analysis, and correction of transmission protection system misoperations as defined in Standard 063.1-R1-1.

M1-2. The Regional Reliability ~~Council~~Organization shall have evidence it provided documentation of its procedure as defined in Standard 063.1-R1-2.

Regional Differences:
None identified.

Compliance Monitoring Process:

Timeframe:

On request (within 30 calendar days.)

Compliance Monitoring Responsibility:

NERC.

Levels of Non-compliance:

Level 1: The Regional Reliability ~~Council~~Organization's procedure does not address all the requirements as defined above in Standard 063.1-R1-1.

Level 2: Not applicable.

Level 3: Not applicable.

Level 4: The Regional Reliability ~~Council~~Organization's procedure was not provided.

Standard 063.2 Analysis and Reporting of Transmission Protection System Misoperations

Requirements:
R2-1. The Transmission Owner, Generator Owner, Distribution Provider that owns transmission protection system(s) shall analyze all protection system misoperations and shall take corrective actions to avoid future misoperations.

R2-2. The Transmission Owner, Generator Owner, Distribution Provider that owns transmission protection system(s) shall provide to the affected Regional Reliability ~~Council~~Organization and NERC on request (within 30 calendar days) documentation of the misoperations analyses and corrective actions according to the Regional Reliability ~~Council~~Organization's procedures of Standard 063.1-R1-1.

Measures:
M2-1. The Transmission Owner, Generator Owner, and Distribution Provider that owns transmission protection system(s) shall have evidence it analyzed its protection system misoperation(s) and took corrective action(s) to avoid future misoperations.

M2-2. The Transmission Owner, Generator Owner, and Distribution Provider that owns transmission protection system(s) shall have evidence it provided documentation of its protection system misoperations, analyses and corrective action(s) according to the Regional Reliability ~~Council~~Organization procedures of Standard 063.1-R1-1.

Regional Differences:
None identified.

Compliance Monitoring Process:

Timeframe:

On request (within 30 calendar days.)

Compliance Monitoring Responsibility:

Compliance Monitor: Regional Reliability ~~Council~~Organization.

Levels of Non-compliance:

Level 1: Documentation of transmission protection system misoperations is complete according to Standard 063.1-R1-1 but documentation of corrective actions taken for all identified misoperations is incomplete.

Level 2: Documentation of corrective actions taken for misoperations is complete but documentation of transmission protection system misoperations is incomplete according to Standard 063.1-R1-1.

Level 3: Documentation of misoperations and corrective actions is incomplete.

Level 4: No documentation of misoperations or corrective actions was provided.

Standard 063.3 Transmission Protection Maintenance and Testing

Requirements:

R3-1. The Transmission Owner, ~~and~~ Generator Owner and Distribution Provider that owns transmission protection system(s) shall have a system maintenance and testing program(s) in place. The program(s) shall include:

a) Transmission Protection system identification shall include but are not limited to:
   - Relays.
   - Instrument transformers.
   - Communications systems, where appropriate.
   - Batteries.

b) Documentation of maintenance and testing intervals and their basis.

c) Summary of testing procedure.

d) Schedule for system testing.

e) Schedule for system maintenance.

f) Date last tested/maintained.

R3-2. The Transmission Owner and Generator Owner that owns transmission protection system(s) shall provide documentation of the program and its implementation to the appropriate Regional Reliability ~~Council~~Organization and NERC on request (within 30 calendar days).

Measures:

M3-1. The Transmission Owner or Generator Owner that owns a transmission system protection system(s) ~~has a system~~ shall have a maintenance and testing program(s) as defined in Standard 063.3-R3-1.

M3-2. The Transmission Owner and Generator Owner that owns transmission system protection system(s) shall have evidence it provided documentation of its system maintenance and testing program(s) and the implementation of its program(s) as defined in Standard 063.3-R3-2.

Regional Differences:

None identified.

Compliance Monitoring Process:

Timeframe:

On request (within 30 calendar days.)

Compliance Monitoring Responsibility:

Regional Reliability ~~Council~~Organization. Each Regional Reliability ~~Council~~Organization shall report compliance and violations to NERC via the NERC Compliance Reporting process.

Levels of Non-compliance:

Level 1: Documentation of the maintenance and testing program was incomplete, but records indicate implementation was on schedule.

Level 2: Documentation of the maintenance and testing program was provided, but records indicate that implementation was not on schedule.

Level 3: Documentation of the maintenance and testing program was incomplete, and records indicate implementation was not on schedule.

Level 4: Documentation of the maintenance and testing program, or its implementation, was not provided.

Standard: **067**

Title: Under Frequency Load Shedding

067.1: Development and Documentation of Regional Reliability ~~Council~~Organizations' Underfrequency Load Shedding (Underfrequency Load Shedding) Programs.

067.2 Assuring Consistency of Entity Underfrequency Load Shedding Programs with Regional Reliability ~~Council~~Organization's Underfrequency Load Shedding Program Requirements.

067.3 Implementation and Documentation of Underfrequency Load Shedding Equipment Maintenance Program.

067.4 Analysis and Documentation of Underfrequency Load Shedding Performance Following an Underfrequency Event.

Purpose: Provide last resort system preservation measures by implementing an Under Frequency Load Shedding ~~(underfrequency load shedding)~~ Program. ~~requiring DPs of electricity on the bulk electric system to drop loads to arrest declining system frequency during capacity shortages resulting from system islanding or other major system disturbances.~~

Effective Date: February 8, 2005

Standard 067.1 Development and Documentation of Regional Reliability ~~Council~~Organizations' Underfrequency Load Shedding (Underfrequency Load Shedding) Programs
~~Regional Reliability Council~~

Requirements:
R1-1. Each Regional Reliability ~~Council~~Organization shall develop, coordinate, and document an underfrequency load shedding Program, which shall include the following:

a) Requirements for coordination of underfrequency load shedding programs within the subregions, Regional Reliability ~~Council~~Organization, and, where appropriate, among Regional Reliability ~~Council~~Organizations.

b) Design details shall include, but are not limited to:
   – Frequency set points.
   – Size of corresponding load shedding blocks (% of connected loads.)
   – Intentional and total tripping time delays.
   – Generation protection.
   – Tie tripping schemes.
   – Islanding schemes.
   – Automatic load restoration schemes.
   – Any other schemes that are part of or impact the underfrequency load shedding programs.

c) A Regional Reliability ~~Council~~Organization underfrequency load shedding program database. This database shall be updated as specified in the Regional Reliability ~~Council~~Organization Program (but at least every five years) and shall include sufficient information to model the underfrequency load shedding program in dynamic simulations of the interconnected transmission systems.

d) Technical assessment and documentation of the effectiveness of the design and implementation of the Regional underfrequency load shedding program. This technical assessment shall be conducted periodically and shall (at least every five years or as required by changes in system conditions) include, but not be limited to:
   – A review of the frequency set points and timing, and
   – Dynamic simulation of possible disturbance that cause the region or portions of the region to experience the largest imbalance between demand (load) and generation.

R1-2. The Regional Reliability ~~Council~~Organization shall provide documentation of its underfrequency load shedding program and its database information to NERC on request (within 30 calendar days).

R1-3. The Regional Reliability ~~Council~~Organization shall provide documentation of the technical assessment of its underfrequency load shedding program to NERC on request (within 30 calendar days).

Measures:
M1-1. The Regional Reliability ~~Council~~Organization shall have documentation of the underfrequency load shedding Program ~~and Current~~and Current underfrequency load shedding database.

M1-2. The Regional Reliability ~~Council~~Organization shall have evidence it provided documentation of its ~~its~~ underfrequency load shedding program and its database information to NERC as specified in Reliability Standard 067.1-R1-2.

M1-3. The Regional Reliability ~~Council~~Organization shall have evidence it provided documentation of its technical assessment of its underfrequency load shedding program to NERC as specified in Reliability Standard 067.1-R1-3.

Regional Differences:
None identified.

Compliance Monitoring Process:

Timeframe:

On request (within 30 calendar days) for the program, database, and results of technical assessments.

Compliance Monitoring Responsibility:

~~NERC~~Compliance Monitor: Unaffiliated Third Party.

Levels of Non-compliance:

Level 1: Documentation demonstrating the coordination of the Regional Reliability ~~Council~~Organization's underfrequency load shedding program was incomplete in one of the elements in Reliability Standard 067.1-R1-1.

Level 2: N/A.

Level 3: N/A.

Level 4: Documentation demonstrating the coordination of the Regional Reliability ~~Council~~Organization's underfrequency load shedding program was incomplete in two or more requirements or documentation demonstrating the coordination of the Regional Reliability ~~Council~~Organization's underfrequency load shedding program was not provided, or an assessment was not completed in the last five years.

Standard 067.2 Assuring Consistency of Entity Underfrequency Load Shedding Programs with Regional Reliability ~~Council~~Organization's Underfrequency Load Shedding Program Requirements

R2-1. The Transmission Owner, Transmission Operator ~~Load-serving Entity,~~ and Distribution Provider that owns or operates an underfrequency load shedding program, as required by ~~the~~ its Regional Reliability ~~Council~~ Organization, shall ensure that ~~their~~ its program is consistent with ~~the~~ its Regional Reliability ~~Council's~~ Organization's underfrequency load shedding program requirements.

R2-2. The Transmission Owner, Transmission Operator and Distribution Provider that owns or operates an underfrequency load shedding program shall~~Such entities shall~~ provide, and annually update, ~~their~~ its underfrequency load shedding data as necessary for ~~the RRC~~ its Regional Reliability Organization to maintain and update an underfrequency load shedding program database.

R2-~~2~~3. The Transmission Owner, Transmission Operator, ~~Load-serving Entity,~~ and Distribution Provider, that owns or operates an underfrequency load shedding program as required by the Regional Reliability ~~Council~~Organization shall provide its documentation of that program to ~~the~~ its Regional Reliability ~~Council~~ Organization on request (30 calendar days).

Note that the draft was posted without any measures – the original standard included the following in the Items to be Measured:

Consistency of entity's UFLS program with Regional UFLS requirements.

Measures:

M2-1. Each Transmission Owner's, Transmission Operator's, and Distribution Provider's underfrequency load shedding program shall be consistent with that entity's associated Regional Reliability Organization's underfrequency load shedding program's requirements.

M2-2. Each Transmission Owner, Transmission Operator, and Distribution Provider with an underfrequency load shedding program shall have evidence it provided its associated Regional Reliability Organization and NERC with documentation of its underfrequency load shedding program on request (30 calendar days).

Regional Differences:
None identified.

Compliance Monitoring Process:

Timeframe:

On request (within 30 calendar days.)

Compliance Monitoring Responsibility:

Compliance Monitor: Regional Reliability ~~Council~~Organization.

Levels of Non-compliance:

Level 1: Evaluations of entity underfrequency load shedding programs for consistency with the Regional Reliability ~~Council~~Organization's underfrequency load shedding

Program were incomplete/inconsistent in one or more requirements of Reliability Standard 067.1-R1, but is consistent with the required load shed.

Level 2: The amount of load shedding is less than 95% of the regional requirements in any of the load steps.

Level 3: The amount of load shedding is less than 90% of the regional requirements in any of the load steps.

Level 4: The amount of load shedding is less than 85% of the regional requirements on any of the load steps, or evaluations of entity underfrequency load shedding programs for consistency with the Regional Reliability ~~Council~~Organization's underfrequency load shedding program were not provided.

Standard 067.3 Implementation and Documentation of Underfrequency Load Shedding Equipment Maintenance Program

Requirements:

R3-1. The Transmission Owner, Transmission Operator, and ~~Load-serving Entity ,~~ Distribution Provider required by the Regional Reliability ~~Council~~Organization to have an underfrequency load shedding program shall have an underfrequency load shedding equipment maintenance and testing program in place. This program shall include underfrequency load shedding equipment identification, the schedule for underfrequency load shedding equipment testing, and the schedule for underfrequency load shedding equipment maintenance.

R3-2. The Transmission Owner, Transmission Operator, and ~~Load-serving Entity ,~~ Distribution Provider required by the Regional Reliability ~~Council~~Organization to have an underfrequency load shedding program shall provide the results of implementation to the Regional Reliability ~~Council~~Organization(s) and NERC on request (within 30 calendar days).

Measures:

M3-1. The Transmission Owner, Transmission Operator, and~~Load-serving Entity ,~~ Distribution Provider required by the Regional Reliability ~~Council~~Organization to have an underfrequency load shedding program shall have an underfrequency load shedding equipment maintenance and testing program in place that contains the elements specified in Reliability Standard 067.3-R3-1.

M3-2. The Transmission Owner, Transmission Operator, ~~Load-serving Entity ,~~ Distribution Provider required by the Regional Reliability ~~Council~~Organization to have an underfrequency load shedding program shall have evidence it provided the results of the program's implementation to the Regional Reliability ~~Council~~Organization(s) and NERC on request (within 30 calendar days).

Regional Differences:

None identified

Compliance Monitoring Process:

Timeframe:

On request (within 30 calendar days.)

Compliance Monitoring Responsibility:

Compliance Monitor: Regional Reliability ~~Council~~Organization.

Levels of Non-compliance:

Level 1: Documentation of the maintenance and testing program was incomplete, but records indicate implementation was on schedule.

Level 2: Complete documentation of the maintenance and testing program was provided, but records indicate that implementation was not on schedule.

Level 3: Documentation of the maintenance and testing program was incomplete, and records indicate implementation was not on schedule.

Level 4: Documentation of the maintenance and testing program, or its implementation was not provided.

Standard 067.4 Analysis and Documentation of Underfrequency Load Shedding Performance Following an Underfrequency Event

Requirements:

R4-1. The Transmission Owner, Transmission Operator, Load-serving Entity , Distribution Provider, required by the Regional Reliability ~~Council~~Organization to have an underfrequency load shedding program shall analyze and document its underfrequency load shedding program performance in accordance with Regional Reliability ~~Council~~Organization's underfrequency load shedding Program, including the performance of underfrequency load shedding equipment and program effectiveness following system events resulting in system frequency excursions below the initializing set points of the underfrequency load shedding program. The analysis shall include, but not be limited to:

a) A description of the event including initiating conditions.

b) A review of the underfrequency load shedding set points and tripping times.

c) A simulation of the event.

d) A summary of the findings.

R4-2. The Transmission Owner, Transmission Operator, Load-serving Entity, Distribution Provider required by the Regional Reliability ~~Council~~Organization to have an underfrequency load shedding program shall provide documentation of the analysis of its underfrequency load shedding program to the Regional Reliability ~~Council~~Organization(s) and NERC on request 90 calendar days after the system event.

Measures:

M4-1. The Transmission Owner, Transmission Operator, Load-serving ~~Entity ,~~Entity, Distribution Provider required by the Regional Reliability ~~Council~~Organization to have an underfrequency load shedding program's analysis and documentation of underfrequency load shedding program performance following an underfrequency event shall include all elements identified in Reliability Standard 067.4-R4-1.

M4-2. The Transmission Owner, Transmission Operator, Load-serving Entity , Distribution Provider required by the Regional Reliability ~~Council~~Organization to have an underfrequency load shedding program shall have evidence it provided documentation of the analysis of its underfrequency load shedding program performance following an underfrequency event as specified in Reliability Standard 067.4-R4-1.

Regional Differences:

None identified.

Compliance Monitoring Process:

Timeframe:

On request 90 calendar days after the system event.

Compliance Monitoring Responsibility:

Compliance Monitor: Regional Reliability ~~Council~~Organization.

Levels of Non-compliance:

Level 1: Analysis of underfrequency load shedding program performance following an actual underfrequency event below the underfrequency load shedding set point(s) was incomplete in one or more elements in Reliability Standard 067.4-R4-1.

Level 2: Not applicable.

Level 3: Not applicable.

Level 4: Analysis of underfrequency load shedding program performance following an actual underfrequency event below the underfrequency load shedding set point(s) was not provided.

Standard: **068**

Delete 1, 2, 5

Title: Undervoltage Load Shedding

~~068.1 Undervoltage Load Shedding Program Documentation~~

~~068.2 Undervoltage Load Shedding Program Database~~

068.3 Technical Assessment of the Design and Effectiveness of Undervoltage Load Shedding Program.

068.4 Undervoltage Load Shedding System Maintenance and Testing.

~~068.5 Analysis and Documentation of Undervoltage Load Shedding Program Performance~~

Purpose: Provide system preservation measures in an attempt to prevent system voltage collapse or voltage instability by implementing an Undervoltage Load Shedding program requiring end users of electricity on the bulk electric system to drop loads.

Effective Date: February 8, 2005

~~Standard 068.1: Undervoltage Load Shedding Program Documentation~~

~~Requirements:~~
~~R1-1. The Responsible Entity (Load-serving Entity, Transmission Owner, Transmission Operator and Distribution Provider) that owns or operates undervoltage loadshedding programs shall document their undervoltage loadshedding programs including descriptions of the following design details:~~

~~a)Size of customer demand (load) blocks (% of connected load)~~

~~b)Corresponding voltage set points~~

~~c)Relay and breaker operating times~~

~~d)Intentional delays~~

~~e)Related generation protection~~

~~f)Islanding schemes~~

~~g)Automatic load restoration schemes~~

~~h)Any other schemes that are part of or impact the undervoltage loadshedding programs.~~

~~R1-2. The Responsible Entity that owns or operates undervoltage loadshedding programs shall provide documentation of the undervoltage load shedding program to the appropriate Regional Reliability Council(s) and NERC on request (five business days).~~

~~Measures:~~
~~M1-1. The Responsible Entity shall have documentation of its undervoltage load shedding program that includes all items specified in R1-1.~~

~~M1-2. The Responsible Entity shall have evidence it provided the appropriate Regional Reliability Council(s) and NERC with documentation of its undervoltage load shedding program on request (five business days).~~

~~Regional Differences:~~
~~None identified~~

~~Compliance Monitoring Process:~~

~~Timeframe:~~
~~On request (five business days).~~

~~Compliance Monitoring Responsibility:~~
~~Regional Reliability Council~~

~~Levels of Non-compliance:~~

~~Level 1:~~ ~~Documentation of the undervoltage load shedding program was provided, but was incomplete.~~
~~Level 2:~~ ~~Not applicable.~~
~~Level 3:~~ ~~Not applicable.~~
~~Level 4:~~ ~~Documentation of the undervoltage load shedding program was not provided.~~

~~Standard 068.2: Undervoltage Load Shedding Program Database~~

~~Requirements:~~
~~R2-1. The Regional Reliability Council shall maintain and annually update an undervoltage load shedding program database. This database shall include sufficient information to model the undervoltage load shedding program in dynamic simulations of the interconnected transmission systems, including the following items:~~

~~a)Type of undervoltage load shedding equipment,~~

~~b)Voltage set point(s),~~

~~c)Time delay from initiation to trip signal, and~~

~~d)Amount of demand interrupted at peak or other specified level.~~

~~R2-2. The Regional Reliability Council shall update the database annually, and shall provide the current database to NERC on request (within 30 business days).~~

~~Measures:~~
~~M2-1. The Regional Reliability Council shall have an undervoltage load shedding program database that contains the items identified in Reliability Standard 068-R2-1.~~

~~M2-2. The Regional Reliability Council shall have evidence that it provided its current undervoltage load shedding program database to NERC as specified in Reliability Standard 068-R2-2.~~

~~Regional Differences:~~
~~None identified~~

~~Compliance Monitoring Process:~~
~~Timeframe:~~
~~Database to be updated annually.~~
~~Current database on request (30 business days).~~

~~Compliance Monitoring Responsibility:~~
~~NERC~~

~~Levels of Non-compliance:~~

~~Level 1:~~ ~~An undervoltage load shedding program database was provided, but was incomplete.~~

~~Level 2:~~ ~~Not applicable.~~

~~Level 3:~~ ~~Not applicable.~~

~~Level 4~~~~: An undervoltage load shedding program database was not provided.~~

Standard 068.3: Technical Assessment of the Design and Effectiveness of Undervoltage Load Shedding Program

Requirements:
R3-1. The Load-serving Entity, Transmission Owners, Transmission Operator, and Distribution Provider that owns or operates undervoltage load shedding programs shall periodically (at least every five years or as required by changes in system conditions) conduct and document a technical assessment of the effectiveness of their undervoltage load shedding programs. This assessment shall be conducted with the associated Transmission Planner(s) and Planning Authority(ies).

This technical assessment shall include, but is not limited to:

a) Coordination of the ~~UVLS~~undervoltage load shedding programs with other protection and control systems in the Region and with other Regional Reliability Organizations, as appropriate.
b) Simulations that demonstrate that the ~~UVLS~~undervoltage load shedding programs performance is consistent with ~~the~~ Standard 51.
c) A review of the voltage set points and timing.

R3-2. The Load-serving Entity, Transmission Owners, Transmission Operator, and Distribution Provider that owns or operates undervoltage load shedding programs shall provide documentation of its current undervoltage load shedding program's technical assessment to the appropriate Regional Reliability ~~Council~~Organizations and NERC on request (30 calendar days).

Measures:
M3-1. The Load-serving Entity, Transmission Owner, Transmission Operator, and Distribution Provider that owns or operates undervoltage load shedding programs shall include the elements identified in Reliability Standard 068.3-R3-1.

M3-2. The Load-serving Entity, Transmission Owners, Transmission Operator, and Distribution Provider that owns or operates undervoltage load shedding programs shall have evidence it provided documentation of its current undervoltage load shedding program's technical assessment to the Regional Reliability ~~Council~~Organizations and NERC as specified in Reliability Standard 068.3-R3-2.

Regional Differences:
None identified.

Compliance Monitoring Process:

Timeframe:
Technical assessments every five years or as required by system changes.
Current technical assessment on request (30 calendar days.)

Compliance Monitoring Responsibility:
Compliance Monitor: Regional Reliability ~~Council~~Organizations. Each Regional Reliability Organization shall report compliance and violations to NERC via the NERC Compliance Reporting process.

Levels of Non-compliance:

Level 1: N/A.

Level 2: N/A.

Level 3: N/A.

Level 4: A technical assessment of the undervoltage load shedding programs did not address one of the requirements listed in Reliability Standard 068.3 ~~-R2~~ R3 or a technical assessment of the undervoltage load shedding programs was not provided.

Standard 068.4: Undervoltage Load Shedding System Maintenance and Testing

Requirements:
R4-1. The Load-serving Entity, Transmission Owner, and Distribution Provider that owns an under voltage load shedding system shall have a system maintenance and testing program(s) in place. The program(s) shall include:

a) Under voltage load shedding system identification which shall include but is not limited to:
   - Relays.
   - Instrument transformers.
   - Communications systems, where appropriate.
   - Batteries.

b) Documentation of maintenance and testing intervals and their basis.

c) Summary of testing procedure.

d) Schedule for system testing.

e) Schedule for system maintenance.

f) Date last tested/maintained.

R4-2. The Load-serving Entity, Transmission Owner, and Distribution Provider that owns an under voltage load shedding system shall provide documentation of the program and its implementation to the appropriate Regions and NERC on request (within 30 calendar days).

Measures:
M4-1. The Load-serving Entity, Transmission Owner, and Distribution Provider that owns an under voltage load shedding system shall have documentation that its undervoltage load shedding equipment maintenance program conforms with Standard 068.4-R4-1.

M4-2. The Load-serving Entity, Transmission Owner, and Distribution Provider that owns an under voltage load shedding system shall have evidence it provided documentation of its undervoltage load shedding maintenance program and its implementation as specified in Standard 068.4-R4-2.

Regional Differences:
None identified.

Compliance Monitoring Process:

Timeframe:
On request (30 calendar days.)

Compliance Monitoring Responsibility:
Compliance Monitor: Regional Reliability ~~Council~~Organization.

Levels of Non-compliance:

Level 1: Documentation of the maintenance and testing program was incomplete, but records indicate implementation was on schedule.

Level 2: Compliance documentation of the maintenance and testing program was provided, but records indicate that implementation was not on schedule.

Level 3: Documentation of the maintenance and testing program was incomplete, and records indicate implementation was not on schedule.

Level 4: Documentation of the maintenance and testing program, or its implementation, was not provided.

~~Standard 068.5: Analysis and Documentation of Undervoltage Load Shedding Program Performance~~

~~Requirements:~~
~~R5-1. The Load-serving Entity, Transmission Owner, and Distribution Provider that owns or operates an undervoltage load shedding program shall analyze and document all undervoltage load shedding operations, misoperations, and failures to operate. Documentation of the analysis shall include a review of the undervoltage load shedding set points and tripping times and a summary of the findings.~~

~~R5-2. The Load-serving Entity, Transmission Owner, and Distribution Provider that owns or operates an undervoltage load shedding program shall provide documentation of its analysis of undervoltage load shedding operations, misoperations, and failures to operate, to the appropriate Regional Reliability Councils and NERC on request (30 business days).~~

~~Measures:~~
~~M5-1. The Load-serving Entity, Transmission Owner, and Distribution Provider that owns or operates an undervoltage load shedding program shall have documentation to show that its analysis of undervoltage load shedding operations, misoperations and failures to operate as specified in Reliability Standard 069-R5-1.~~

~~M5-2. The Load-serving Entity, Transmission Owner, and Distribution Provider that owns or operates an undervoltage load shedding program shall have evidence that it provided documentation of its analysis of undervoltage load shedding operations, misoperations, and failures to operate as specified in Reliability Standard 069-R5-2.~~

~~Regional Differences:~~
~~None identified~~

~~Compliance Monitoring Process:~~
~~Timeframe:~~
~~On request (30 days).~~

~~Compliance Monitoring Responsibility:~~
~~Regional Reliability Council~~

~~Levels of Non-compliance:~~
~~Level 1: An analysis of undervoltage load shedding operations, misoperations, and failures to operate was provided but was incomplete.~~
~~Level 2: Not applicable.~~
~~Level 3: Not applicable.~~
~~Level 4: An analysis of undervoltage load shedding program performance was not provided.~~

Standard: **069**

Title: Special Protection Systems

069.1 Special Protection System Procedure.

069.2 Special Protection System Database.

069.3 Special Protection System Assessment.

069.4 Special Protection System Data and Documentation.

069.5 Special Protection System Misoperations.

069.6 Special Protection System Maintenance and Testing.

Purpose: To ensure that all Special Protection Systems are properly designed, meet performance requirements, and are coordinated with other protection systems. To ensure that maintenance and testing programs are developed and misoperations are analyzed and corrected.

Effective Date: February 8, 2005

Standard 069.1: Special Protection System Procedure

Requirements:

R1-1. Each Regional Reliability ~~Council~~Organization with a Transmission Owner, Generator Owner, or Distribution Providers(s) that uses or is planning to use a Special Protection System shall have a documented Regional Reliability ~~Council~~Organization review procedure to ensure the Special Protection System complies with Regional Reliability ~~Council~~Organization criteria and NERC Reliability Standards. The Regional Reliability ~~Council~~Organization review procedure shall include:

a) Description of the process for submitting a proposed Special Protection System for Regional Reliability ~~Council~~Organization review.

b) Requirements to provide data that describes design, operation, and modeling of a Special Protection System.

c) Requirements to demonstrate that the Special Protection System shall be designed so that a single Special Protection System component failure, when the Special Protection System was intended to operate, does not prevent the interconnected transmission system from meeting the performance requirements defined in sections 1, 2~~,3~~ and 3 of Reliability Standard 051.

d) Requirements to demonstrate that the inadvertent operation of a Special Protection System shall meet the same performance requirement (Section 1, 2, and 3 of Reliability Standard 051) as that required of the contingency for which it was designed, and not exceed Section 3 (Reliability Standard 051)

e) Requirements to demonstrate the proposed Special Protection System will coordinate with other protection and control systems and applicable Regional Reliability ~~Council~~Organization emergency procedures.

f) Regional Reliability ~~Council~~Organization definition of misoperation.

g) Requirements for analysis and documentation of corrective action plans for all Special Protection System misoperations.

h) Identification of the Regional Reliability ~~Council~~Organization group responsible for the Regional Reliability ~~Council~~Organization's review procedure and the process for Regional Reliability ~~Council~~Organization approval of the procedure.

i) Determination, as appropriate, of maintenance and testing requirements.

R1-2. The Regional Reliability ~~Council~~Organization shall provide affected Regional Reliability ~~Council~~Organizations and NERC with documentation of the Regional Reliability ~~Council~~Organization's Special Protection System review procedure on request (within 30 calendar days).

Measures:

M1-1. The Regional Reliability ~~Council~~Organization ~~whose members~~ with a Transmission Owner, Generator Owner, or Distribution Provider us~~ing~~e or ~~are~~ planning to use a Special Protection System shall have a documented Regional Reliability ~~Council~~Organization review procedure as defined in Reliability Standard 069.1-R1-1.

M1-2. The Regional Reliability ~~Council~~Organization shall have evidence it provided affected Regional Reliability ~~Council~~Organizations and NERC with documentation of its Special Protection System review procedure on request (within 30 calendar days).

Regional Differences:
Not Identified.

Compliance Monitoring Process:

Timeframe:
On request (within 30 calendar days.)

Compliance Monitoring Responsibility:
Compliance Monitor: Unaffiliated Third Party.~~NERC~~

Levels of Non-compliance:

Level 1: Documentation of the Regional Reliability ~~Council~~Organization's procedure is missing one of the items listed in Reliability Standard 069.1- R1-1.

Level 2: Documentation of the Regional Reliability ~~Council~~Organization's procedure is missing two of the items listed in Reliability Standard 069.1-R1-1.

Level 3: Documentation of the Regional Reliability ~~Council~~Organization's procedure is missing three of the items listed in Reliability Standard 069.1-R1-1.

Level 4: Documentation of the Regional Reliability ~~Council~~Organization's procedure was not provided or is missing four or more of the items listed in Reliability Standard 069.1-R1-1.

Standard 069.2: Special Protection System Database

Requirements:

R2-1. A Regional Reliability ~~Council~~Organization that has a Transmission Owner, Generator Owner, or Distribution Provider with a Special Protection System installed shall maintain a Special Protection System database. The database shall include the following types of information:

a) Design Objectives — Contingencies and system conditions for which the Special Protection System was designed,

b) Operation — The actions taken by the Special Protection System in response to disturbance conditions, and

c) Modeling — Information on detection logic or relay settings that control operation of the Special Protection System.

R2-2. The Regional Reliability ~~Council~~Organization shall provide to affected Regional Reliability ~~Council~~Organization(s~~)and~~) and NERC documentation of its database or the information therein on request (within 30 calendar days).

Measures:

M2-1. The Regional Reliability ~~Council~~Organization that has a Transmission Owner, Generator Owner, or Distribution Providers with a Special Protection System installed, shall have a Special Protection System database as defined in ~~Section 2~~ R~~1~~2-1 of this Reliability Standard.

M2-2. The Regional Reliability ~~Council~~Organization shall have evidence it provided documentation of its database or the information therein, to affected Regional Reliability ~~Council~~Organization(s) and NERC on request (within 30 calendar days).

Regional Differences:

Not Identified.

Compliance Monitoring Process:

Timeframe:

On request (within 30 calendar days.)

Compliance Monitoring Responsibility:

Compliance Monitor: Unaffiliated Third Party.~~NERC~~

Levels of Non-compliance:

Level 1: The Regional Reliability ~~Council~~Organization's database is missing one of the items listed in Reliability Standard 069.2-R2-1.

Level 2: The Regional Reliability ~~Council~~Organization's database is missing two of the items listed in Reliability Standard 069.2-R2-1.

Level 3: Not applicable.

Level 4: The Regional Reliability ~~Council~~Organization's database was not provided or is missing all of the elements listed in Reliability Standard 069.2-R2-1.

Standard 069.3: Special Protection System Assessment

Requirements:

R3-1. The Regional Reliability ~~Council~~Organization shall assess the operation, coordination, and effectiveness of all Special Protection Systems installed in its region at least once every five years for compliance with NERC Reliability Standards and Regional criteria.

R3-2. The Regional Reliability ~~Council~~Organization shall provide either a summary report or a detailed report of its assessment of the operation, coordination, and effectiveness of all Special Protection Systems installed in its region to affected Reliability Authorities or NERC, on request (within 30 calendar days).

R3-3. The documentation of the Regional Reliability ~~Council~~Organization's Special Protection System assessment shall include the following elements:

a) Identification of group conducting the assessment and the date the assessment was performed.

b) Study years, system conditions, and contingencies analyzed in the technical studies on which the assessment is based and when those technical studies were performed.

c) Identification of Special Protection Systems that were found not to comply with NERC Standards and Regional Reliability ~~Council~~Organization criteria.

d) Discussion of any coordination problems found between a Special Protection System and other protection and control systems.

e) Provide corrective action plans for non-compliant Special Protection Systems.

Measures:

M3-1. The Regional Reliability ~~Council~~Organization shall assess the operation, coordination, and effectiveness of all Special Protection Systems installed in its region at least once every five years for compliance with NERC Standards and Regional criteria.

M3-2. The Regional Reliability ~~Council~~Organization shall provide either a summary report or a detailed report of this assessment to affected Regional Reliability ~~Council~~Organizations or NERC, on request (within 30 calendar days).

M3-3. The Regional Reliability ~~Council~~Organization's documentation of the Special Protection System assessment shall include all elements as defined in Section 3 of Reliability Standard 069.3-R3.

Regional Differences:
Not Identified.

Compliance Monitoring Process:

Timeframe:

On request (within 30 calendar days.)

Compliance Monitoring Responsibility:

Compliance Monitor: Unaffiliated Third Party.~~NERC~~

Levels of Non-compliance:

Level 1: The summary (or detailed) Regional Reliability ~~Council~~Organization Special Protection System assessment is missing one of the items listed in Reliability Standard 069.3-R3-3.

Level 2: The summary (or detailed) Regional Reliability ~~Council~~Organization Special Protection System assessment is missing two of the items listed in Reliability Standard 069.3-R3-3.

Level 3: The Regional Reliability ~~Council~~Organization's summary (or detailed) Regional Reliability ~~Council~~Organization Special Protection System assessment is missing three of the items listed in Reliability Standard 069.3-R3-3.

Level 4: The Regional Reliability ~~Council~~Organization's summary (or detailed) Regional Reliability ~~Council~~Organization Special Protection System assessment is missing more than three of the items listed in Reliability Standard 069.3-R3-3 or was not provided.

Standard 069.4: Special Protection System Data and Documentation

Requirements:

R4-1. The Transmission Owner, Generator Owner, and Distribution Provider that owns a Special Protection System shall maintain a list of and provide data for existing and proposed Special Protection Systems as ~~defined~~ specified in Reliability Standard 069.2-R2-1.

R4-2. The Transmission Owner, Generator Owner, and Distribution Provider that owns a Special Protection System shall have evidence it reviewed new or functionally modified Special Protection Systems in accordance with the Regional Reliability ~~Council~~Organization's procedures as defined in Reliability Standard 069.1-R1-1 prior to being placed in service.

R4-3. The Transmission Owner, Generator Owner, and Distribution Provider that owns a Special Protection System shall provide documentation of Special Protection System data and the results of studies that show compliance of new or functionally modified Special Protection Systems with NERC Standards and Regional Reliability ~~Council~~Organization criteria to affected Regional Reliability ~~Council~~Organizations and NERC, on request (within 30 calendar days).

Measures:

M4-1. The Transmission Owner, Generator Owner, and Distribution Provider that owns a Special Protection System shall have evidence it maintains a list of and provides data for existing and proposed Special Protection Systems as defined in Reliability Standard 069.2-R2-1.

M4-2. The Transmission Owner, Generator Owner, and Distribution Provider that owns a Special Protection System shall have evidence it reviewed new or functionally modified Special Protection Systems in accordance with the Regional Reliability ~~Council~~Organization's procedures as defined in Reliability Standard 069.1-R1-1 prior to being placed in service.

M4-3. The Transmission Owner, Generator Owner, and Distribution Provider that owns a Special Protection System shall have evidence it provided documentation of Special Protection System data and the results of studies that show compliance of new or functionally modified Special Protection Systems with NERC Standards and Regional Reliability ~~Council~~Organization criteria to affected Regional Reliability ~~Council~~Organizations and NERC, on request (within 30 calendar days).

Regional Differences:
Not Identified.

Compliance Monitoring Process:

Timeframe:
On request (within 30 calendar days.)

Compliance Monitoring Responsibility:
Compliance Monitor: Regional Reliability ~~Council~~Organization.

Levels of Non-compliance:

Level 1: Special Protection System owners provided Special Protection System data, but was incomplete according to the Regional Reliability ~~Council~~Organization Special Protection System database requirements.

Level 2: Special Protection System owners provided results of studies that show compliance of new or functionally modified Special Protection Systems with the

NERC Planning Standards and Regional Reliability ~~Council~~Organization criteria, but were incomplete according to the Regional Reliability ~~Council~~Organization procedures for Reliability Standard 069.1-R1-1.

Level 3: Not applicable.

Level 4: No Special Protection System data was provided in accordance with Regional Reliability ~~Council~~Organization Special Protection System database requirements for Standard 069.1-R1-1, or the results of studies that show compliance of new or functionally modified Special Protection Systems with the NERC Reliability Standards and Regional Reliability ~~Council~~Organization criteria were not provided in accordance with Regional Reliability ~~Council~~Organization procedures for Reliability Standard 069.1-R1-1.

Standard 069.5: Special Protection System Misoperations

Requirements:

R5-1. The Transmission Owner, Generator Owner, and Distribution Provider that owns a Special Protection System shall analyze its Special Protection System operations and maintain a record of all misoperations in accordance with Regional Reliability ~~Council~~Organization procedures in Reliability Standard 069.1- R1-1.

R5-2. The Transmission Owner, Generator Owner, and Distribution Provider that owns a Special Protection System shall take corrective actions to avoid future misoperations.

R5-3. The Transmission Owner, Generator Owner, and Distribution Provider that owns a Special Protection System shall provide documentation of the misoperation analyses and the corrective action plans to the affected Regional Reliability ~~Council~~Organization and NERC, on request (within 90 calendar days).

Measures:

M5-1. The Transmission Owner, Generator Owner, and Distribution Provider that owns a Special Protection System shall have evidence it analyzed Special Protection System operations and maintains a record of all misoperations in accordance with Regional Reliability ~~Council~~Organization procedures in Reliability Standard 069.5-R5-1.

M5-2. The Transmission Owner, Generator Owner, and Distribution Provider that owns a Special Protection System shall have evidence it took corrective actions to avoid future misoperations.

M5-3. The Transmission Owner, Generator Owner, and Distribution Provider that owns a Special Protection System shall have evidence it provided documentation of the misoperation analyses and the corrective action plans to the affected Regional Reliability ~~Council~~Organization and NERC, on request (within 90 calendar days).

Regional Differences:

Not Identified.

Compliance Monitoring Process:

Timeframe:

On request (within 90 calendar days of the incident or on request (within 30 calendar days) if requested more than ~~90~~ 90 calendar days after the incident.)

Compliance Monitoring Responsibility:

Compliance Monitor: Regional Reliability ~~Council~~Organization.

Levels of Non-compliance:

Level 1: Documentation of Special Protection System misoperations is complete but documentation of corrective actions taken for all identified Special Protection System misoperations is incomplete.

Level 2: Documentation of corrective actions taken for Special Protection System misoperations is complete but documentation of Special Protection System misoperations is incomplete.

Level 3: Documentation of Special Protection System misoperations and corrective actions is incomplete.

Level 4: No documentation of Special Protection System misoperations or corrective actions.

Standard 069.6: Special Protection System Maintenance and Testing

Requirements:

R6-1. The Transmission Owner, Generator Owner, and Distribution Provider that owns a Special Protection System shall have a system maintenance and testing program(s) in place. The program(s) shall include:

a) Special Protection System identification shall include but is not limited to:
   - Relays.
   - Instrument transformers.
   - Communications systems, where appropriate.
   - Batteries.

b) Documentation of maintenance and testing intervals and their basis.

c) Summary of testing procedure.

d) Schedule for system testing.

e) Schedule for system maintenance.

f) Date last tested/maintained.

R6-2. The Transmission Owner, Generator Owner, and Distribution Provider that owns a Special Protection System shall provide documentation of the program and its implementation to the appropriate Regional Reliability ~~Council~~Organizations and NERC on request (within 30 calendar days).

Measures:

M6-1. The Transmission Owner, Generator Owner, and Distribution Provider that owns a Special Protection System shall have a system maintenance and testing program(s) in place that includes all items in Reliability Standard 069.6-R6-1.

M6-2. The Transmission Owner, Generator Owner, and Distribution Provider that owns a Special Protection System shall have evidence it provided documentation of the program and its implementation to the appropriate Regional Reliability ~~Council~~Organizations and NERC on request (within 30 calendar days).

Regional Differences:
Not Identified.

Compliance Monitoring Process:

Timeframe:
On request (within 30 calendar days.)

Compliance Monitoring Responsibility:
Compliance Monitor: Regional Reliability ~~Council~~Organization. Each Region shall report compliance and violations to NERC via the NERC Compliance Reporting process.

Levels of Non-compliance:

Level 1: Documentation of the maintenance and testing program was incomplete, but records indicate implementation was on schedule.

Level 2: Complete documentation of the maintenance and testing program was provided, but records indicate that implementation was not on schedule.

Level 3: Documentation of the maintenance and testing program was incomplete, and records indicate implementation was not on schedule.

Level 4: Documentation of the maintenance and testing program, or its implementation, was not provided.

Standard: **070**

Title: System Blackstart Capability

070.1 Establish, Maintain, and Document a Regional Blackstart Capability Plan.

~~070.2 Establish, maintain, and document a regional blackstart capability plan~~

~~070.3 Diagram the number, size, and location of system blackstart generating units and the initial transmission switching requirements.~~

070.4 Documentation of Blackstart Generating Unit Test Results.

Purpose: A system blackstart capability plan is necessary to ensure that the quantity and location of system blackstart generators are sufficient and that they can perform their expected functions as specified in overall coordinated regional system restoration plans.

Effective Date: February 8, 2005

Standard: **070.1**

Title: Establish, maintain, and document a regional blackstart capability plan.

Requirements:
R1-1. Each Regional Reliability ~~Council~~ Organization shall establish and maintain a system blackstart capability plan, as part of an overall coordinated regional system restoration plan. The overall regional system restoration plan~~, that~~ shall include requirements for verification through analysis how system blackstart generating units shall perform their intended functions and shall be sufficient to meet system restoration plan expectations.

The Regional Reliability ~~Council~~ Organization shall coordinate with and among other Regional Reliability ~~Council~~Organizations as appropriate in the development of its blackstart capability plan(s).~~as appropriate.~~

The blackstart capability plan shall include:

~~1.~~a) A requirement to have a database that contains all blackstart generators[1] designated for use in a Restoration Plan within the respective areas. This database shall be updated on an annual basis. The database shall include the name, location, MW capacity, type of unit, latest date of test, and starting method.

~~2.~~b) A requirement to demonstrate that blackstart units perform their intended functions as required in the Reliability Authority's system restoration plan. This requirement can be met either through simulation or testing. The blackstart plan must consider the availability of designated blackstart plan units and initial transmission switching requirements.

~~3.~~c) Blackstart unit testing requirements including, but not limited to:

- Testing frequency (minimum of one third of the units each year).
- Type of test required, including the requirement to start when isolated from the system.
- Minimum duration of tests.

~~4.~~d) A requirement to review and update the regional blackstart capability plan at least every five years.

R1-2. The Regional Reliability ~~Council~~ Organization shall provide documentation of its system blackstart capability plans to NERC within 30 ~~business~~ calendar days of a request.

Measures:
M1-1. The Regional Reliability ~~Council~~ Organization's blackstart capability plan shall include all four of the requirements in Reliability Standard 070.1-R1-1.

M1-2.~~—~~ The Regional Reliability ~~Council~~ Organization shall have evidence it provided its blackstart capability plan in accordance with Reliability Standard 070.1-R1-2.

[1] A unit cannot be considered a blackstart unit unless it has met the regional blackstart requirements. It is expected that if a unit fails a test, that unit will be fixed and retested within a timeframe established by the Regional Reliability ~~Council~~ Organization in accordance with the regional Blackstart Plan or that unit will no longer be considered blackstart.

Regional Differences:
None identified.

Compliance Monitoring Process:

Timeframe:

Current regional blackstart capability plan: on request (30 calendar days).

Compliance Monitoring Responsibility:

Compliance Monitor: ~~NERC~~ Unaffiliated Third Party.

Levels of Non-compliance:

Level 1: N/A.

Level 2: The Regional Reliability ~~Council~~Organization's blackstart generating unit capability plan was incomplete in one of the four requirements defined above in Reliability Standard 070.1-R1-1.

Level 3: N/A.

Level 4: The Regional Reliability ~~Council~~Organization's blackstart generating unit capability plan was not provided (Reliability Standard 070.1-R2-1), or was incomplete in two or more of the four requirements defined above in Reliability Standard 070.1-R1-1.

~~**Standard: 070.2**~~

~~**Title:** Establish, maintain, and document a regional blackstart capability plan.~~

~~**Requirements:**~~
~~R2-1. Each Transmission Operator shall verify that the number, size, and location of system blackstart generating units are sufficient to meet regional restoration plan expectations.~~
~~The Transmission Operator of each system shall demonstrate, through simulation or testing, that blackstart generating unit(s) in its area can perform their intended functions as required in the regional restoration plan. (Section 1 of this reliability standard) Such simulation or testing shall be performed at least every five years.~~

~~R2-2. Each Transmission Operator shall provide documentation of its most current simulations or tests to the Regional Reliability Councils and NERC on request (within 30 business days).~~

~~**Measures:**~~
~~M2-1. The Transmission Operator shall provide documentation that the blackstart units in its area are sufficient to meet the requirements of Standard 070-R2-1.~~

~~M2-2. The Transmission Owner shall have evidence it provided its test results in accordance with Standard 070-R2-2.~~

~~**Regional Differences:**~~
~~None identified.~~

~~**Compliance Monitoring Process:**~~
~~**Timeframe:**~~
~~Simulation or testing of blackstart capability units: Every five years.~~
~~Documentation of the most current simulations or tests: on request (30 business days)~~

~~**Compliance Monitoring Responsibility:**~~
~~Regional Reliability Council~~

~~**Levels of Non-compliance:**~~
~~**Level 1:** N/A~~

~~**Level 2:** N/A~~

~~**Level 3:** N/A~~

~~**Level 4:** The Transmission Operator's simulation or test results demonstrating that blackstart generating units can perform their intended functions were not provided, or the results were not compliant with the regional restoration plan.~~

~~**Standard: 070.3**~~

~~**Title:** Diagram the number, size, and location of system blackstart generating units and the initial transmission switching requirements.~~

~~**Requirements:**~~

~~R3-1. Each Transmission Operator shall have on file diagrams showing the location of each blackstart generating unit that is part of the regional blackstart capability plan (Reliability Standard 070-R1-1). The diagrams shall be reviewed and updated annually or when system changes occur. Where applicable, primary and secondary cranking paths associated with each blackstart generating unit and the units to be restarted shall be identified on the diagrams.~~

~~R3-2. The Transmission Operator shall provide current diagrams to the Regional Reliability Council and NERC on request (30 business days).~~

~~**Measures:**~~

~~M3-1. The Transmission Operator shall have evidence it provided the diagrams specified in Reliability Standard 070-R3-1 as specified in Reliability Standard 070-R3-2.~~

~~**Regional Differences:**~~

~~None identified.~~

~~**Compliance Monitoring Process:**~~

~~**Timeframe:**~~

~~Update of diagrams showing blackstart generating units: annually or when system changes occur~~

~~Current diagrams: on request (30 business days).~~

~~**Compliance Monitoring Responsibility:**~~

~~Regional Reliability Council~~

~~**Levels of Non-compliance:**~~

~~**Level 1**: N/A~~

~~**Level 2:** N/A~~

~~**Level 3:** N/A~~

~~**Level 4**: The Transmission Operator's diagrams of the number, size, and location of system blackstart generating units and the initial transmission switching requirements were not provided, or the diagrams were not compliant with the Regional Reliability Council's restoration plan.~~

Standard: **070.4**

Title: **Documentation of blackstart generating unit test results.**

Requirements:
R4-1. The Generator Operator of each blackstart generating unit shall test the startup and operation of each system blackstart generating unit identified in the blackstart capability plan as required in the regional Blackstart Plan (Reliability Standard 070.1-R1-1). Testing records shall include the dates of the tests, the duration of the tests, and an indication of whether the tests met regional Blackstart Plan requirements.

R4-2. The Generator Owner or Generator Operator shall provide documentation of the test results of the startup and operation of each blackstart generating unit to the Regional Reliability ~~Council~~Organizations and upon request to NERC.

Measures:
M4-1. The Generator Operator shall have evidence it provided the test results specified in Reliability Standard 070.4-R4-1 as specified in Reliability Standard 070.4-R4-2.

Regional Differences:
None identified.

Compliance Monitoring Process:

Timeframe:

Current test results: to the Regional Reliability ~~Council~~ Organization and upon request to NERC (30 calendar days.)

Compliance Monitoring Responsibility:

Compliance Monitor: Regional Reliability ~~Council~~Organization.

Levels of Non-compliance:

Level 1: Startup and operation testing of each blackstart generating unit was performed, but the documentation was incomplete.

Level 2: N/A.

Level 3: Startup and operation testing of a blackstart generating unit was only partially performed.

Level 4: Startup and operation testing of each blackstart generating unit was not performed.

Standard: 072

Title: Vegetation Management Program

072.1 Vegetation Management Program

Purpose: To ensure that Transmission Owners have a vegetation management program to prevent transmission line contact with vegetation, and to ensure that certain vegetation-related outages are reported to the appropriate Regional Reliability Organization.

Effective Date: February 8, 2005

Standard: 072.1

Title: Vegetation Management Program

Requirements:
R1-1. Each Transmission Owner shall have a vegetation management program to prevent transmission line contact with vegetation. The vegetation management program shall include the following three elements:

a) Inspection requirements

b) Trimming clearances

c) Annual work plan

R1-2. Each Transmission Owner shall report to its Regional Reliability ~~Council~~Organization all vegetation-related outages on transmission circuits 200 kV and higher and any other lower voltage lines designated by the Regional Reliability ~~Council~~Organization to be critical to the reliability of the electric system.

Measures:
M1-1. The Transmission Owner's vegetation management program documentation contains the following elements:

a) Inspection requirements

b) Trimming clearances

c) Annual work plan

M1-2. The Transmission Owner shall have evidence it performs vegetation program maintenance in the annual work plan according to the requirements and procedures contained in the program.

M1-3. The Transmission Owner shall have evidence it reported all vegetation-related transmission line trips on lines of 200kV or higher and any other lower voltage lines designated by the Regional Reliability ~~Council~~Organization to be critical to the reliability of the electric system.

Compliance Monitoring Process:
Reporting Requirements:

Self-certification: The Transmission Owner annually self-certifies that it has performed vegetation program maintenance in the annual work plan according to the requirements and procedures contained in the program.

Periodic Reporting: Transmission Owners shall report vegetation-related line outages on transmission circuits 200 kV or higher and any other lower voltage lines designated by the Regional Reliability ~~Council~~Organization to be critical to the reliability of the electric system, to ~~the~~ its Regional Reliability Organization for a calendar month by the 20th of the following month. The Regional Reliability Organization shall report quarterly results to NERC.

All outages shall be reported where the cause of the outage is the line faulting due to contact with vegetation, except:

- Multiple outages on an individual line, if caused by the same vegetation, shall be reported as one outage regardless of the actual number of outages within a 24-hour period.

- A single trip followed by a successful automatic reclosure within a 24-hour period shall not be a reportable outage.

Reporting Period:

Three-year Audit

The Compliance Monitor ~~swill~~ shall conduct an on-site review every three years. The Vegetation Management Program will be reviewed and assessed.

Self-Certification

The Transmission Owner annually submits a self-certification that it has performed all vegetation management maintenance in the annual work plan during the past calendar year that is described in the Vegetation Management Program.

Periodic Reporting

All vegetation-related transmission line trips on lines of 200kV or higher and any other lower voltage lines designated by the Regional Reliability ~~Council~~Organization to be critical to the reliability of the electric system will be reported to the region on a monthly basis by the 20th of the following month. The Region shall report quarterly results to NERC by the last business day of January, April, July, and October.

Compliance Reset Period: One calendar quarter

Compliance Monitoring Responsibility:

Compliance Monitor: Regional Reliability ~~Council~~Organization. Each Regional Reliability Organization shall report compliance and violations to NERC via the NERC Compliance Reporting process.

Levels of Non-compliance:

The Transmission Owner is in Full Compliance if the following Requirements are met:

Three-year Audit

The vegetation management program is fully documented and contains all three elements listed in ~~Measurement~~ Reliability Standard 072-R1-1. ~~M1-1of this Reliability Standard.~~

Self-Certification

The T~~t~~ransmission ~~owner~~Owner performed all maintenance as described in the annual work plan.

Periodic Reporting

All vegetation-related transmission line outages of 200kV or higher and any other lower voltage lines designated by the Regional Reliability ~~Council~~Organization to be critical to the reliability of the electric system are reported during a calendar quarter.

The T~~t~~ransmission ~~owner~~Owner is non-compliant if:

- Vegetation-related outages occurred and were not reported during a one-month period
- The Vegetation Management Plan is found to be not complete
- The T~~t~~ransmission O~~o~~wner did not perform necessary maintenance described in the annual work plan as reported via self-certification.