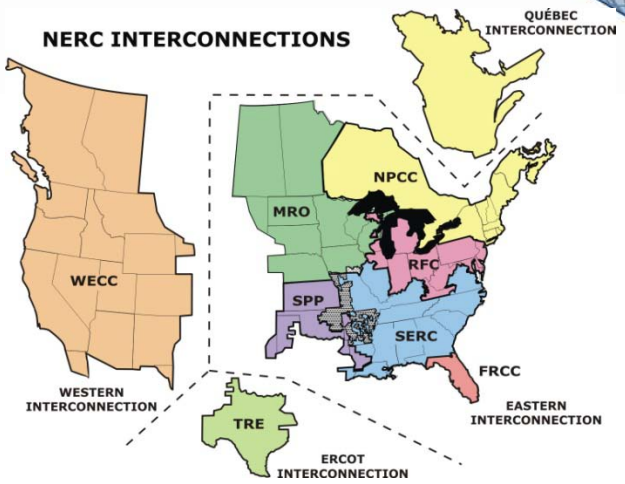
NERC
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

# Reliability Assessment Procedure

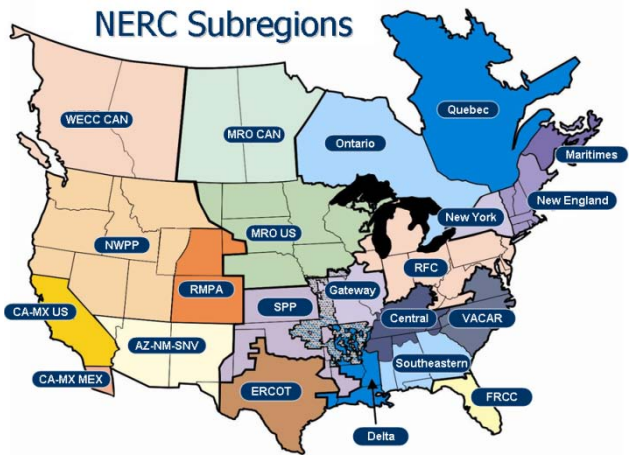
## Subregional Restructuring to Support ISO/RTO Boundaries

### Background

One key to delivering credible and meaningful assessments of the bulk power system reliability is the establishment of logical "load responsibility areas,"[1] functionally Planning Coordinators and Load Serving Entities,[2] into suitable capacity and load regions/subregions. One goal of NERC's reliability assessments is to provide data and analysis of the capacity and load conditions that fairly and correctly represent the current and future conditions, regardless of regional membership boundaries.




Historically, each NERC Regional Entity (see Figures on right for current region/subregion designations) had established logical capacity and load regions/subregions traditionally relying heavily on both their regional footprint and meaningful consolidation of Planning Coordinators and Load Serving Entities within their regional boundaries. In some cases, regions/subregions for reliability assessments may be identical to an individual system, while in others it may be an existing sub-group or consolidation of multiple power systems.




Region/subregion boundaries (i.e., RTO/ISO) change over time requiring their ongoing enhancement. For example, Planning Coordinators, which existed in one Regional Entity, may join another region, resulting in reallocation of resource and load as part of this transition, or Planning Coordinators may consolidate to accommodate changes in resource planning and acquisition arrangements. Therefore, a meaningful way to assess the reliability of the bulk power system must accommodate these changes.

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[1] *Procedure for Appraisal of the Adequacy and Reliability of the Bulk Power Supply*, NERC Report by Security and Reliability Subcommittee, January 1973.

[2] See NERC's *Functional Definitions and Functional Entities*, Version 5.0 for the responsibilities and roles of Planning Coordinators and Load Serving Entities, http://www.nerc.com/files/Functional_Model_V5_Final_2009Dec1.pdf

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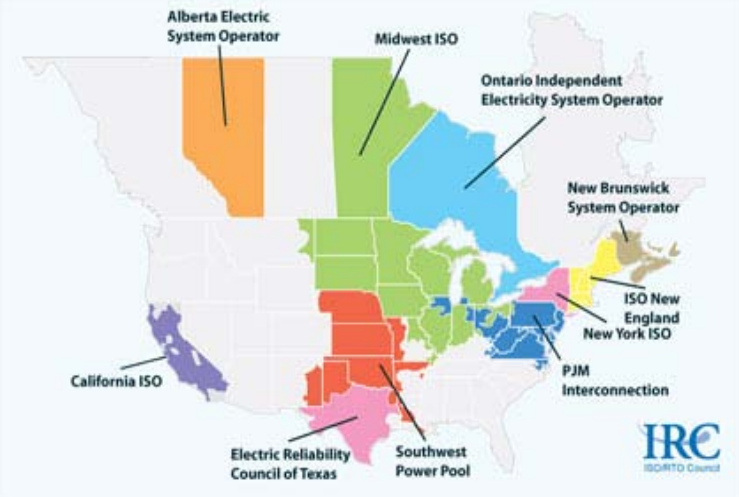
## Status

The figure to the right portrays the footprint of the North American Independent System Operators (ISOs) and Regional Transmission Organizations (RTOs). ISOs/RTOs, organized in the mid-1990s to support the introduction of competition in wholesale power markets. There are currently ten ISOs/RTOs, some of which span multiple Regional Entity boundaries. Each of these organizations, except for the Alberta Electric System Operator (Memorandum of Understanding between NERC, WECC and AESO is signed[3] wherein AESO performs "*Planning and making arrangements for construction of transmission facilities to meet the needs of load and generation*"), are registered in NERC's Compliance Registry[4] as Planning Coordinators.




**Ten ISO/RTOs in North America[5]**

According to NERC's Compliance Registry, there are approximately eighty Planning Coordinators, of which four are registered in multiple regions. They are:

| Planning Coordinator | MRO | RFC | SERC | SPP |
|---|---|---|---|---|
| American Transmission Co., LLC[6] | X | X | | |
| Midwest Independent Transmission System Operator, Inc. | X | X | X | |
| PJM Interconnection, LLC | | X | X | |
| Southwest Power Pool | X | | | X |

## Improvements Required

Capacity and load regions/subregions for purposes of reliability assessment should reflect the planning process used to identify resources needed to serve demand, thereby promoting increased granularity, clarity and accuracy for reliability assessments. Creation of suitable capacity and load regions/subregions does not necessarily mean they must reside within Regional Entity membership boundaries.

With changes made in 2010 to the reliability assessment data and self-assessment collection processes, Planning Coordinators spanning more than one Regional Entity provide data to both NERC and the respective

[3] http://www.nerc.com/files/NERC-WECC-AESO_MOU_Executed%20Version_071510.pdf
[4] http://www.nerc.com/page.php?cid=3|25
[5] http://www.isorto.org/site/c.jhKQIZPBImE/b.2604471/k.B14E/Map.htm
[6] The American Transmission Co., LLC does not provide generation/load projection data for reliability assessments and, coordinates its transmission resources with other Planning Coordinators.

Regional Entities in which they are members. To accommodate regional membership boundaries, the capacity and load of those Planning Coordinators spanning multiple regions have to be artificially divided, with a portion of their capacity and load in one region and the remainder in another.

This approach reduces the visibility and accuracy of the resource/demand balance in those regions/subregions containing the fragment capacity and load from Planning Coordinators spanning multiple regions. Namely, resource margins on a region/subregion membership boundary basis can distort capacity and load conditions and mask resource shortfalls. For example, the Gateway subregion of SERC is currently included in both the Midwest ISO's reliability assessment and in the SERC Gateway subregion's reliability assessment. Including Ameren's capacity and load information in both the MISO Planning Coordinator evaluation and in the SERC-Gateway subregion creates overlapping assessment areas and confusion for the reader and misleading assessments of resource margins.

Additionally, ISOs/RTOs and their associated planning and operations responsibilities are somewhat different from other Planning Coordinators. For example, ISO/RTOs independently drive increased system capacity through market mechanisms, as they do not own generation or transmission facilities. The ISO/RTOs also complete transmission system studies and recommend upgrades based upon the ISO/RTO boundary rather than individual transmission or resource owner footprints, and capacity and load deliverability studies for their boundaries (not just the individual transmission owner footprints) to determine adequacy.

## Recommendations

Given the unique nature of ISOs/RTOs, for the 2011 reliability assessments, NERC recommends:

1. ISO/RTOs should provide resource/demand projections and self-assessments to the Regional Entities that they reside to facilitate joint reliability assessment.
2. For those portions of a Regional Entity where an ISO/RTO does not exist, capacity/demand projections and self-assessments should be provided using logical Planning Coordinator and Load Serving Entity groupings (region/subregion with suitable Planning Coordinator consolidations) within a Regional Entity's boundaries.

3. Based on the regions/subregions in 2010, these recommendations lead to the following capacity and load data and self-assessment submittals for 2011 Seasonal and Long-Term Reliability Assessments (more granularity may be proposed by individual each Regional Entity):

NPCC *(No Change from 2010*)
- NPCC/U.S./ISO-NE
- NPCC/U.S./NYISO
- NPCC/Canada/IESO
- NPCC/Canada/NBSO
- NPCC/Canada/Quebec

RFC
- PJM (including Dominion)

SERC (4 RCs – Names TBD) (exclusive of MISO and PJM)
- SERC – TVA
- SERC – SOCO
- SERC – ICTE (including SPP RC entities registered in SERC)
- SERC – VACS

SPP RE
- SPP RE (including MRO members that are part of SPP Planning Coordinator (SPP RE) including Nebraska entities)

FRCC *(No Change from 2010*)
- FRCC

MRO
- MRO/U.S. (excluding members that are part of SPP or MISO Planning Coordinators)
- MISO (including Ameren and RFC members that are part of MISO Planning Coordinator, excluding Manitoba)
- MRO/Canada/Manitoba
- MRO/Canada/Saskatchewan

TRE (*No Change from 2010*)
- ERCOT

WECC
- WECC/NWPP/U.S.
- WECC/U.S./RMPA
- WECC/U.S./AZ-NM-SNV
- WECC/U.S./CAISO
- WECC/Canada/BC
- WECC/Canada/AESO
- WECC/CA-MX (without CAISO)
- WECC/Mexico/ MX

**Subregions and Regional Responsibilities View:**

| Subregions | Submittal | Develop\Review |
|---|---|---|
| ISO-NE/U.S. | NPCC | NPCC |
| NYISO/U.S. | NPCC | NPCC |
| IESO/Canada | NPCC | NPCC |
| NBSO/Canada | NPCC | NPCC |
| Quebec/Canada | NPCC | NPCC |
| | | |
| PJM | RFC | RFC, SERC |
| | | |
| SERC – TVA (Specific Name TBD) | SERC | SERC |
| SERC – SOCO (Specific Name TBD) | SERC | SERC |
| SERC – ICTE (including SPP RC entities registered in SERC) (Specific Name TBD) | SERC | SERC |
| SERC – VACS (Specific Name TBD) | SERC | SERC |
| | | |
| SPP RE (including Nebraska entities) | SPP | SPP, MRO |
| | | |
| FRCC | FRCC | FRCC |
| | | |
| MRO/U.S. (excluding MISO and Nebraska) | MRO | MRO |
| MISO/U.S. (excluding Manitoba) | MRO | MRO, RFC, SERC |
| Manitoba/Canada | MRO | MRO |
| SaskPower/Canada | MRO | MRO |
| | | |
| ERCOT | TRE | TRE |
| | | |
| NWPP/U.S. | WECC | WECC |
| BASIN/U.S. | WECC | WECC |
| RMPA/U.S. | WECC | WECC |
| DESERT SW/U.S. | WECC | WECC |
| CAISO/U.S. | WECC | WECC |
| BC/Canada | WECC | WECC |
| AESO/Canada | WECC | WECC |
| CA/U.S. (without CAISO) | WECC | WECC |
| MX/Mexico | WECC | WECC |