North American Energy Standards Board

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Via email and posting

TO: Wholesale Electric Quadrant Members and Interested Industry Participants

FROM: Todd Oncken, NAESB Deputy Director

RE: Request for Comments on Operate Within Interconnection Limits Business Practices Scoping Document – due June 16, 2004

DATE: May 17, 2004

Dear NAESB WEQ Members and Interested Industry Participants,

The WEQ Standards Review Subcommittee has completed a scoping document to determine whether complementary business practices are needed for NERC's proposed Operate Within Interconnection Reliability Operating Limits (IROLs) Standard (Standard 200). Attached, please find the scoping document and its attachment.

Comments on this scoping document should focus on, but not necessarily be limited to, the following:

1. Beyond the initial transition to NAESB Standards Version 0, is adoption of NERC Operating Policy Appendix 9C1, 9C2 or 9C3 as a NAESB business practices acceptable to suit the needs of market participants to relieve congestion for areas where there is no organized pricing market for congestion?

    a. Are multiple operating philosophies acceptable for purposes of accommodating market transactions, particularly for those transactions that cross market and Reliability Authority borders?

    b. NERC Policy 9.F.3.1 states:

        > **Selecting transmission loading relief procedure.** The RELIABILITY COORDINATOR experiencing a potential or actual SOL or IROL violation on the transmission system within its RELIABILITY COORDINATOR AREA shall, at its discretion, select from either a "local" (Regional, Interregional, or subregional) transmission loading relief procedure or an INTERCONNECTION-wide procedure, such as those listed in Appendix 9C1, 9C2 or 9C3.

        Is it appropriate for NAESB to develop and/or adopt the Regional, Interregional, or subregional procedures referenced above? Without adoption, what stakeholder process exists for the development of those procedures?

2. Will there be a need to develop market-oriented business practices to complement current NERC Operating Policy 9 Section F (April 24, 2004)? For example, should local procedures, where currently in place, such as generation redispatch or load management, be standardized to require all dispatchable resources to participate in the process and be compensated?

    a. If yes, when allocating resources to participate in NAESB, what priority should be placed on this item?

3. As a NAESB business practice complement to current NERC Operating Policy 9 Section F (April 24, 2004), should a standard be developed that only addresses congestion that occurs as a circumstance of transacting business across a seam?

a. If yes, when allocating resources to participate in NAESB, what priority should be placed on this item?

4. Should there be a new NAESB standard to complement current NERC Operating Policy 9 Section F (April 24, 2004) with both requirements for local congestion management and congestion management across seams?

   a. If yes, when allocating resources to participate in NAESB, what priority should be placed on this item?

Please return any comments you have on the document to the NAESB Office (naesb@naesb.org or 713-356-0067 fax) by June 16, 2004. If you have any question or need further assistance, feel free to contact the NAESB Office at 713-356-0060.

Best Regards,

Todd Oncken, Deputy Director

cc: Rae McQuade, Executive Director

Scope Document
For
NERC Operate Within Interconnection Reliability Operating Limits (IROLs)

NAESB Standard Request # R30317 in Coordination With Input from the NERC Market Committee

The North American Electric Reliability Council has sought to establish an industry reliability standard for establishing requirements for the operation of the interconnected bulk power system within specified operating limits to avoid uncontrolled cascading outages over a wider area that could threaten the reliability of the bulk transmission network. NAESB's Standards Review Subcommittee seeks to establish companion standard business practices to complement the reliability requirements to be set forth by NERC.

NERC Proposed Standard(s) and date:
200 – Operate Within Interconnection Reliability Operating Limits, July 1, 2003
201 - Interconnection Reliability Operating Limit Identification, July 1, 2003
202 – Monitoring, July 1, 2003
203 – Analyses and Assessments, July 1, 2003
204 –Actions, July 1, 2003
205 – Data Specification & Collection, July 1, 2003
206 – Data Provision, July 1, 2003
207 – Action Plan, July 1, 2003
208 – Reliability Authority Directives, July 1, 2003

Description and Background

The proposed NERC Reliability standard seeks to prevent instability, uncontrolled Separation, or cascading outages that adversely impact the reliability of the bulk transmission
system.

This NERC standard will address the following areas:

- Identification of interconnection reliability limits.
- Monitoring of the system for interconnection reliability limits.
- Analyze and assess system conditions based on monitored interconnection reliability limits.
- Specify data and collection needed for monitoring interconnection reliability limits.
- Action plan utilized by Reliability Authorities to maintain operations within interconnection reliability limits.
- Requirements apply to entities performing various electric system functions, as defined in the NERC Functional Model.

The NERC proposed standard raises the following possible business practice concerns and questions to the NAESB Executive Committee:

> NERC requires that the RCs of the bulk transmission system have in place procedures to effectively manage transactions in the event of overload on the system. These procedures may impact tariff service priorities and affect commercial market transactions that transpire both within and between markets.
>
> Developing business practices for curtailment processes may entail that all transactions are tagged or follows the processes developed by NAESB's Electronic Scheduling Subcommittee.
>
> There are questions on whether the development will be focused on national standard, a standard encompassing regional differences, or if the standard will be primarily a communication standard to be applicable on a national basis.
>
> Regarding the list of facilities subject to the interconnection reliability operational limits, will this list be the only set of facilities employed by both NERC for reliability requirements as well as a NAESB Business Practice Standard?

The NAESB SRS and NERC MC realize the need for additional companion business practice standards beyond those currently in place surrounding control of operating limits. However, the level to which the standard should be applied remains unclear.

Reliability standards are currently in place to ensure control area operators observe reliability limits, and for the most part these limits are observed. The problem is that in order to stay within prescribed limits, control areas may be obligated to relieve congestion in their own area utilizing a set of procedures that may cause overloads in neighboring areas. Other problems arise when a control area operator has a transmission constraint on an element at the control area's border. In these instances, that control area's congestion relief procedure may employ a business or market process that meets the obligations of the reliability standards for its own control area, but may negatively impact the business or market process of the neighboring control area. These types of overloads are very difficult to control with only generation inside the control area and are best managed either by standardization of a congestion relief process or coordination of congestion relief processes of the affected control areas. Thus, the working group concludes that additional business standards are needed to avoid shifting problems from one control area to another, and to ensure effective control of constraints at the borders between control areas.

Today, in the Eastern Interconnection, the primary method for interconnected congestion management is the NERC Transmission Loading Relief (TLR) process. When a control area operator needs relief on a transmission element, a TLR request is issued and transactions currently flowing in the direction of the constraint are curtailed. In some areas, most notably in areas utilizing a market driven congestion relief mechanism, TLRs are used only after all internal redispatch options have been exhausted. Others use TLRs as the first step in controlling overloaded elements. There are also plans between RTOs utilizing market relief mechanisms to redispatch resources down to appropriate levels to ensure one RTO is not over utilizing the transmission system in a neighboring control area and thus causing the congestion. In the Western Interconnection, the primary means of operating within interconnected reliability limits involves using previously identified "qualified paths".

Because of the already existing differences between the interconnections, as described above, a single nationwide business standard for congestion management may not be possible. On the other hand, a multitude of business practices to provide congestion relief, for transmission systems that operate in an interconnected fashion, may not lend well to facilitating transactions between markets (i.e.-Seams Issues). Further discussion and investigation are needed to determine if multiple operating philosophies are acceptable for purposes of accommodating market transactions, particularly for those transactions that cross market and Reliability Authority borders.

Regardless of the breadth of geographical coverage, the complementary NAESB standard should address the following areas:

- Identification of interconnection reliability operating limits. Control areas / RTOs should post and maintain a list of interconnected reliability limits they operate to, so that other control areas / RTOs can maintain a copy of the list in their own systems and ensure they are prepared to adjust unit output for the limit.
- Monitoring of the system for interconnection reliability operating limits. All control areas / RTOs should be responsible for monitoring the list of interconnected reliability limits mentioned above.
- Analyze and assess system conditions based on monitored interconnection reliability limits, to determine when action needs to be taken to alter flow patterns and increase the margin on elements that are approaching their limit.
- Data collection specification. As a guide for an appropriate level of monitoring, the standard should specify data collection needed for monitoring interconnection reliability limits.
- Action plan utilized by operators to maintain operations within interconnection reliability limits. The standard should contain a checklist and procedure for operators to follow in order to implement control on interconnected reliability limits.

The standard should build off of the existing processes and procedures used in each interconnection to the extent practical. The standard should realize differences in current methods of transaction management due to market based versus non-market based areas, and cover interactions of each of these types of areas.

- Practices for management of transaction curtailment including:
    - Timing
    - Priority
    - Magnitude
    - Duration
    - Types of methodologies used
    - Informing parties of the reloads and the methodologies used
    - Affected Parties communicating their agreement on the reloads.

- Possible Approaches for a NAESB Business Practice for Congestion Management

    - One option is to develop the proposed companion standard based on the methods included in the Joint Operating Agreement between PJM and MISO, to be implemented later this year. The sample is attached as Appendix A.

- For areas that do not employ market mechanisms for congestion relief (FERC Pro Forma 888 Point-to-point service), a congestion market mechanism could be developed to relieve congestion. Some possible requirements include:
    - Communication between RAs and market of pending constraints
    - Electronic bulletin board posting of prices to "buy-through" congestion (by operator and/or customers)
    - Operator driven market price to keep bi-lateral schedules based on real-time system conditions
    - Bids and offers to displace higher priority bi-lateral transactions (assumes same path and same PTDFs) (Congestion price would be based on bi-lateral schedule's PTDF)
    - Redispatch (with prices)

Appendix A to MSSCWG Response to MC

Operate Within Interconnection Reliability Operating Limits Standard - Sample

Description and Background:

As RTOs / ISOs expand and implement different means to control transmission congestion, one of the primary seams issues that must be resolved is how different congestion management methodologies (market-based and traditional) will interact to ensure that operating limits are still met. This document proposes an industry standard for the operation of the bulk power system and the business practices needed to operate within interconnection reliability limits.

The proposed solution will greatly enhance current IDC granularity by utilizing existing real-time applications to monitor and react to flowgates external to an operating entity's footprint. Given that operating entities today utilize different means of controlling transmission congestion, be it pricing signals, direct unit control, or transmission loading relief (TLR) requests, the proposal is broad enough to cover three possible interactions between neighboring operating entities:

- Market Based to Market Based
- Market Based to non Market Based
- Non Market Based to non Market Based

Overview:

Operating entities will continue to be ultimately responsible to ensure flows on transmission facilities within their control are below the prescribed limits, but will have improved measures to get relief from neighboring areas when needed. When an operating entity indicates that flow reduction is needed on a particular flowgate, the neighboring entities will then redispatch units in that area down to a pre-determined level. To accomplish this, the neighboring areas will monitor the contribution from their units (their "Market Flow") on the affected flowgate, and dispatch the units to reduce that contribution. To effect this coordination of congestion management activities, this proposal includes a methodology for determining both firm and non-firm flows resulting from operating entity dispatch on external parties flowgates, used to establish the pre-determined levels for areas to reduce to.

Market Flows are defined as the flows generated from an operational entity's dispatch, and is equal to the sum of firm and non-firm flows. The firm components consist of the

flows created both through serving Network Native Load (NNL) and by those schedules flowing on Firm transmission reservations (7-F). For the purposes of this proposal, both firm transmission and NNL schedules will be referred to as the **NNL** component of Market Flows, and are considered firm.

The remainders of Market Flows, therefore, are non-firm. When the values of these flows are known, they can be treated as equivalent to non-firm transmission service. As such, Reliability Coordinators can request operating entities provide relief under TLR based on these transmission priorities.

By applying the above philosophy to the problem of coordinating congestion management, we can determine not only the impacts of an operating entity's dispatch on a particular flowgate, we can also determine the appropriate firmness of those flows. This results in the ability to coordinate both proactive and reactive congestion management between operating entities in a way that respects the current TLR process, while still allowing for the flexibility of internal congestion management based on Locational Marginal Pricing or other methods of redispatch.

There are two areas that must be defined in order for this proposal to work effectively:

- **Coordinated Flowgate Definition.** In order to ensure that impacts of dispatch are properly recognized, a list of flowgates must be developed around which congestion management may be effected and coordination can be established. This list would include the component being monitored and the applicable limit, plus the historical firm and non-firm flows from each operating entity.
- **Congestion Management.** By coordinating congestion management efforts and enhancing the TLR process to recognize both untagged internal flows and data of finer granularity, we can ensure that when TLR is called, the appropriate non-firm flows are reduced before firm flows. This will result in a reduction of TLR 5 events, as more relief will be available in TLR 3 to mitigate a constraint.

Flow Calculations:

When an operating entity's dispatch creates flows on a Coordinated Flowgate, those flows can be quantified and considered the **Directional Market Flow.** Market flow is then further designated into two components: **NNL Flow,** which is energy flow related to contributions from the Network Native Load serving aspects of the dispatch, and **Economic Dispatch (ED) Flow,** which is energy flow related to the Market-Based Operating Entity's market operations. These distinctions are important, as the NNL Flows are considered firm, while the Economic Dispatch flows are not.

Each operating entity will calculate their actual real-time and projected Directional Market Flows, as well as their Directional NNL Flows, on each Coordinated Flowgate. These values will allow the operating entity to determine the Economic Dispatch (ED) Flows created by the markets operations, or non-market dispatch.

Congestion Management

On a periodic basis, the operating entity will calculate Directional Market Flows for all Coordinated Flowgates. These flows will represent the actual flows in each direction at the time of the calculation, and be used in concert with the previously calculated NNL Limits to determine the portion of those flows that should be considered firm and non-firm.

Every fifteen minutes, the operating entity will be responsible for providing to Reliability Coordinators the following information:

- NNL Flows for all Coordinated Flowgates in each direciton
- Economic Dispatch Flows for all Coordinated Flowgates in each direction

This information will be provided for both current hour and next hour, and is used in order to communicate to Reliability Coordinators the amount of flows to be considered as the result of firm service on the various Coordinated Flowgates in each direction. When NNL Limit forecast is calculated to be greater than Market Flow for current hour or next hour, actual NNL Limit (used in TLR5) will be set equal to Market Flow.

Additionally, every hour the Market-Based Operating Entity will submit to the Reliability Authority a set of data describing the marginal units and associated participation factors for generation within the market footprint. The level of detail of the data may vary, as different regions will have different unique situations to address. However, this data will at a minimum be supplied for imports to and exports from the market area, and will contain as much information as is determined to be necessary to ensure system reliability. This data will be used by the Reliability Authority to determine the impacts of schedule curtailment requests when they result in a shift in the dispatch within the market area.

Operating entities will have the list of third party/external Coordinated Flowgates modeled as monitored facilities in its EMS. The limits an operating entity will use for these third party flowgates will be the NNL values determined by the NNL Calculations.

The Operating Entity will upload the real-time and projected flows, as well as the delta of the NNL and actual flows on these flowgates, to the IDC every 15 minutes. When the real time actual or projected flows exceed these NNL values on a flowgate and the Reliability Coordinator who has responsibility for that flowgate has declared a TLR 3a or higher, the operating entity will redispatch its system to the amount required by the IDC. The amount of redispatch will be calculated by the IDC. In a TLR 3, the Operating Entity could be required to redispatch to the full amount of economic dispatch over the NNL Limit. Note the operating entity may provide relief through either 1.) a reduction of flows on the flowgate in the direction required, or 2.) an increase of counterflows on the flowgate.

Operating Entities will implement this redispatch using the most economic solution (where applicable) while simultaneously ensuring that each of the bound constraints is

resolved reliably. Additionally the Operating Entity will make any transaction curtailments as specified by the NERC IDC.

Using this method, the relief on the constrained flowgate will be faster than the 30 minutes required by TLR schedule curtailments, because when the bounds are applied, the systems are designed to provide relief within 15 minutes. The RC calling the TLR will be able to see the relief provided on the flowgate as the operating entity continues to upload their contributions to the real-time flows on this flowgate.