

## Agenda

### ACE Diversity Interchange Task Force

April 29, 2010 | 8:00–5 p.m.  
April 30, 2010 | 8:00–Noon  
Ameren General Office Building  
1901 Chouteau Avenue  
St. Louis, Missouri 63103

**Purpose:** The ACE Diversity Interchange Task Force (ADITF) will coordinate efforts during this meeting to address and complete its Charter.

**Agenda:**

1. Administrative – Don Badley
  - a. Introductions of Membership and Guests
  - b. Arrangements
  - c. Approval of Meeting Agenda
  - d. Attachment – Charter
  - e. Attachment – Duke Energy Letter to NERC OC Chair Regarding the Implementation Requirements for ADI, March 12, 2009
2. ACE Diversity Interchange (ADI) – the definition
3. White Paper Outline – discuss
  - a. Attachment – White Paper Draft Outline
4. Review of Items to Consider Regarding ADI – Compatibility to Standards
  - a. Means of Interchange
  - b. Transmission Usage
    - i. Flows
    - ii. Modeling
    - iii. Tagging
  - c. L<sub>10</sub> – does one become larger than two?
  - d. CPS performance
  - e. DCS performance

5. Presentations / Discussion / Proposals
6. Reliability Issues Related to Supplemental Regulation - Mike Potishnak
7. Next Meeting

## Antitrust Compliance Guidelines

### I. General

It is NERC's policy and practice to obey the antitrust laws and to avoid all conduct that unreasonably restrains competition. This policy requires the avoidance of any conduct that violates, or that might appear to violate, the antitrust laws. Among other things, the antitrust laws forbid any agreement between or among competitors regarding prices, availability of service, product design, terms of sale, division of markets, allocation of customers or any other activity that unreasonably restrains competition.

It is the responsibility of every NERC participant and employee who may in any way affect NERC's compliance with the antitrust laws to carry out this commitment.

Antitrust laws are complex and subject to court interpretation that can vary over time and from one court to another. The purpose of these guidelines is to alert NERC participants and employees to potential antitrust problems and to set forth policies to be followed with respect to activities that may involve antitrust considerations. In some instances, the NERC policy contained in these guidelines is stricter than the applicable antitrust laws. Any NERC participant or employee who is uncertain about the legal ramifications of a particular course of conduct or who has doubts or concerns about whether NERC's antitrust compliance policy is implicated in any situation should consult NERC's General Counsel immediately.

### II. Prohibited Activities

Participants in NERC activities (including those of its committees and subgroups) should refrain from the following when acting in their capacity as participants in NERC activities (e.g., at NERC meetings, conference calls and in informal discussions):

- Discussions involving pricing information, especially margin (profit) and internal cost information and participants' expectations as to their future prices or internal costs.
- Discussions of a participant's marketing strategies.
- Discussions regarding how customers and geographical areas are to be divided among competitors.

- Discussions concerning the exclusion of competitors from markets.
- Discussions concerning boycotting or group refusals to deal with competitors, vendors or suppliers.
- Any other matters that do not clearly fall within these guidelines should be reviewed with NERC's General Counsel before being discussed.

### **III. Activities That Are Permitted**

From time to time decisions or actions of NERC (including those of its committees and subgroups) may have a negative impact on particular entities and thus in that sense adversely impact competition. Decisions and actions by NERC (including its committees and subgroups) should only be undertaken for the purpose of promoting and maintaining the reliability and adequacy of the bulk power system. If you do not have a legitimate purpose consistent with this objective for discussing a matter, please refrain from discussing the matter during NERC meetings and in other NERC-related communications.

You should also ensure that NERC procedures, including those set forth in NERC's Certificate of Incorporation, Bylaws, and Rules of Procedure are followed in conducting NERC business.

In addition, all discussions in NERC meetings and other NERC-related communications should be within the scope of the mandate for or assignment to the particular NERC committee or subgroup, as well as within the scope of the published agenda for the meeting.

No decisions should be made nor any actions taken in NERC activities for the purpose of giving an industry participant or group of participants a competitive advantage over other participants. In particular, decisions with respect to setting, revising, or assessing compliance with NERC reliability standards should not be influenced by anti-competitive motivations.

Subject to the foregoing restrictions, participants in NERC activities may discuss:

- Reliability matters relating to the bulk power system, including operation and planning matters such as establishing or revising reliability standards, special operating procedures, operating transfer capabilities, and plans for new facilities.
- Matters relating to the impact of reliability standards for the bulk power system on electricity markets, and the impact of electricity market operations on the reliability of the bulk power system.
- Proposed filings or other communications with state or federal regulatory authorities or other governmental entities.
- Matters relating to the internal governance, management and operation of NERC, such as nominations for vacant committee positions, budgeting and assessments, and employment matters; and procedural matters such as planning and scheduling meetings.

## RS ACE Diversity Interchange Review Group Scope

### CHARTER

#### *NERC Resources Subcommittee Review of ACE Diversity Interchange (ADI) Review Group*

### Establishment and Authority

NERC Resources Subcommittee has established an ACE Diversity Interchange (ADI) Review Group to respond to the Duke Energy March 12, 2009 letter to the NERC Operating Committee Chair regarding the Implementation Requirements for ACE Diversity Interchange.

### Purpose/Responsibilities

The purpose of the ADI review group is to evaluate and respond to the questions and issues raised within the Duke Energy March 12, 2009 letter (attached hereto). The evaluation and responses shall include, but not be limited to:

- A review of ADI implementation impacts to
  - BAL-001-0.1a
  - BAL-002-0 R1.1
  - BAL-005-0b R6
  - BAL-005-0b R9
  - BAL-005-0b R10
  - BAL-006 R4.3
  - MOD Standards in General
  - Basis for CPS2 L<sub>10</sub> limits
  - Other

The objectives and requirements ADI review group shall include, but not be limited to:

1. Clear responses to Duke Energy's concerns
2. Proposed recommendations to the NERC OC Chair with respect to actions necessary by the OC including but not limited to recommendation of areas necessary for SAR actions.
3. Proposed process for addressing proposals such as ADI on a forward-looking basis.

## Work Group Composition and Governance

ADI review group shall be composed of technical representatives from the NERC Resources Subcommittee. The group will coordinate with the ORS and IS.

**Project Lead:** NERC Resources Subcommittee Vice Chair

### **Time-Line**

The ADI review group shall deliver its findings and report for consideration the NERC Resources Subcommittee and further by the NERC OC by March 2010

To: Gayle Mayo, NERC Operating Committee Chair

Subject: Implementation Requirements for ACE Diversity Interchange

Date: March 12, 2009



Dear Gayle,

The NERC Resources Subcommittee was approached last year to discuss a process for sharing ACE sometimes referred to as ACE Diversity Interchange or "ADI". The Resources Subcommittee at that time declined to offer its opinion of whether the use of ADI is permitted under the current reliability standards; however, our company believes that the use of ADI needs further investigation due to the potential reliability impact the implementation may have on the operation of the Bulk Electric System. Attachment A presents our concerns and questions regarding ADI implementation.

Parties implementing ADI recognize that the CPS2 L10 bounds at times are more restrictive than necessary for reliable operation, however we are not assured that implementation will have appropriate and adequate reliability/transmission oversight or that the operation will not adversely impact the Interconnection frequency. It is possible that if the current Standards do not prevent two Balancing Authorities from swapping MWs for a minute or two, or more often, that other standards requiring ACE recovery within a defined time, such as DCS under BAL-002 or the draft Balancing Authority ACE Limit under Project 2007-18, could be circumvented without appropriate provisions to address such transfers.

Notwithstanding our concern that ADI may be circumventing the basis for the non-linear allocation of the CPS2 L10 limits, we believe that ADI can be implemented reliably and within the scope of the standards given certain provisions being met; however, we also believe that ADI under other circumstances can be implemented in a manner detrimental to reliable operation of the system. Compliance, integration of renewable resources, and management of operating costs have all pushed the expansion of the use of ADI to where we believe the implementation and use needs to be addressed.

We respectfully request that the NERC Operating Committee discuss this topic and consider directing the Resources Subcommittee to address this subject more fully with the Operating Reliability Subcommittee and Interchange Subcommittee as needed to address the concerns and questions noted. The work may result in the identification of areas necessary for a SAR if not addressed adequately under the current standards. Please let me know if you have any questions or comments on our request.

Sincerely,

*Doug Hills*

Director, Midwest Control Area Operation

cc: J. Holeman  
L. Kezele  
G. Adamski  
T. Bilke  
T. Vandervort

## ATTACHMENT A

### STANDARD PROVISIONS CITED:

BAL-005-0b R6. The Balancing Authority's AGC shall compare total Net Actual Interchange to total Net Scheduled Interchange plus Frequency Bias obligation to determine the Balancing Authority's ACE.

BAL-005-0b R9. The Balancing Authority shall include all Interchange Schedules with Adjacent Balancing Authorities in the calculation of Net Scheduled Interchange for the ACE equation.

BAL-005-0b R10. The Balancing Authority shall include all Dynamic Schedules in the calculation of Net Scheduled Interchange for the ACE equation.

BAL-006 R4.3. A Balancing Authority shall make after-the-fact corrections to the agreed-to daily and monthly accounting data only as needed to reflect actual operating conditions (e.g. a meter being used for control was sending bad data). Changes or corrections based on non-reliability considerations shall not be reflected in the Balancing Authority's Inadvertent Interchange. After-the-fact corrections to scheduled or actual values will not be accepted without agreement of the Adjacent Balancing Authority(ies).

MOD Standards in general.

INT Standards related to dynamic transfers.

### CONCERNS AND QUESTIONS

A process sometimes referred to as "ACE Diversity Interchange", or "ADI", has been used between two or more Balancing Authorities to "share" ACE for control performance compliance reporting under BAL-001. There are multiple forms of this approach in place, however it is not clear that the current NERC Standards allow for the use of ADI, or that the practice of allowing BAs to add CPS2 L10 limits is not circumventing the basis for the non-linear allocation of the limits.

An example of ADI would be where two Balancing Authorities develop a process where the ACE for each BA is monitored in real-time, and the BAs are provided information supporting that the ACE of one BA could be, or is being, used to offset what would otherwise be a CPS2 exceedance for the other BA or both BAs. For example, two BAs with a bias each of -27 MW/0.1Hz and CPS2 L10 of 40 MW, could operate in a manner where one BA could be pushing 60 MW and the other pushing 10 MW, and ACE would be "swapped" in a manner so that both BAs are kept within their CPS2 bounds - essentially giving the two BAs a combined CPS2 L10 target of 80 MW.

Another scenario could be where a computer combines the information for both BAs and provides a dynamic value between them to balance the two within the combined target of 80 MW for 90% of the ten-minute periods each month under CPS2. An extreme example under either implementation would be where BA1 could be pushing 500 MW and BA2 could be dragging 579 MW, and the ACE shared for compliance could be any variation of allocation attempting to keep both BA's within their CPS2 L10 limit (BA1 with minus 39 MW and BA2 with minus 40 MW reported ACE for example, reflecting a 539 MW dynamic transfer from BA1 to BA2 under ADI).

For the implementation, a variable to reflect the ACE swapped could go into the ACE equation as either scheduled or actual interchange, however that is where our questions begin:

If the interchange reflected in the ACE equation is considered Actual Interchange,

- a) Is the interchange considered a pseudo-tie that has to be modeled to capture the potential transmission impact of the dynamic transfer?
- b) Can the value operated to be removed from Actual Interchange accounting after-the-fact where the transfers then become part of Inadvertent Interchange?
- c) Do the BAs have to be Adjacent BAs for the pseudo-tie implementation? If not, what are the requirements that must be met?
- d) Do the BAs have to ensure that anticipated transfers are accounted for in ATC/AFC and other transmission capability determinations under the MOD Standards?
- e) Do the BAs have to procure transmission service?
- f) Can the dynamic transfer be implemented between two Balancing Authorities without the knowledge of the applicable Transmission Operators or Transmission Service Providers?

If the interchange reflected in the ACE equation is considered Scheduled Interchange:

- a) Does the anticipated flow need to be tagged and updated as a Dynamic Schedule?
- b) Can any value besides the tagged Net Interchange Schedules with Adjacent Balancing Authorities be included the Scheduled Interchange component of the ACE equation? If so, what criteria applies to capturing such transfers in transmission modeling?
- c) Does transmission service have to be procured?
- d) Can the values operated to be removed from Scheduled Interchange accounting after-the-fact where the transfers then become part of Inadvertent Interchange?
- e) Can scheduled interchange between two BAs be implemented without the knowledge of the applicable Transmission Operators or Transmission Service Providers?

Under either type of dynamic transfer, is it possible under the existing standards for two BAs to swap a few MWs, or a few hundred MWs, for only a minute or so? If so, what provisions need to be met in order for such an implementation and what information must be kept to make auditors aware of the implementation?

The non-linear aspect of the CPS2 L10 allocation to all BAs based upon their bias provides the opportunity under ADI for multiple BAs to operate in a manner no different than that of single BA, but have a combined CPS2 L10 much greater than what a single BA of equivalent size is afforded. For example, ten 100 MW BAs (1000 MW total) could operate under ADI with a combined CPS2 L10 of 77.4 MW, a value greater than what would have been

allocated to a 9500 MW BA in 2008. The justification and intent of the CPS2 L10 non-linear allocation appears to be violated by ADI.

If the net result of a group of BAs sharing ACE is no different than operation of a single BA, should the combined size of the ADI group be used as the basis for the CPS2 L10 allocation? Provision of Supplemental Regulation Service by definition is one BA supplementing another BA's regulation; when the provision moves to bidirectional sharing of regulation (or multi-party sharing of regulation for three or more parties under ADI), it appears that the basis for the non-linear allocation of the CPS2 L10 limits is not consistent with the intended application.

Arguments in support of the CPS2 requirement have indicated that the L10 limits are needed to limit the impact of imbalanced operation on the transmission system. If such arguments are supported, what requirements must be met to mitigate unscheduled flows or monitor transmission loading resulting from sustained operation outside the L10 bound by use of interchange perhaps not tagged or considered in transmission service? Can BAs implement ADI without the knowledge of appropriate Transmission Operators and Transmission Service Providers? Can Transmission Service Providers allow BAs to implement ADI without transmission service while not providing comparable service to other entities?

If ambiguity exists on the treatment of Interchange under ADI (scheduled or actual), then it isn't clear how such Interchange is captured appropriately by the parties responsible for compliance to the MOD Standards for development of ATC/AFC calculations.

Can a Balancing Authority have an arrangement with multiple BAs across the country to exchange ACE for CPS1 and CPS2 compliance? There isn't a clear line on where simple provision of Supplemental Regulation Service moves to operation in a manner similar to a single BA where the basis for the compliance measures remains consistent with the intended application.

#### **MATERIAL IMPACT OF THE IMPLEMENTATION:**

The material impact would be to those affected by adverse conditions on the Interconnection including: a) Actual Frequency impact of Balancing Authorities operating under BAL-001 without proper calculation of variables used for performance monitoring and compliance; b) transmission impacts of unscheduled interchange not being subject to transmission loading relief procedures; c) transmission impacts of Transmission Operators and Transmission Service Providers not having all information available for development of correct ATC/AFC calculations and other requirements under the MOD Standards.

#### **RELATED DEFINITIONS:**

Dynamic Interchange Schedule or Dynamic Schedule: A telemetered reading or value that is updated in real time and used as a schedule in the AGC/ACE equation and the integrated value of which is treated as a schedule for interchange accounting purposes. Commonly used for scheduling jointly owned generation to or from another Balancing Authority Area.

Dynamic Transfer: The provision of the real-time monitoring, telemetering, computer software, hardware, communications, engineering, energy accounting (including inadvertent interchange), and administration required to electronically move all or a portion of the real energy services associated with a generator or load out of one Balancing Authority Area into another.

Interchange: Energy transfers that cross Balancing Authority boundaries.

**Interchange Authority:** The responsible entity that authorizes implementation of valid and balanced Interchange Schedules between Balancing Authority Areas, and ensures communication of Interchange information for reliability assessment purposes.

**Interchange Schedule:** An agreed-upon Interchange Transaction size (megawatts), start and end time, beginning and ending ramp times and rate, and type required for delivery and receipt of power and energy between the Source and Sink Balancing Authorities involved in the transaction.

**Interchange Transaction:** An agreement to transfer energy from a seller to a buyer that crosses one or more Balancing Authority Area boundaries.

**Interchange Transaction Tag or Tag:** The details of an Interchange Transaction required for its physical implementation.

**Net Actual Interchange:** The algebraic sum of all metered interchange over all interconnections between two physically Adjacent Balancing Authority Areas.

**Net Interchange Schedule:** The algebraic sum of all Interchange Schedules with each Adjacent Balancing Authority.

**Net Scheduled Interchange:** The algebraic sum of all Interchange Schedules across a given path or between Balancing Authorities for a given period or instant in time.

**Overlap Regulation Service:** A method of providing regulation service in which the Balancing Authority providing the regulation service incorporates another Balancing Authority's actual interchange, frequency response, and schedules into providing Balancing Authority's AGC/ACE equation.

**Pseudo-Tie:** A telemetered reading or value that is updated in real time and used as a "virtual" tie line flow in the AGC/ACE equation but for which no physical tie or energy metering actually exists. The integrated value is used as a metered MWh value for interchange accounting purposes.

**Supplemental Regulation Service:** A method of providing regulation service in which the Balancing Authority providing the regulation service receives a signal representing all or a portion of the other Balancing Authority's ACE.

## ADI White Paper Outline

### BACKGROUND

Purpose of paper

Definitions

Area Control Error

ACE Inadvertent

Inadvertent Interchange

Primary Inadvertent Interchange

Secondary Inadvertent Interchange

Dynamic Transfer

Dynamic Schedule

Pseudo-Tie

ACE Diversity Interchange (ADI)

Regulating Reserve

Starting Point

End Point

### PROS/CONS

Pros

Performance (improvements) - CPS1, CPS2:

Unit Movement (Reduction) higher Efficiencies

Cons

### OTHER ISSUES

Tariff issues/legal issues:

Equipment/Infrastructure Requirements

Impact Input/Export Capacity

Equity Issues

Tracking

Monitoring

Competing with market

Complexity of issues

Transmission Reservation vs. No Transmission Reservation

FERC view

Merchant Issues

Transmission

Tagging

Existing Markets (conflicts or restrictions)

Settlement

Pros:

Cons:

### ANALYSES

Technical Discussion  
Necessary Attributes  
Constrained paths  
Equal benefits  
Implementation  
Additional consideration

CONCLUSION

SUMMARY