

## Agenda Resources Subcommittee

April 20, 2011 | 8 a.m.–5 p.m.  
April 21, 2011 | 8 a.m.–12 p.m.

SEMPRA Generation Office  
101 Ash Street  
San Diego, California

Conference – 1-866-740-1260, Pass code 5247004

1. **Administrative\***
  - a. Membership and Guests — Chair Bilke
    - i. **Attachment 1.a.i** – RS Organization and Assignments
    - ii. **Attachment 1.a.ii** – RS Roster
    - iii. **Attachment 1.a.iii** – RS Survey Contacts
  - b. Arrangements — Larry Kezele
  - c. Notice of Public Meeting — Larry Kezele
    - i. Participants are reminded that this meeting is public. Notice of the meeting was posted on the NERC website and widely distributed. The notice included the number for dial-in participation. Participants should keep in mind that the audience may include members of the press and representatives of various governmental authorities, in addition to the expected participation by industry stakeholders.
  - d. Approval of Meeting Minutes — Chair Bilke
    - i. **Attachment 1.d.i** – January 26–27, 2011 Meeting Minutes
  - e. Approval of the Meeting Agenda
  - f. Procedures
    - i. **Attachment 1.f.i** – Parliamentary Procedures — Chair Bilke
    - ii. **Attachment 1.f.ii** – Antitrust Compliance Guidelines — Larry Kezele

- g. Resources Subcommittee Action Items List (review prior to the meeting) — Chair Bilke
    - i. **Attachment 1.g.i** – Action Items List
  - h. NERC–RS Confidentiality Agreement — Chair Bilke
    - i. **Attachment 1.h.i** – Confidentiality Agreement
  - i. Resources Subcommittee Scope, Available on NERC RS website — Larry Kezele
    - i. RS Scope Link: [http://www.nerc.com/docs/oc/rs/RS\\_Scope.pdf](http://www.nerc.com/docs/oc/rs/RS_Scope.pdf)
2. **Working Groups and Task Force Reports**
- Working Group Meetings, Conference Calls, or Action since the last RS Meeting
- a. Frequency Work Group — Sydney Niemeyer
  - b. Inadvertent Interchange Work Group — Vice Chair Badley
  - c. Operating Reserves Work Group — Larry Akens
  - d. ACE Diversity Interchange Task Force — Vice Chair Badley
  - e. Discussion – Is there a need for a half day meeting for one on the Work Groups?
3. **NERC Related Activity\***
- a. NERC Operating Committee Action Items Assigned to RS – Chair Bilke
    - i. Eastern Interconnection Inadvertent Interchange Application Balance Resolution
      - (1) **Attachment 3.a.i.(1)** – Letter regarding Eastern Interconnection Inadvertent Interchange Application Balance Resolution, dated March 5, 2011
    - ii. Time Error Correction Elimination Field Trial
      - (1) **Attachment 3.a.ii.(1)** – Chair Bilke’s presentation at the March 2011 Operating Committee Meeting
      - (2) **Attachment 3.a.ii.(2)** – Draft Time Error Correction Communication Plan
    - iii. RS Position Paper on Frequency Response – Final Revision
      - (1) **Attachment 3.a.iii.(1)** – RS Position Paper on Frequency Response, dated February 23, 2011
    - iv. Sharing ANI/SNI data in real time to improve reliability
  - b. Support for Frequency Response Initiative and Frequency Response Standards – Chair Bilke and Bill Herbsleb

- i. Select Candidate Events
    - ii. Evaluate Current Frequency Response
    - iii. Observations from 2011 Annual Bias Setting
  - c. Frequency Response Initiative, Activity and RS Assignments — Bob Cummings
- \* Background material included
  - d. Frequency Event Repository: Short-term (NERC Situation Awareness) and Long-term (FMA Application) – Chair Bilke, Jessica Bian
  - e. Reliability Metrics Working Group (RMWG) — Jessica Bian, Jerry Rust
- 4. **NERC Reliability Standards and Reliability Related Documents**
  - a. Frequency Response SDT — Bill Herbsleb
  - b. Balancing Authority Reliability-based Control SDT — Larry Akens
  - c. NERC OC Operating Manual

(Note: The NERC OC Operating Manual is posted at [http://www.nerc.com/files/opman\\_12-13Mar08.pdf](http://www.nerc.com/files/opman_12-13Mar08.pdf))

    - i. Area Interchange Error Survey Training Document – Vice Chair Badley and Inadvertent Interchange Working Group
    - ii. Frequency Response Characteristic Survey Training Document – Sydney Niemeyer and Frequency Working Group
    - iii. Inadvertent Interchange Accounting Training Document – Vice Chair Badley and Inadvertent Interchange Working Group
    - iv. Time Monitoring Reference Document – Vice Chair Badley and Inadvertent Interchange Working Group
  - d. Balancing and Frequency Control Document– Chair Bilke

(Note: Following the January 2011 RS Meeting, Chair Bilke circulated the Balancing and Frequency Control Document for final review and comment. The final document is posted at <http://www.nerc.com/docs/oc/rs/NERC%20Balancing%20and%20Frequency%20Control%2004052011.pdf>)
- 5. **RS Software Applications**
  - a. Resources Adequacy (ACE-Frequency) Application — Gil Tam, Chair Bilke
  - b. Intelligent Alarms — Gil Tam, Chair Bilke
  - c. AIE Monitoring Application — Gil Tam, Vice Chair Badley, Bill Herbsleb
  - d. CPS1 & BAAL Monitoring Application — Gil Tam, Larry Akens

- e. Frequency Monitoring and Analysis Application — Gil Tam, Sydney Niemeyer, Bill Herbsleb, Chair Bilke
  - f. Inadvertent Interchange Application — Gil Tam, Vice Chair Badley, Bill Herbsleb
  - g. NERC-CERTS-RS Inadvertent Interchange Application Support of TEC Field Trial – Chair Bilke, Gil Tam
  - h. NERC North American SynchroPhasor Initiative (NASPI) and Real-time Dynamic Measuring System (RTDMS) — Chair Bilke, Bob Cummings
  - i. ARR Daily Events – Status update on previously reported problems
6. **Frequency and Control Performance**
- a. Frequency Performance
    - i. Western Interconnection Frequency Trends and Events — James Murphy
    - ii. Eastern Interconnection Frequency Trends and Events — Chair Bilke
    - iii. ERCOT Interconnection Frequency Trends and Events — Sydney Niemeyer
    - iv. Hydro Quebec Interconnection Frequency Trends and Events — Mike Potishnak
    - v. TEC Field Trial Impact Analysis (Placeholder for Future Meetings)
  - b. CPS1, CPS2, BAAL Data Trends — Chair Bilke
  - c. DCS Data Trends — Chair Bilke
  - d. FRCC Request Made by RS Chair for all FRCC BAs to use the NERC Inadvertent Interchange Application – Chair Bilke
  - e. Status of New/Reconfigured BA checklist –Bill Herbsleb, Mike Potishnak
  - f. Inadvertent Interchange Accounting — Vice Chair Badley, Bill Herbsleb
    - i. Balances
    - ii. Mismatches
    - iii. Remaining Transition Issues
    - iv. TEC Field Trial Observations and Statistics (Placeholder for Future Meetings)
7. **Time Error**
- a. Eastern Interconnection — Bill Herbsleb
  - b. Western Interconnection — John Tolo
  - c. ERCOT Interconnection — Sydney Niemeyer
  - d. Hydro Québec Interconnection — Mike Potishnak

- e. Field Trial Status (placeholder for future meetings)
8. **Future Meetings**
- a. July 27–28, 2011 – Denver, CO, Host TBD, Contact: WECC RS Members
  - b. October 26–27, 2011 – Las Vegas, NV, Host TBD, Contact: WECC RS Members
  - c. January 25–26, 2012 – Miami or Tampa, FL, Host TBD, Contact: Don McInnis
  - d. April 25–26, 2012 – San Francisco, CA or San Antonio, TX, Host TDB, Contact WECC RS or ERCOT RS Members

## NERC Resources Subcommittee Organization

<b>Terry Bilke (Chair)</b> Midwest ISO	Donald E. Badley ( <b>Vice Chair</b> ) WECC/Northwest Power Pool	Larry Akens Tennessee Valley Authority
Gerald D. Beckerle Ameren Services Company	William Herbsleb PJM Interconnection, L.L.C.	Don McInnis Florida Power & Light Company
James Murphy Bonneville Power Administration	William Kunkel Midwest Reliability Organization	Sydney L. Niemeyer NRG Texas Power, LLC
Tony Nguyen British Columbia Hydro	Michael Oatts Southern Company Services	Michael J. Potishnak ISO-New England
Robert C. Rhodes, Jr. Southwest Power Pool	John Swez Duke Energy	John Tolo Tucson Electric Power Company
Larry Kezele NERC		
<b>Inadvertent Working Group</b>  <b>Don Badley – Chair</b> William Herbsleb Mike Potishnak Terry Bilke Larry Akens William Kunkel James Murphy Tony Nguyen	<b>Frequency Working Group</b>  <b>Sydney Niemeyer – Chair</b> Mike Potishnak Terry Bilke Gerry Beckerle Don Badley James Murphy John Swez William Herbsleb Robert Rhodes Bob Cummings Tony Nguyen Carlos Martinez	<b>Reserves Working Group</b>  <b>Larry Akens – Chair</b> Don Badley Mike Potishnak Sydney Niemeyer Robert Rhodes James Murphy John Tolo John Swez Gerry Beckerle Mike Oatts
<b>Survey Assignments</b>		
Area Interchange Error Surveys (East)	Terry Bilke	
Frequency Response Surveys	Sydney Niemeyer	
Inadvertent Interchange Reports (East)	Chris Scheetz	
Inadvertent Interchange Reports (West)	Don Badley	
Time Error Reports (East)	Bill Herbsleb	
Time Error Reports (West)	John Tolo	
ERCOT Reports	Sydney Niemeyer	

## Resources Subcommittee

<b>Chairman</b>	Terry Bilke Director, Standards and Compliance	Midwest ISO, Inc. 701 City Center Drive Carmel, Indiana 46082-4202	(317) 249-5463 (317) 249-5994 Fx tbilke@midwestiso.org
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## NERC Resources Subcommittee Survey Contacts

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\*Primary Contact

## Minutes Resources Subcommittee

January 26–27, 2011

ERCOT Austin Executive and Administration Center  
7620 Metro Center Drive  
Austin, Texas

A meeting of the North American Electric Reliability Corporation (NERC) Resources Subcommittee (RS) was held on January 26–27, 2011 in Austin, Texas. The agenda and attendance list are attached as **Exhibits A** and **B**, respectively.

Resources Subcommittee Chair Terry Bilke presided and Larry Kezele announced that a quorum was present. Larry Kezele read the applicable Notice of Public Meeting.

### **Antitrust Compliance Guidelines**

Larry Kezele acknowledged the NERC Antitrust Compliance Guidelines.

### **October 27–28, 2010 Meeting Minutes**

The RS approved the October 27–28, 2010 meeting minutes.

### **Administrative**

The RS reviewed and revised the RS Organization and Assignments, the RS Roster, and the RS Survey Contacts.

### **Working Group and Task Force Reports**

- 1. Frequency Working Group** — Chair Sydney Niemeyer  
Mr. Niemeyer reported that the Frequency Working Group did not have a meeting or activity since the last RS meeting. Frequency Working Group members are very involved in the NERC Frequency Response Initiative, the Frequency Response Standard Drafting Team, and the Balancing Authority Reliability-based Control Standard Drafting Team. Don Badley reported that WECC issued two frequency response characteristic surveys.
- 2. Inadvertent Interchange Working Group** — Chair Don Badley  
Mr. Badley reported that the working group has not met since the subcommittee's last meeting.

3. **Operating Reserves Working Group** — Chair Larry Akens

Mr. Akens reported that the Operating Reserves Working Group has not met since the subcommittee's last meeting. Operating Reserves Working Group members are very involved in the Balancing Authority Reliability-based Control (BARC) Standard Drafting Team. Five of the nine BARCSDT are members of the RS. The BARCSDT is developing an Operating Reserves white paper.

4. **ACE Diversity Interchange Task Force** — Chair Don Badley

Mr. Badley reported that the ADITF is making progress in drafting an ADI white paper. The task force will conduct a meeting on Thursday, January 27, 2011 and Friday, January 28, 2011 to continue its review of the white paper.

### **NERC Related Activity**

1. **Inadvertent Interchange Balances**

Chair Bilke reported that the Operating Committee approved sending a letter to the Eastern Interconnection balancing authorities indicating what the subcommittee believes their inadvertent interchange balance is effective January 2007. (Note: In addition, see Time Error, Frequency Performance, and Control Performance, Section 6 – Inadvertent Interchange Accounting.)

2. **Time Error Correction Field Trial**

Chair Bilke reviewed a proposal to implement a Time Error Correction Elimination Field Trial (**Presentation 1**). He reviewed the Operating Committee's motions to move the proposed field trial forward. The subcommittee discussed moving directly to elimination of time error corrections versus a more gradual transition that would eventually lead to the elimination of time error corrections. Larry Akens encouraged NERC to discuss the subcommittee's plan related to the time error correction field trial with FERC staff. Mike Potishnak and Vice Chair Badley will redraft the BAL-004 Manual Time Error Correction Field Test Memo to reflect the subcommittee's discussion. *Bill Herbsleb moved to notify the Operating Committee that the subcommittee's preference is to totally eliminate manual time error corrections (i.e., not to consider a phased in approach).* The subcommittee approved the motion. The subcommittee discussed what Interconnections would participate in the field trial and decided that all three Interconnections (ERCOT, Eastern, and Western) would participate.

3. **RS Position on Frequency Response**

Chair Bilke reported that the Frequency Response position paper is currently posted for comment with comments due by February 1, 2011. Mr. Bilke and the Frequency Working Group will address the comments.

4. **Integration of Variable Generation Task Force Sub-group Report "Ancillary Service and Balancing Authority Area Solutions to Integrate Variable Generation"**

John Swez provided an overview of the *Ancillary Service and Balancing Authority Area Solutions to Integrate Variable Generation* report, which is currently posted for comment until January 31, 2011. He specifically highlighted section 2.1 (Regulation

and Load Following), section 2.2 (Contingency Reserves), section 3.1 (Variable Generation Output Forecasts), and the report's recommendations. He will provide a summary of the subcommittee's comments to the IVGTF Sub-group.

**5. Annual Bias Calculation Review**

Chair Bilke reported that NERC drafted and issued for review the CPS2 bounds report and he encouraged subcommittee members to review the report to verify accuracy of the reported data. John Tolo suggested that the subcommittee address the process of developing the CPS2 bounds report. The subcommittee would like to complete its review of the CPS2 bounds report by February 1, 2011 for implementation by March 1, 2011.

Bill Herbsleb reported that the Frequency Response Standard Drafting Team is considering implementing a field trial that would lower the minimum frequency bias to 0.8 percent (as compared to the 1.0 percent value reflected in BAL-003). The drafting team would like to begin the field trial in May 2011.

**6. Frequency Response Initiative**

Bob Cummings, Director of System Analysis and Reliability Initiatives, reported that the Frequency Response Initiative is conducting two surveys related to the initiative and the survey responses are being evaluated. The survey results are being used to improve system modeling of governor response.

**7. Frequency Event Repository**

Chair Bilke reported that NERC is taking steps to develop a frequency event repository. In the short-term, the NERC Situation Awareness program area is gathering event information and in the long-term the FMA application could be used as a repository.

**8. Sharing Actual and Scheduled Net Interchange Data in Real Time to Improve Reliability**

Chair Bilke suggested that the subcommittee consider sharing actual and scheduled net interchange data in real time to improve reliability. In addition, he suggested that the subcommittee reach out to the Reliability Coordinator Working Group or the Operating Reliability Subcommittee for their thoughts regarding capturing this information. This would improve visibility in identifying scheduling errors that could be impacting Interconnection frequency.

**9. Reliability Metrics Working Group**

Jerry Rust, the Reliability Metrics Working Group's liaison to the RS, discussed reliability metric ALR1-12 (Interconnection Frequency Response). Mr. Rust requested the subcommittee's further review of metric ALR1-12 and help in determining what data could be consistently gathered across the Interconnections. When can the data be gathered and sent to the RMWG? The underlying data is available from each Interconnection, but the data needs to be scrubbed and verified for accuracy. Bill Herbsleb stated that the data needs to be available by the end of the second quarter of 2011.

## **NERC Reliability Standards and Reliability Related Documents**

### **1. Frequency Response Standard Drafting Team**

Bill Herbsleb, chair of the Frequency Response Standard Drafting Team, asked the subcommittee for volunteers to help develop the details to support the drafting team's proposed bias field trial. The field trial procedure will address metrics and a back-out plan.

### **2. Balancing Authority Reliability-based Controls Standard Drafting Team**

Larry Akens, chair of the Balancing Authority Reliability-based Controls Standard Drafting Team, reported that, due to a change in assignment at Duke Energy, Doug Hils stepped down as the drafting team's co-chair. The drafting team will likely be assigned a new NERC staff facilitator. Finally, as a result of NERC's re-prioritization of standard drafting projects, the work of the BARC standard drafting team may be placed on hold.

### **3. NERC Operating Manual**

#### **a. Area Interchange Error Survey Training Document**

Vice Chair Badley, chair of the Inadvertent Interchange Working Group, reported that the working group anticipates developing a revised AIE Survey Training Document for review by the subcommittee at its next meeting.

#### **b. Frequency Response Characteristic Survey Training Document**

Chair Bilke reported that the Frequency Response Standard Drafting Team will be reviewing this training document.

#### **c. Inadvertent Interchange Accounting Training Document**

Vice Chair Badley, chair of the Inadvertent Interchange Working Group, reported that the working group has not yet addressed updating this training document.

#### **d. Time Monitor Reference Document**

Chair Bilke reported that the Time Monitor Reference Document should be reviewed to assure there are no conflicts with the proposed Manual Time Error Correction Field Trial.

### **4. Balancing and Frequency Control Document**

Chair Bilke will send the current version of the Balancing and Frequency Control Document to the subcommittee for a final review before the document is posted to the subcommittee's website.

## **Resources Subcommittee Software Applications**

1. Gil Tam, Electric Power Group, provided a summary of the applications shown below (**Presentation 2**). Mr. Tam also discussed the current frequency event detection methodology and proposed a replacement frequency event detection methodology. The subcommittee will do a comparison of the two methodologies for a period of time before making a transition.

#### **a. Resources Adequacy**

- b. Intelligent Alarms
  - c. Area Interchange Error
  - d. CPS1 and BAAL Monitoring
  - e. Frequency Monitoring and Analysis
  - f. Inadvertent Interchange
  - g. Automated Reliability Reports
2. **NERC-CERTS-RS Inadvertent Interchange Application Support of TEC Field Trial**  
This agenda item was not discussed.
  3. **North American SynchroPhasor Initiative and Real-time Dynamic Measuring System**  
Chair Bilke reported that version 7.1 of RTDMS will be released later this year and there will be a user training session.

## **Time Error, Frequency Performance, and Control Performance**

1. **Time Error and Frequency Performance**
  - a. **Western Interconnection Trends and Events**  
James Murphy reviewed the Western Interconnection frequency performance (**Presentation 3**) and John Tolo reviewed the Western Interconnection time error report (**Presentation 4**).
  - b. **Eastern Interconnection Trends and Events**  
Chair Bilke reviewed the Eastern Interconnection frequency performance (**Presentation 5**) and Bill Herbsleb reviewed the Eastern Interconnection time error report (**Presentation 6**).
  - c. **ERCOT Interconnection Trends and Events**  
Sydney Niemeyer reviewed the ERCOT Interconnection frequency performance and time error report (**Presentation 7**). Mr. Niemeyer also reviewed ERCOT's frequency rate of change (**Presentation 8**).
  - d. **Hydro Quebec Interconnection Trends and Events**  
Chair Bilke reviewed the Hydro Quebec Interconnection frequency performance and time error report (**Presentation 9**).
2. **CPS1, CPS2, BAAL Data Trends**  
In closed session, the subcommittee discussed CPS1, CPS2, and BAAL data trends.
3. **DCS Data Trends**  
In closed session, the subcommittee discussed DCS data trends.
4. **Request Made by RS Chair for all FRCC Balancing Authorities to use the NERC Inadvertent Interchange Application**  
Chair Bilke reported that three FRCC balancing authorities that interface with SERC check out inadvertent balances with Southern Company; however, the subcommittee

requests each FRCC balancing authority to enter this data into the inadvertent interchange application. Alternatively, the FRCC balancing authorities need to designate a single point of contact that can validate Inadvertent Interchange data. This will be needed in particular to support the TEC elimination field test.

5. **Status of New/Reconfigured Balancing Authority Checklist**

Bill Herbsleb reported that he received limited input from the Reliability Coordinator Working Group and the IDC Working Group related to their review of the balancing authority checklist. Mr. Herbsleb will request NERC compliance staff review.

6. **Inadvertent Interchange Accounting**

Vice Chair Badley reviewed Western Interconnection on-peak and off-peak inadvertent interchange monthly balances and Bill Herbsleb reviewed the Eastern Interconnection on-peak and off-peak inadvertent interchange monthly balances.

Bill Herbsleb reported that, since the Eastern Interconnection implemented the “pseudo-BA” for inadvertent interchange in the fourth quarter of 2010, the interconnection has balanced. The Eastern Interconnection needs to address mismatches prior to January 2007. Mr. Herbsleb reviewed a draft letter on behalf of the RS to the balancing authorities in the Eastern Interconnection stating their inadvertent interchange balances. The letter requests each balancing authority to identify any discrepancies in the data and to provide evidence to correct their indicated balance. This will help in establishing a definitive historic and accurate inadvertent interchange balance. The subcommittee discussed suggested revisions to the letter.

7. **TEC Field Trial Observations and Statistics**

Since the Manual Time Error Correction Field Trial has not yet started, this agenda topic was not discussed.

8. **FERC Study on Frequency Response of Renewable Resources**

Eddy Lim provided an overview of the draft report *Use of Frequency Response Metrics to Assess the Planning and Operating Requirements for Reliable Integration of Variable Renewable Generation*, dated December 2010 (**Presentation 10**). The draft report is posted at <http://www.ferc.gov/industries/electric/indus-act/reliability/frequencyresponsemetrics-report.pdf>. Supporting documents are posted at <http://www.ferc.gov/industries/electric/indus-act/reliability.asp#anchor>. Comments on the draft report are due by March 7, 2011.

**Resources Subcommittee Action Item List**

Larry Kezele reviewed and updated the action item list, which is affixed as **Exhibit C**.

### Dates and Locations of Future Meetings

Additional meetings or conference calls may be scheduled as necessary for RS business-related purposes.

Wednesday, April 20, 2011 Thursday, April 21, 2011	8 a.m. – 5 p.m. 8 a.m. – noon	San Diego, CA Host: TBD, WECC RS members * Coordinator: WECC RS Members
Wednesday, July 27, 2011 Thursday, July 28, 2011	8 a.m. – 5 p.m. 8 a.m. – noon	Denver, CO Host: TBD, WECC RS members* Coordinator: WECC RS Members
Wednesday, October 26, 2011 Thursday, October 27, 2011	8 a.m. – 5 p.m. 8 a.m. – noon	Las Vegas, NV Host: TBD, WECC RS members* Coordinator: WECC RS Members
Wednesday, January 25, 2012 Thursday, January 26, 2012	8 a.m. – 5 p.m. 8 a.m. – noon	Ft. Lauderdale / Miami Alternate: Tampa Coordinator: Don McInnis
Wednesday, April 25, 2012 Thursday, April 26, 2012	8 a.m. – 5 p.m. 8 a.m. – noon	San Francisco Alternate: San Antonio Coordinator: WECC RS Members

\* Future RS meetings will be hosted at RS member, Region, utility, or volunteer facilities.

### Adjourn

The subcommittee meeting adjourned at 12:02 p.m. CST on January 27, 2011.

Respectfully submitted,

*Larry Kezele*

Larry Kezele  
 Resources Subcommittee Secretary

## Parliamentary Procedures

Based on Robert's Rules of Order, Newly Revised, 10th Edition, plus "Organization and Procedures Manual for the NERC Standing Committees"

### Motions

Unless noted otherwise, all procedures require a "second" to enable discussion.

When you want to...	Procedure	Debatable	Comments
Raise an issue for discussion	Move	Yes	The main action that begins a debate.
Revise a Motion currently under discussion	Amend	Yes	Takes precedence over discussion of main motion. Motions to amend an amendment are allowed, but not any further. The amendment must be germane to the main motion, and can not reverse the intent of the main motion.
Reconsider a Motion already approved	Reconsider	Yes	Allowed only by member who voted on the prevailing side of the original motion.
End debate	Call for the Question <i>or</i> End Debate	Yes	If the Chair senses that the committee is ready to vote, he may say "if there are no objections, we will now vote on the Motion." Otherwise, this motion is debatable and subject to 2/3 majority approval.
Record each member's vote on a Motion	Request a Roll Call Vote	No	Takes precedence over main motion. No debate allowed, but the members must approve by 2/3 majority.
Postpone discussion until later in the meeting	Lay on the Table	Yes	Takes precedence over main motion. Used only to postpone discussion until later in the meeting.
Postpone discussion until a future date	Postpone until	Yes	Takes precedence over main motion. Debatable only regarding the date (and time) at which to bring the Motion back for further discussion.
Remove the motion for any further consideration	Postpone indefinitely	Yes	Takes precedence over main motion. Debate can extend to the discussion of the main motion. If approved, it effectively "kills" the motion. Useful for disposing of a badly chosen motion that can not be adopted or rejected without undesirable consequences.
Request a review of procedure	Point of order	No	Second not required. The Chair or secretary shall review the parliamentary procedure used during the discussion of the Motion.

### Notes on Motions

**Seconds.** A Motion must have a second to ensure that at least two members wish to discuss the issue. The "second" is not recorded in the minutes. Neither are motions that do not receive a second.

**Announcement by the Chair.** The Chair should announce the Motion before debate begins. This ensures that the wording is understood by the membership. Once the Motion is announced and seconded, the Committee "owns" the motion, and must deal with it according to parliamentary procedure.

## Voting

Voting Method	When Used	How Recorded in Minutes
Unanimous Consent	When the Chair senses that the Committee is substantially in agreement, and the Motion needed little or no debate. No actual vote is taken.	The minutes show "by unanimous consent."
Vote by Voice	The standard practice.	The minutes show Approved or Not Approved (or Failed).
Vote by Show of Hands (tally)	To record the number of votes on each side when an issue has engendered substantial debate or appears to be divisive. Also used when a Voice Vote is inconclusive. (The Chair should ask for a Vote by Show of Hands when requested by a member).	The minutes show both vote totals, and then Approved or Not Approved (or Failed).
Vote by Roll Call	To record each member's vote. Each member is called upon by the Secretary,, and the member indicates either "Yes," "No," or "Present" if abstaining.	The minutes will include the list of members, how each voted or abstained, and the vote totals. Those members for which a "Yes," "No," or "Present" is not shown are considered absent for the vote.

### Notes on Voting

(Recommendations from DMB, not necessarily Mr. Robert)

**Abstentions.** When a member abstains, he is not voting on the Motion, and his abstention is not counted in determining the results of the vote. The Chair should not ask for a tally of those who abstained.

**Determining the results.** The results of the vote (other than Unanimous Consent) are determined by dividing the votes in favor by the total votes cast. Abstentions are not counted in the vote and shall not be assumed to be on either side.

**"Unanimous Approval."** Can only be determined by a Roll Call vote because the other methods do not determine whether every member attending the meeting was actually present when the vote was taken, or whether there were abstentions.

**Majorities.** Robert's Rules use a simple majority (one more than half) as the default for most motions. NERC uses 2/3 majority for all motions.

## 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.



**Resources Subcommittee  
April 20–21, 2011 Meeting  
Open Action Items List**

<b>Action Figure</b>	<b>Subject</b>	<b>Action Item/Assignment</b>	<b>Due Date</b>	<b>Completion Date</b>
Resources Subcommittee	NERC Frequency Response Initiative	<p>042710, Resources Subcommittee to support Bob Cummings and the Frequency Response Initiative (FRI). RS will work with RS Frequency WG, the BARCSDT, the FRRSDT, NERC Staff, FERC Staff, and industry contributors to address relative issues and concerns.</p> <p>012611, Bob Cummings to give a status of the FRI and RS-related FRI assignments.</p> <p>012711, Work with Bob Cummings to develop a common data set and finalize the field test parameters.</p>	Ongoing	
Bill Herbsleb, Mike Potishnak	BA Check List for Decertification or New BAs	<p>102809, Bill Herbsleb, Mike Potishnak, and Tom Vandervort to develop some sort of check list on what needs to be done when a BA:</p> <ul style="list-style-type: none"> <li>• New Certifications</li> <li>• Decertifications</li> <li>• Merges</li> <li>• Consolidates, Etc.</li> </ul> <p>012710, Terry asked Bill and Mike to develop the BA Check List.</p> <p>Mike wants to have the BA mapping as part of the resolution (what is looked at before and after a BA divides, merges, retires, etc. – the initial BA and resulting BA).</p> <p>042810, Bill Herbsleb to send NERC BA certification / decertification action items to Tom Vandervort to process.</p> <p>102710, Bill drafted a BA certification check-list for new BAs, merged BAs, and decertified BAs. Bill requested the RS to review and enhance the check-list for the</p>	020311	

Action Figure	Subject	Action Item/Assignment	Due Date	Completion Date
		<p>January, 2011 RS meeting.</p> <p>012711 Bill Herbsleb to send out the check list to Jim Hughs.</p>		
<p>Bill Herbsleb Mike Potishnak</p>	<p>FMA Application Accuracy</p>	<p>102810, Gil Tam, CERTS requested the RS to review the (+ or -) signs in the FMA application to ensure accuracy of the FMA Application. Bill Herbsleb and Mike Potishnak volunteered to review the BA Bias signs in the FMA Application.</p> <p>012711 Bob Cummings and Bill Herbsleb to review.</p>	<p>Ongoing</p>	
<p>Bill Herbsleb</p>	<p>Inadvertent Interchange Balances Determination</p>	<p>102810, Bill will draft a letter on behalf of the RS to the Balancing Authorities (BAs) in the Eastern Interconnection stating their inadvertent interchange balances prior to January, 2007 with a request to the BAs to identify any disputes with evidence to correct and establish a definitive historic and accurate inadvertent interchange balance.</p> <p>012711 RS reviewed draft letter. Terry Bilke will issue the revised letter.</p>	<p>021111</p>	
<p>Resources Subcommittee</p>	<p>NERC OC Operating Manual Docs</p>	<p>073108, RS members on each open BAL-related standard drafting team are to request that the SDT write or plan to write a modules for each SDT specific requirement and how to achieve technical results for the PSRD.</p> <p>102908, Resources Subcommittee recommended to the OC that the RS documents that are found in the OC Operating Manual be kept in the manual.</p> <p><b>102908, RS Working Groups and RBCSDT, BACSDT, and FRSDT are to revise the documents for accuracy. RS will then submit the revised documents to the RFWG to update the manual. SDTs can develop the documents as standards reference documents to support their respective standards.</b></p> <p>012909, John Swez to review the Performance Standard Reference Document for accuracy. Ongoing action item.</p> <p>RS Operating Manual documents are:</p> <p><b>Performance Standard Reference Guidelines (PSRG) – John Swez</b> – Note the OC approved the PSRG on June 15, 2010, new PSRG inserted into the NERC Operating Manual</p> <p><b>Area Interchange Error Survey Training Document – Don Badley and Inadvertent Interchange WG</b></p> <p><b>Frequency Response Training Document – Sydney Niemeyer and Frequency WG</b></p> <p><b>Inadvertent Interchange Accounting Training Document – Don Badley and Inadvertent Interchange WG – Expect update by next meeting.</b></p>	<p>Ongoing</p>	

Action Figure	Subject	Action Item/Assignment	Due Date	Completion Date
		<p><b>Time Monitoring Reference Document – Don Badley and Inadvertent Interchange WG – Terry Bilke and Mike Potishnak will review for inconsistencies with proposed TEC Field Trial</b></p> <p>121609, NERC posted the Performance Standard Reference Document for 45 day comment period which ends on Feb 12, 2010.</p> <p>102710, The OC approved the PSRG on June 15, 2010. The RS anticipates the remaining OC Operating Manual documents to be revised during the SDT standards revision process.</p>		
Terry Bilke and RS	OC Charge – Position Paper on Frequency Response	<p>102810, The OC requested the RS write a position paper on Frequency Response. Terry wrote an initial draft of the position paper (see Oct 27 RS meeting agenda) and asked the RS to comment and enhance the paper, in order to present it to the OC at its December, 2010 OC meeting.</p> <p>012711 RS to make final comments by February 1, 2011. The Frequency Working Group and Terry Bilke will meet by conference call and webcast on February 4 at 12 pm EST for 4 hours to revise the position paper based on the comments received.</p>	Complete For the March OC meeting	
Bill Herbsleb, Tom Vandervort	Coordinate NERC RS Applications with CIP Group	<p>072810, Tom Vandervort to coordinate the NERC RS applications with the CIP Program. Contact Bill Herbsleb to get background on RS concerns. Awaiting a check list from Bill.</p> <p>102810, The PJM Situation Awareness tools cannot be closed for a week to 10 days. Bill is going to come up with a list of tools that can be used to install new software applications. Then we will have a conference call to discuss with Bill, TV, CERTS/EPG, and NERC IT, as necessary.</p> <p>012711 Open to next subcommittee meeting.</p>	012611	
Tom Vandervort	NERC – CERTS Applications Vetting	<p>072810, Tom Vandervort to work with Gil, Carlos, and Brian Nolan to discuss the NERC Monitoring Applications Central Registration, Installation &amp; Documentation process.</p> <p>102810, Bob to work with Gil to standardize a singular User ID an Password for all NERC CERTS/EPG applications (instead of having a User Name and Password for each NERC CERTS Application. Bob Cummings and TV to coordinate this activity.</p> <p>102810, This Action Item is considered closed.</p> <p>012711 Gil Tam will review a proposal at the subcommittee's next meeting</p>	102810	102710
Tom Vandervort	CPS Data	<p>102810, During the CPS data review, it was pointed out that not all Canadian entities are included in the CPS Summary. Tom to visit with Chris Scheetz to include future Canadian entities into the CPS Summary.</p>	012611	

Action Figure	Subject	Action Item/Assignment	Due Date	Completion Date
		012711 Review data later in today's meeting		
Don Badley , Bill Herbsleb and Inadvertent Interchange Work Group	Inadvertent Interchange Balances	<p>010109, <b>HIGH PRIORITY</b></p> <p>Coordinated effort is necessary to attain and incorporate the proper 2006 and 2007 carry-forward inadvertent interchange data.</p> <p>102909, Don Badley and Bill Herbsleb are aggressively addressing the mismatched balances, in progress. <b>Don and Bill may call upon RS members for assistance to resolve mismatches and balance the Eastern Interconnection inadvertent interchange accounts.</b></p> <p>012710, Don and Bill will prepare and send out a summary of the EI mismatches.</p> <p>072810, Don and Bill to update the II balancing effort and request RS assistance. Terry would like to see carry-forward II balances identified as "Unresolved Balances" to identify and fix the mismatched II.</p> <p>102810, CERTS/EPG will establish a "Pseudo-BA" in the Eastern Interconnection to capture the mismatch inadvertent interchange data in one account until all BAs accounts can be settled.</p> <p>012711 Reviewed Bill Herbsleb's draft letter and established a pseudo-BA</p>	012611	
	<b>NERC-CERTS Project Review</b>			
Gil Tam	Inadvertent Interch missing or mismatch data entries	<p>072809, Based on RS suggestion, Gil to send e-mail notification to BAs' staff that performs Inadvertent Interchange application data entries when triggers show missing or mismatched data. Gil to work closely with Don Badley and Bill Herbsleb. Ongoing effort.</p> <p>012611, Gil to update the RS on the effort to notify BAs staffs when Inadvertent Interchange application data entries when triggers show missing or mismatch data.</p> <p>012711 Mr. Tam announced that the upgrade will be release in February 2011.</p>	012611	
Gil Tam	Inadvertent Interchange Application	<p>102810, Gil to explain what does the Inadvertent Interchange application "locked" and "unlocked" terms mean? Explain if there is an audit trail for locking and unlocking the application whenever there is an adjustment.</p> <p>012711 Bill Herbsleb's letter will address this issue.</p>	012611	
Larry Kezele	Time Error Correction Field Trial	012711 Develop a Field Trial email exploder.	March OC meeting	
Larry Kezele	Time Error Correction	012711 Keep Terry Bilke and Larry Akens in loop when developing NERC	Ongoing	

Action Figure	Subject	Action Item/Assignment	Due Date	Completion Date
	Field Trial	communications package.		
Larry Kezele	Process for developing the CPS2 bounds report	012711 At the fall subcommittee meeting, the RS will develop a process for drafting the CPS2 bound report.	Fall RS meeting	
Eddy Lim	Collect and analyze data to establish a new primary frequency control metric	012711 Collect and analyze data to establish a new primary frequency control metric	September Operating Committee meeting	

**NERC CONFIDENTIALITY AGREEMENT  
 FOR  
 NERC RESOURCES SUBCOMMITTEE MEMBERS**

This Confidentiality Agreement (“Agreement”), dated \_\_\_\_\_, is between the North American Electric Reliability Corporation (“NERC”), and

\_\_\_\_\_, a member of the NERC Resources Subcommittee (“RS Member”) (collectively referred to as “Parties”).

**WHEREAS**, NERC Compliance Monitoring and Enforcement Program collects, reviews, evaluates, and determines if the control performance data is acceptable or in violation of NERC reliability standards’ requirements; and

**WHEREAS**, NERC Resources Subcommittee, in accordance with the Resources Subcommittee Charter, is the NERC technical resource to support resolution of balancing resources and demand issues and interconnection frequency related issues by providing industry leadership and guidance on matters relating to balancing resources and demand issues and interconnection frequency related issues; reviewing balancing authorities’ control performance on a periodic basis; and addressing technical issues on Automatic Generation Control (AGC), Time Error Correction, Operating Reserves, and Frequency Response; and

**WHEREAS**, NERC staff and software vendors have established computer applications to collect, tabulate, and carry out the collection and analysis process for both the Compliance Monitoring and Enforcement Program and the NERC Resources Subcommittee; and

**WHEREAS**, in order for the Resources Subcommittee to fulfill its charter, it is necessary for the Resources Subcommittee Members to have access to confidential control performance data and information from operating entities within NERC, and to be able to conduct open and unconstrained discussions among team members,

The Parties therefore agree as follows:

1. The term “Control Performance Data” means all data and information that the operating entities within NERC regions have furnished or are furnishing to NERC in connection with the operating entities’ operations within the Bulk Power System, whether furnished before or after the date of this Agreement, whether tangible or intangible, and in whatever form or medium provided (including, without limitation, oral communications), as well as all information generated by the Compliance Monitoring and Enforcement Program.

# NERC

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RELIABILITY CORPORATION

2. The RS Member understands and agrees that the Control Performance Data is being made available solely for purposes of the work of the Resources Subcommittee and that the Control Performance Data shall not be used in any manner to further the commercial interests of any person or entity. The RS Member further understands and agrees that he or she will not disclose Control Performance Data to any person who has not signed this Agreement except:

- a. as such disclosure may be required by law or judicial or regulatory order;
- b. in accordance with paragraph 5; or
- c. that a RS Member who is NERC or Regional Entity staff member may make Control Performance Data available to the NERC or regional compliance program.

3. If the RS Member's employing organization has signed the NERC Confidentiality Agreement for Operating Reliability Data ("NERC ORD Agreement"), paragraph 2 shall not be deemed to prohibit RS Member from disclosing Control Performance Data to other employees of that organization, but only to the extent that "operating reliability" as defined in the NERC ORD Agreement is shared within the organization.

4. The Parties expressly agree that Control Performance Data shall otherwise only be disclosed through official releases and reports as authorized by NERC.

5. It shall not be a violation of this Agreement for the RS Member to discuss a specific balancing authority's Control Performance Data with the specific balancing authority staff with the intent to improve the specific balancing authority's Control Performance.

6. This Agreement shall be for the sole benefit of the parties hereto. This Agreement may be modified or waived only by a separate writing signed by the Parties. If any clause or provision of this Agreement is illegal, or unenforceable, then it is the intention of the Parties hereto that the remainder of this Agreement shall not be affected thereby, and it is also the intention of the Parties that in lieu of each clause or provision that is illegal, invalid or unenforceable, there be added as part of this Agreement a clause or provision as similar in terms to such illegal, invalid or unenforceable clause or provision as may be possible and be legal, valid and enforceable. This Agreement will be governed and construed in accordance with the laws of the State of New Jersey, except for any choice of law requirement that otherwise may apply the law from another jurisdiction.

This Agreement shall have a term of five (5) years from the date hereof.

# NERC

NORTH AMERICAN ELECTRIC  
RELIABILITY CORPORATION

## NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

By: \_\_\_\_\_

Printed: \_\_\_\_\_

Title: \_\_\_\_\_

## NERC RESOURCES SUBCOMMITTEE MEMBER

Signed: \_\_\_\_\_

Printed: \_\_\_\_\_

March 5, 2011

Eastern Interconnection Regional Managers  
NERC Operating Committee Leadership  
Resources Subcommittee  
Eastern Interconnection Resources Subcommittee Survey Contacts

## **Inadvertent Interchange Confirmation – January 2007 and January 2010 accumulations**

The NERC Operating Committee approved the Resources Subcommittee reaching out to Eastern Interconnection Balancing Authorities (BAs) to obtain confirmation of Inadvertent Interchange balances at two anchor points in time. The reason is that BAs have transitioned to the NERC Inadvertent Interchange reporting application at different times and some of these BAs did not enter their initial “carry forward” balances.

Attached to this request is a workbook with two spreadsheets to capture BA confirmation information. We are asking the Regional Survey Contacts (or Regional Manger designee) to reach out to their respective BAs and collect this information.

Balancing Authorities are asked to confirm if they agree with the data in the NERC Inadvertent Interchange reporting application as reflected in the spreadsheet. If the BA does not agree, the BA should provide what they believe their balances were for these two months. Regions are also asked to enter the BA contact information in the spreadsheet should we need to reach out with questions.

Questions on the Inadvertent Interchange reporting application or the data it contains should be referred to Frank Carrera ([Carrera@electricpowergroup.com](mailto:Carrera@electricpowergroup.com) or 626 685-2015).

Completed spreadsheets should be sent to Bill Herbsleb ([herbslhw@pjm.com](mailto:herbslhw@pjm.com)) by April 15, 2011.

Sincerely,

*Terry Bilke*

Terry Bilke  
Resources Subcommittee Chairman

Enclosure – spreadsheet Jan2007 & Jan 2010 tabs

cc: Gil Tam, Electric Power Group  
Brian Nolan, NERC

## Time Error Correction Elimination Field Trial

Terry Bilke- NERC Resources Subcommittee  
NERC Operating Committee Meeting  
March 2011

to ensure  
the reliability of the  
bulk power system

### Topics

- Directive from NERC Operating Committee
- Field Test Organization
- Field Test Precursors
- Test Controls and Halts
- Measures of Success
- Metrics Gathered and Tracked
- Phased Test Option
- Impacts and Issues

## NERC OC Directive

- The NERC Operating Committee (OC) directed the Resources Subcommittee (RS) to develop a field trial by March 2011 to eliminate manual time error corrections
- Specific deliverables:
  - Test Start and Stop Dates
  - Measurements for success and failure
  - Coordination with NERC staff regarding the communication package to inform the consumer
- The RS was asked develop a field trial that could include an option to phase in the elimination of manual time error corrections

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## Field Trial Organization

<b>Interconnection</b>	<b>RS Contact</b>	<b>Time Monitor Contact</b>
Eastern	Terry Bilke	Gary McLellan
HQ	Mike Potishnak	Guy Quintin
Texas	Sydney Niemeyer	Sandip Sharma
Western	Don Badley	Michael Cassiadoro

<b>Lead</b>	Terry Bilke
<b>NERC</b>	Andy Rodriguez
<b>BARC Drafting Team</b>	Larry Akens

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## Precursors to the Test

- NERC Communication Outreach
- Eastern Interconnection Time Monitor Transition to IESO
- Positive Confirmation on January 2007 and January 2011 Inadvertent Interchange Balances
- Orientation and Training (Webinar) for Time Monitors and Balancing Authorities
- NAESB and FERC Coordination by NERC

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## Field Test Controls

- Weekly Calls First Month
- Monthly Calls Remainder of Test
- Quarterly Reports
- Communication Plan Controls

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## Field Test Timeline

Task	Start	Finish	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J
OC Plan Approval	3/9/2011	3/9/2011	x															
NERC Communication Plan	3/10/2011	6/30/2012																
Phase 1	3/10/2011	6/10/2011																
Phase 2	6/10/2011	8/10/2011																
Phase 3	8/10/2011	2/10/2012																
Inadvertent Tool Setup	3/1/2011	6/1/2011																
Time Monitor and BA Training	4/1/2011	5/1/2011																
Field Test	6/11/2011	6/10/2012																
Conference Calls	6/11/2011	6/10/2012		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Create Reports	6/11/2011	6/10/2012						x				x			x			
Final Report	6/10/2012	6/30/2012																x

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## Halts

- **Field Test Halted:**
  - Any Reported Reliability Impact Reported to any Reliability Coordinator
  - Any Significant Commercial Impact to NERC
  - Halt Applies to all Interconnections until Evaluation Completed
- RS will Determine and Communicate Temporary 20 Second Control Band if Test Halted
- After Consultation with ORS and NERC, RS will Recommend to OC whether to:
  - Resume Test
  - Maintain New Control Band (or zero Time Error)
  - Revert to Zero-Centered Band

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## Measures of Success

- No Negative Reliability Impacts Identified
  - Reports from BAs or RCs
  - Tracked Metrics
- No Significant Commercial Impacts Reported
- Manageable Inadvertent Interchange Balances

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## Metrics Gathered by RS

- Time Gained/Lost per Week per Interconnection (Time Monitors)
- Minutes Beyond Frequency Trigger Limits (BARC)
- Daily 1 Minute Frequency RMS (RS)
- Reliability Complaints (RCs submitted to Time Monitors)
- Commercial Complaints (NERC)
- Monthly Summary Reports for First Quarter (NERC/RS)
- Quarterly Reports thereafter for 1 Year Test
- Quarterly Reports Include Inadvertent Interchange Impact (RS)

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## Phased Test Option

- First Month: Control to +/- 1 Minute
- Second Month: Control to +/- 5 Minutes
- Months 3-6: Control to +/- 10 Minutes
- Months 7-12: Time Error Limit Released
- Additional Metric:
  - # of TECs
  - Collected by Respective Time Monitor
- RS Recommended not pursuing Phased Test

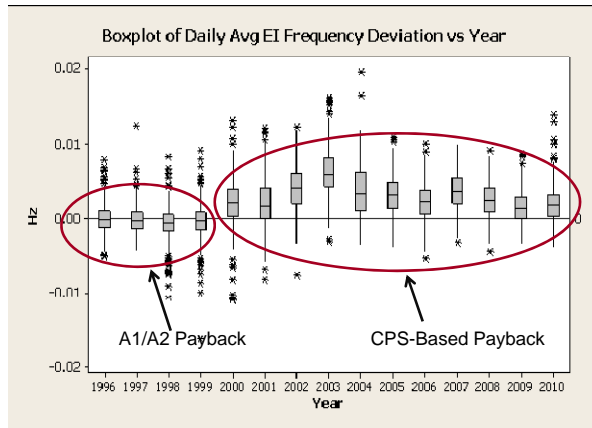
11

## Possible Impacts and Issues

- Possible Time Drift
  - East will gain 20+ Minutes/Year
  - West will gain 8 Minutes/Year
  - ERCOT 2 Minutes/Year
  - HQ Expects no Change
- Assumes Past Frequency Performance Continues
- Fast Frequency may impact some BAs' Inadvertent Interchange Balances

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## Possible Impacts and Issues (continued)



Assuming the East's 2000 to Present Frequency Performance Prevails (and fast frequency is not caused by all BAs slightly over-generating):

- A "perfectly balancing" 5000 MW BA will receive 13,000MWhr of Inadvertent in 1 year.

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## Possible Impacts and Issues (continued)

- No NAESB Business Practice or Tariff Problems if Time Monitor is not Jurisdictional
- Inadvertent Interchange Issue may drive a need for other Inadvertent Payback Options
- According to NAESB Inadvertent Payback Business Practice, it appears the NERC OC has the ability to approve other Payback Methods

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## NERC Communication Outreach

- Phase 1
  - Set up Industry Advisory Group
  - Begin Industry Outreach/Education
  - Webinars
  - *Decision Point – proceed with Field Test, or move to Phase 2?\**
- Phase 2
  - Meet with Concerned Stakeholders
  - *Decision Point – proceed with Field Test, or move to Phase 3?\**
- Phase 3
  - Share Observations (FAQ, Reports, etc.)
  - Assist LSEs and Others with Communication Information
  - *Decision Point – proceed with Field Test, or postpone elimination?\**

\* Decided jointly by OC Chair and NERC CEO - see NERC's "Time Error Correction Communication<sup>15</sup> Plan" for Additional Information

## Question & Answer

**DRAFT****Time Error Correction Communication Plan****February 21, 2011****Executive Summary**

Elimination of Time Error Correction may have adverse effects. To mitigate these, NERC will first create a Time Error Correction Elimination Advisory Group (TECEAG) and set up a website to collect information. Then, we will schedule various activities to collect information and progress through up to three phases, during which we will make decisions regarding next steps. The first decision point will occur after initial education and information collection. The second decision point will, if necessary, occur following more in-depth case-study analysis. The third and final decision point will, if necessary, occur following a public information campaign.

**Establishment of the Time Error Correction Elimination Advisory Group (TECEAG)**

NERC will create a group of five stakeholders plus one staff sponsor to serve on an advisory group. This group will be comprised of the following:

- One stakeholder from the Eastern Interconnection, US
- One stakeholder from the Eastern Interconnection, Canada
- One stakeholder from the Texas Interconnection, US
- One stakeholder from the Western Interconnection, US
- One stakeholder from the Western Interconnection, Canada

The scope of this group will be assisting in the administration and coordination of this communications plan. Members will draft announcements, write copy, and develop technical support documents as necessary.

**Establishment of the TEC Elimination Website and Comment Form**

NERC will set up a simple website that explains Time Error Correction and includes an online comment form through which entities may identify the concerns they may have with the elimination of Time Error Correction. NERC may register a separate domain for this website, depending on cost and availability. NERC will announce the creation of this website via standard NERC communication channels, including trade organizations and publications.

**Phase 1 – Commercial Inquiry**

The goal of this phase is to identify the scope and magnitude of any potential impacts of eliminating Time Error Correction. A series of Webinars that show an educational presentation that places Time Error Correction in context, followed by a question and answer session and announcement of the TEC

Website address, will accomplish this. NERC will announce these Webinars via standard NERC communication channels, including trade organizations and publications.

- Webinar 1 – Electric Utility Industry Stakeholders – Invitations will go to NERC Roster.
- Webinar 2 – Electric Utility Industry Vendors – Invitations will go to all known industry vendors as identified by NERC and the NERC Operating Committee through an e-mail survey.
- Webinar 3 – Commercial and Industrial Customers – Invitations will go to a set of trade groups and organizations as suggested by the NERC and the NERC Operating Committee through an e-mail survey.

One month after the conclusion of the last Webinar, NERC Executive Leadership and the NERC Operating Committee will meet jointly to review information received from the TEC Website Comment Form. If both NERC's CEO and its Operating Committee Chairman agree with moving forward, the following actions may occur:

- Initiation of the Time Error Correction Elimination Field Test
- Movement to Phase 2 of this Communication Plan

Alternatively, NERC will postpone its efforts to eliminate Time Error Corrections.

## **Phase 2 – Commercial Outreach**

This phase assumes that some significant commercial or industrial questions were raised during Phase 1. The goal of this phase is to do a more in-depth analysis of the potential concerns. This phase will occur in a period of two months or less.

NERC will arrange meetings with at least five of the entities that expressed concerns during Phase 1. NERC Executive Leadership and the NERC Operating Committee will select the entities based on their subjective evaluation of the following criteria:

1. The concern must be credible from an engineering perspective.
2. The concern must have significant financial, societal, or reliability impact.

Each of these meetings shall include one or more members of NERC staff and one or more members of the NERC Operating Committee (or its designees). The meeting shall occur at the premises of the entity expressing the concerns. In that meeting, the entity will explain, and, if necessary, demonstrate its concerns to the meeting participants. Each team shall report their findings back to NERC Executive Leadership and the NERC Operating Committee.

At the end of these meetings, NERC Executive Leadership and the NERC Operating Committee will meet jointly to review information received from the meetings. If both NERC's CEO and its Operating Committee Chairman agree with moving forward, the following actions may occur:

- Initiation of the Time Error Correction Elimination Field Test
- Movement to Phase 3 of this Communication Plan

Alternatively, NERC will postpone its efforts to eliminate Time Error Corrections.

### **Phase 3 – Public Outreach**

This phase assumes that some significant commercial or industrial questions were raised during Phase 1 and discovered to potentially be legitimate in Phase 2. The goal of this phase is to educate the public regarding the initiative and to prepare utilities for any potential problems that could arise. This phase will occur in a period of no less than six months.

NERC will develop talking points, public relations copy, and a Frequently Asked Questions document for use in this phase. NERC will coordinate any necessary continent-wide messaging, but in general, Load Serving Entities will be expected to communicate directly with their customers based on materials provided to them by NERC and/or the Regions.

At the end of this time, NERC Executive Leadership and the NERC Operating Committee will meet jointly to decide next steps. If both NERC's CEO and its Operating Committee Chairman agree with moving forward, initiation of the Time Error Correction Elimination Field Test will commence. Alternatively, NERC will postpone its efforts to eliminate Time Error Corrections.

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## Background

At its September 2010 meeting, the NERC Operating Committee requested the NERC Resources Subcommittee (RS) to draft a short “position paper” on Frequency Response.

The NERC Resources Subcommittee (RS) has been concerned with the trend in Frequency Response, particularly in the Eastern Interconnection, for several years. The RS initiated the Standards Authorization Request (SAR) for BAL-003 to put a measurement process in place so engineers can objectively analyze the adequacy of Frequency Response and underlying issues to enable informed decisions.

Most in the industry agree that there is adequate Frequency Response at this point in all Interconnections. For example, it would take a contingency on the order of 10,000 MW in the Eastern Interconnection to trigger the first general step of Under Frequency Load Shedding (UFLS). The intent of the SAR for the Frequency Response Standard is to have facts and an objective process in place to adjust regionally or turn things around globally if warning signs develop or if limits are approached.

## Focus of BAL-003

While it is true that generators are the primary source of Frequency Response, the focus of BAL-003 should not be generators alone. Assuming there is presently an acceptable amount of Primary Frequency Response, resources would be better applied by initially evaluating performance at the Balancing Authority level and address local action in Balancing Authority Areas where Frequency Response measured as low.

A generator-centric standard would be costly and likely take years to implement and does not recognize new resources which can also provide frequency response. The *Form EIA-860 Database Annual Electric Generator Report* for 2008 lists over 7000 generators 25 MW or larger in the US. This does not include combined generation plants with small units with capacity greater than 75 MW (plant level size is another requirement which bring small generation under NERC registry), which would also be subject to a generator-centric standard. Monitoring and validating performance of all these generators would be difficult at best.

## Target Minimum Frequency Response

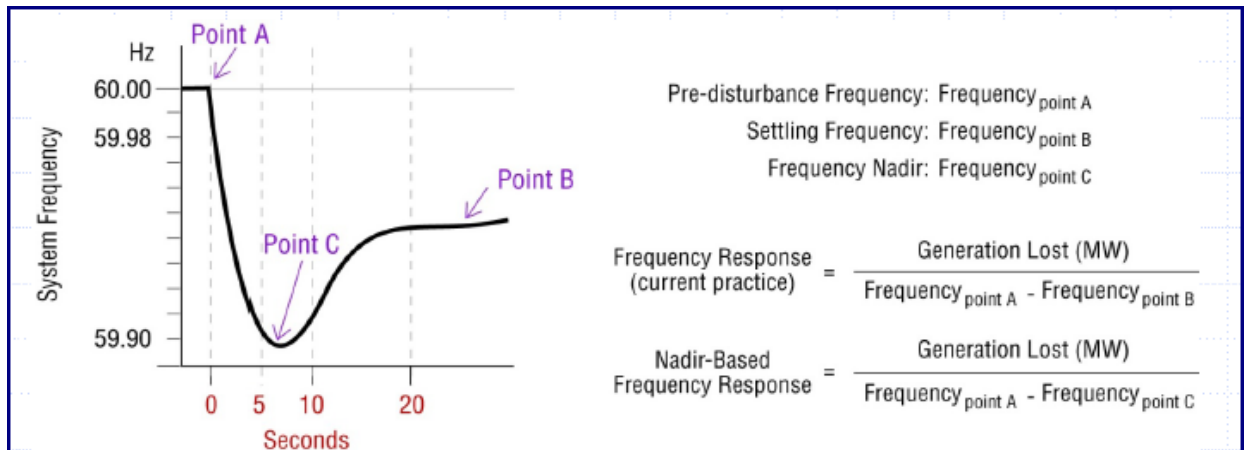
The Frequency Response Standard drafting team is proposing a standard with performance goal that each Interconnection can withstand at least a severe N-2 event without encroaching upon the first tier of Under Frequency Load Shedding (UFLS). The Interconnection may include an additional safety margin in the standard’s contingency protection criteria. The process to identify the Interconnection N-2 protection criteria is expected to be administered central ly by the Interconnection or NERC in lieu of an Interconnection authority to review and maintain the Interconnection level of protection.

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	Eastern	Western	Texas	HQ	
Starting Frequency	60	60	60	60	Hz
Highest UFLS*	59.7	59.5	59.3	58.5	Hz
Contingency Protection Criteria	5000	2740	2708	1700	MW
Frequency Response Obligation	1667	548	387	113	MW/0.1Hz

**Note: The table above is illustrative. The values have not yet been vetted in the standards process.**

The standard assumes that the given Interconnection is at the nominal value of 60 Hz at the time of the event. The target Frequency Response Obligation (FRO) is based on points A and B of the frequency excursion. The contingency protection criteria have a safety margin to address the difference between Points B and C. The graph below depicts a disturbance with a depiction of points A, B, C. C point is the lowest frequency value measured within 10 seconds.



\*The Eastern Interconnection set point presented in the table is a compromise of the general first step of UFLS in the East (59.7Hz) and a special protection setting in Florida (59.7Hz). It is extremely unlikely there would be an event elsewhere in the Eastern Interconnection that would cause a “false trip” of the Florida UFLS.

It is expected the data collected in BAL-003 will be used by planners to validate models and test the adequacy of their respective Interconnection’s Contingency Protection Criterion.

Once the Frequency Response Obligations have been vetted, it would not be difficult to set Red-Yellow-Green risk levels at the Balancing Authorities (BAs) to communicate to the industry the state of Frequency Response and to better target mitigating actions.

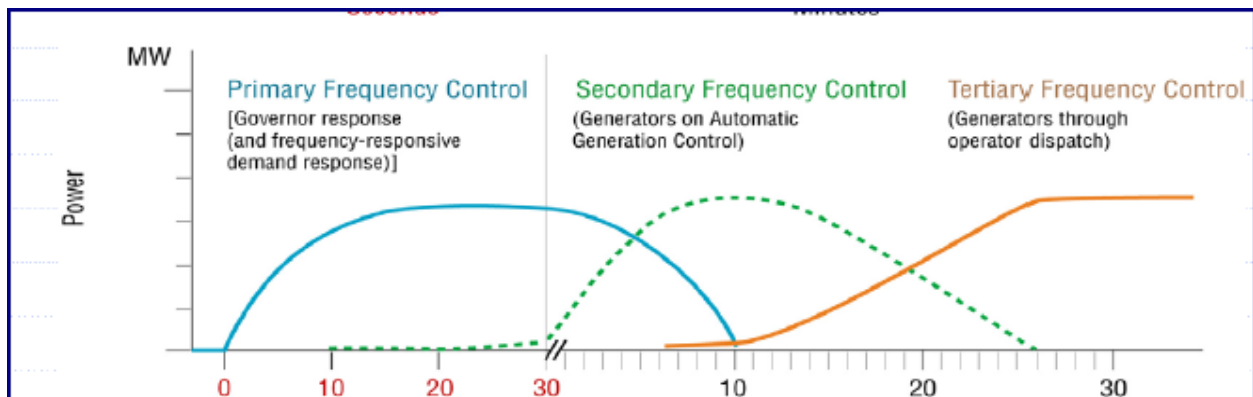
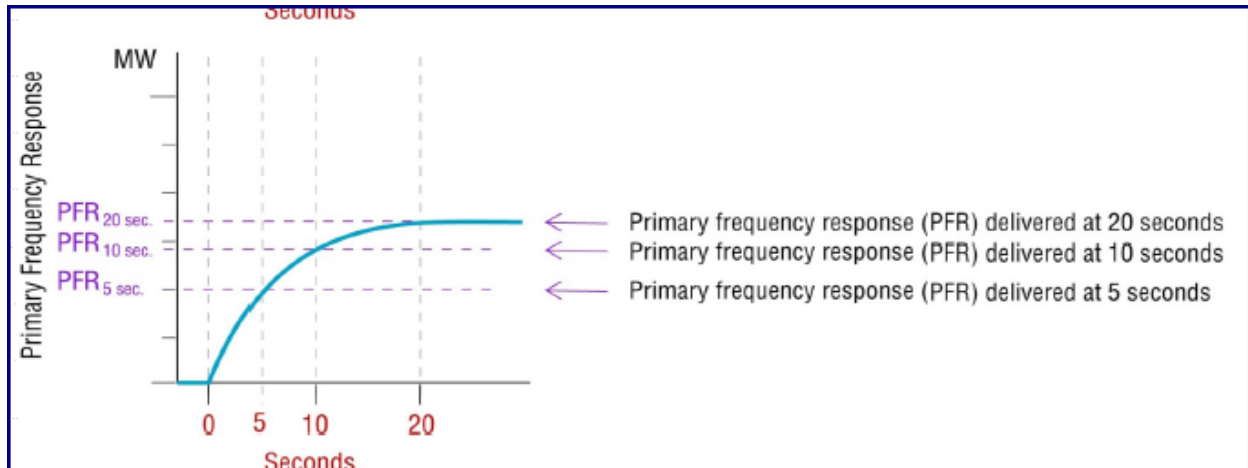
### Obtaining Frequency Response

What are the attributes of Frequency response? The desired support is a resultant change in power or load to arrest declining frequency and restore system frequency to a stable value above point C. The response to arrest frequency deviation is automatic and provided by direct measurement of frequency or rotation of the turbine. The expected response needs to be delivered within cycles to seconds of the

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frequency deviation and continued delivery until the disturbance is arrested and Automatic Generation Control acts to restore ACE. Graphic below shows frequency response delivered within 20 seconds and maintained. Graphics below show primary response measure and the second graph shows the interrelationship of primary, secondary, and Tertiary Frequency Control.

Figures below supplied from the FERC technical conference.



Order No. 693 directed NERC to modify BAL-003 to identify methods of obtaining Frequency Response. A simple approach to achieve this objective is to allow BAs to obtain response by participation in a Reserve Sharing Group (RSG) similar to the acquisition of contingency reserves. Performance could be aggregated similar to the Disturbance Control Standard. Grouping BAs may work to improve some BA response. Frequency response of the Interconnection is used by all BAs when their respective load or generation disturbance event happens.

Additionally, there appears to be an existing mechanism through transmission tariffs and markets. Regulation and Frequency Response is an approved ancillary service. The FERC has also previously given the Transmission Provider authority to determine the amount and location of required ancillary services and if necessary sanction the overutilization of such services. BAL-003 could be used to objectively

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determine the need for additional services. Tariffs are not the only solutions to obtain frequency response. Europe and the state of Texas have also put in grid code requirements that generation must meet which includes frequency response.

Presently, the bulk of Frequency Response must come from generators and may change as alternative methods and devices provide this same service. This means Balancing Authorities will need a rational frequency response service verification standard that couples to any performance obligation in BAL-003.

### Field Test

Assuming BAL-003 will be a Balancing Authority-centric standard, there are several reasons why a field Test is needed, including:

- The drafting team is proposing to adjust the floor for Bias to address concerns raised in the 2003 Blackout Report. Control theory says frequency performance improves if Bias Setting and natural Frequency Response are nearly equal. Still, the interaction between Bias and actual performance may cause unexpected interactions that negatively impact frequency performance.
- The event selection and measurement processes have not been tested and could have flaws.
- In the past, NERC Frequency-Response Characteristic surveys have been used to measure frequency response throughout the continent; however, these surveys had limited accuracy. The drafting team is evaluating other more technically-based approaches to evaluate risk and performance obligations. This evaluation will be done in parallel with the Field Test.

The Frequency Response Standard drafting Team is recommending the use of the 2011 Bias calculation data (events from 2010 frequency excursions as the basis) as a field test. Keep in mind that the trial is recommending the reduction of Bias floor to 0.8% of peak load or true natural response whichever is the larger absolute value for the field trial Bias setting.

### Summary Points

- Frequency response is an important reliability function. In the event of generation loss, it assists in arresting the frequency decline as frequency deviates from nominal, and adds stability.
- The Interconnections appear to have sufficient Frequency Response at this time.
- An overly stringent standard will increase customer costs for marginal increases in reliability.
- BAL-003 should also enable a process for review to bring more Frequency Responsive resources to bear when the Interconnection is stressed or during islanding and blackstart operations. Regions have the authority to develop local standards should they choose to have a more stringent standard, or if there is something unique about the Region that requires more response.
- Similar to the Control Performance Standard, BAL-003 should be “tunable” such that the Interconnection target response can be adjusted as the industry learns more.
- To expedite the standard, there should be a field trial using a defined set of 2010 frequency excursions as a basis for an objective Bias calculation for 2011 and allow analysis of data. An improved standard could be deployed in 2012.

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- If Frequency Response is a priority issue, NERC and the FERC should develop a standard to assure is performance and they should take a leadership role to encourage Smart Grid technologies to include Frequency Response as one of the services provided.

### **Future Work (Generator Control)**

- Generators or other sources of Frequency Response that utilize a step response once frequency crosses their governor dead-band can cause instability during island and blackstart operation. Dead-bands act as filters to prevent generation response and to some extent oscillatory behavior with electrically close generation. The droop curve will drive the unit to a power level based on the difference in reference once the signal exceeds the dead-band – this sudden jump in power is the step function
- Black start plans should consider generator Frequency Response performance in determining black start and cranking path generators.
- Outer Loop MW control and the early withdrawal of Frequency Response is also a reliability concern. Generators that do not sustain Frequency Response during the frequency recovery period should be studied to determine the root cause of the early withdrawal. It is suspected that contributing factors are improper implementation of desired (set point) generation overruling frequency based generation at the generator. Market design, rules or tariffs that incent generators to remain on an exact MW schedule at all times should be changed to acknowledge the obligation to support frequency.
- Interconnections need specific guidelines for droop settings and allowable dead-bands. The droop settings should not have step changes at the dead-bands. Interconnections with low or marginal Frequency Response will need to have a closely coupled generator verification standard.