

Minutes Resources Subcommittee

October 28–29, 2009
Arizona Public Service Co. Office
Phoenix, Arizona

A meeting of the North American Electric Reliability Corporation (NERC) Resources Subcommittee (RS) was held on October 28–29, 2009 at the Arizona Public Service Co. Office in Phoenix, Arizona. The agenda, and attendance list are attached as **Exhibits A** and **B**, respectively. There are no individual statements and one minority opinion, **Exhibit C**.

Resources Subcommittee Chair Terry Bilke presided and a quorum was present.

Resources Subcommittee Appreciation for Meeting Host Arizona Public Service Company
The Resources Subcommittee acknowledges and appreciates the hospitality that the Arizona Public Service Co. Organization and specifically Ludie Stoltz and Tom Glock provided to the subcommittee as it hosted the RS meeting at their facility.

Antitrust Compliance Guidelines

Secretary Vandervort acknowledged the NERC Antitrust Compliance Guidelines.

July 29–30, 2009 RS Meeting Minutes

Mike Potishnak moved to approved the April 29–30, 2009 RS minutes. The motion was approved.

Nominations of RS Officers

The RS officers (Chair and Vice-chair) serve at the appointment of the NERC Operating Committee Chair. RS Chair Terry Bilke and Vice-chair Don Badley have served for two 2-year terms. Chair Bilke appointed Bill Herbsleb as the leader of a nominating committee to recommend RS officers to the NERC OC Chair.

Gerry Beckerle moved to recommend to the NERC OC Chair that current RS Chair Terry Bilke and current Vice-chair Don Badley continue as the RS officers for the next two-year term. The motion passed. Secretary Vandervort will convey the nominations to the OC Chair.

RS Scope Review and RS Working Group Scope Development

RS Scope

RS Vice-chair Don Badley led a review and proposed revision of the RS Scope, see **Exhibit D**. Secretary Vandervort will forward the RS and working group scopes to the OC for approval.

Frequency Working Group Scope

The Frequency Working Group Chair Raymond Vice led the RS in developing the Frequency Working Group Scope, see **Exhibit E**.

Inadvertent Interchange Working Group Scope

The Inadvertent Interchange Working Group Chair Don Badley led the RS in developing the Inadvertent Interchange Working Group Scope, see **Exhibit F**.

Operating Reserves Working Group Scope

The Operating Reserves Working Group Chair Larry Akens led the RS in developing the Operating Reserves Working Group Scope, see **Exhibit G**.

Working Group Reports

Frequency Working Group — Chair Raymond Vice

The Frequency Working Group did not have a report for this meeting. Mr. Vice reported that since the last RS meeting, the Freq WG has worked with the Frequency Response Standard Drafting Team on the drafting team's frequency response activities.

Inadvertent Interchange Working Group — Chair Don Badley

The Inadvertent Interchange Working Group did not have a report for this meeting.

Mr. Badley and Bill Herbsleb reported that they are continuing to balance the inadvertent interchange accounts in the Eastern Interconnection. One of the biggest concerns for inadvertent interchange accounting purposes is to identify and specify inadvertent interchange accounts resulting from changes when Balancing Authorities become certified, decertified, merged, or consolidated. To attain the Balancing Authorities footprint changes (i.e. certifications, de-certifications, mergers, consolidations) that occurred from January 2005 to present, the RS will contact its survey contacts for this historical data.

Mr. Herbsleb, Mike Potishnak, and Tom Vandervort will work together to develop a checklist on what needs to be done, who needs to be notified, what software changes must take place, and how to reconcile the old and new foot-print data when a BA certifies, decertifies, merges, consolidates, etc.

RS Chair Bilke was requested by the OC to report at the December, 2009 OC meeting on the status of the effort to establish definitive Inadvertent Interchange balances. Mr. Bilke will coordinate a report to the OC with Messer Badley and Herbsleb.

Operating Reserves Working Group — Chair Larry Akens

The Operating Reserves Working Group did not have a report for this meeting. Mr. Akens reported that he met with FERC staff as the chairman of the Balancing Authority Control Standard Drafting Team to identify and define the different types of Operating Reserves: 1. Contingency Reserves; 2. Regulating Reserves; 3. Frequency Responsive Reserves; and 4. Replacement Reserves.

Reliability Metrics Working Group

Jerry Rust reported on the five proposed metrics that the RS and RMWG representatives discussed during the last RS meeting.

Metric	Description
ALR 1-10	Average Frequency Error
ALR 1-11	Daily Frequency Outlier
ALR 1-12	Interconnection Frequency Response
ALR 1-13	Balancing Authority Frequency Response
ALR 1-14	Large Resource Losses

Mr. Rust reported that the RMWG denied ALR 1-10 through ALR 1-13, because the four proposed metrics do not meet the RMWG criteria of “simple,” “measurable,” and “attainable.” Mr. Rust continued that the industry will not understand the four proposed metrics and they are not easily attainable.

For the fifth proposed metric, ALR 1-15, the RMWG may move this one forward. Mr. Rust asked the RS how hard is it to get accurate data? Mr. Bilke responded that through the DCS report form, entities are to report all generation losses greater than 1000 MW. The Events Analysis Program will attain large resources losses from other sources (e.g. Situation Awareness, EOP-004, or OE-417). The RMWG will continue to consider this proposed metric.

As a reference the RMWG S.M.A.R.T. criteria that metrics must meet are:

Reliability Metrics Working Group (RMWG)

S.M.A.R.T. (Specific, Measurable, Attainable, Relevant, and Tangible)

Specific/Simple -

- Be easily understood and not driven by commercial factors (i.e. tariff)
- Identify factors that positively or negatively impact reliability
- Address reliability problems and solutions

Measurable -

- Be easily measured with regularly collected information
- Measure past and current reliability
- Measure progress in ensuring reliability
- Measure effectiveness of reliability standards and enforcement programs

Attainable -

- Have time, resources and ability to improve reliability over a certain time frame
- Only focus on key areas that have a much greater chance of success

Relevant –

- Linked to reliability goals
- Provide meaningful information
- Provide feedback for improving the Reliability Standards

Tangible/Timely -

- Reflect current top priority issues and possess a sense of urgency
- Meet industry expectation
- Identify reliability gaps and point to existing standards that need to be modified or new standards that need to be developed

Reliability Fundamentals Working Group

Jerry Rust gave a summary of the RFWG evaluation of the RS *Balancing and Frequency Control* document. The RFWG will come up with some process to address the document. Mr. Bilke said that the RS Balancing document might be broken into two documents, one on the fundamentals and a second document as an expanded technical document.

Alan Oneal is editing the RS *Balancing and Frequency Control* document. Mr. Bilke reminded the RS that Mr. Oneal has requested assistance in attaining reference documents; please refer to previous e-mail messages from Mr. Oneal.

ACE Diversity Interchange (ADI)

Don Badley, the ADI Task Force leader, stated that he was contacted by ORS Representative Jim Castle with a recommendation to combine the RS and ORS ADI initiatives into a single group. Don will contact Mr. Castle after the RS meeting to begin working on the effort. Mr. Badley presented the initial ADI Task Force Scope to the RS for approval. The RS endorsed the scope by unanimous consent, see **Exhibit H**.

Mike Potishnak proposed to change the name of the ADI Task Force to Supplemental Regulation Task Force in order to evaluate other forms of supplemental regulation in addition to ADI. The RS did not move on Mr. Potishnak's suggestion. Mr. Potishnak then submitted a Minority Opinion, See **Exhibit C**.

NERC BA Bubble Diagram

All of the NERC BA Bubble Diagram changes submitted by the RS members and RE staff were compiled by Secretary Vandervort and given to NERC IT staff to incorporate into the official NERC Bubble Diagram. As of this meeting, the enhancements have not been incorporated but will be tracked until the enhancements are reflected in the official diagram.

The BA Bubble Diagram can be found at: http://www.nerc.com/docs/oc/rs/ctrl_nerc.jpg

NERC Frequency Response Initiative

NERC is undertaking a Frequency Response Initiative that will include NERC staff, the NERC Operating Committee, the Frequency Response Standard Drafting Team, and the RS specifically the Frequency Working Group. The roles of each group will be defined as the initiative progresses. Bob Cummings, Director of NERC Events Analysis and Information Sharing is leading the initiative.

Included in the NERC Frequency Response Initiative will be a frequency data request. The frequency data request will either be a mandatory NERC Order 1600, or an OC issued voluntary data request. The RS will collaborate with the Frequency Response Standard Drafting Team to make a recommendation to the NERC OC at its December, 2009 OC meeting.

NERC Reliability Standards

Numerous RS members are on the listed standard drafting teams. These standards began as RS-sponsored standard authorization requests (SARs). Each standard drafting team is developing new or revising existing standard(s), and will post all the documents for industry comment through the NERC Standards Program. The goal for each standard drafting team is to make significant progress towards the next comment posting or standard ballot.

Frequency Response SDT — Chair Bill Herbsleb

The FRRSDT is involved with the NERC Frequency Response Initiative and is heavily involved with the Frequency Data Request that will be either a Mandatory Order 1600 data request or an OC voluntary data request. The FRRSDT will also draft any standards that result from the frequency data analysis. The FRRSDT is also working to incorporate clarification into the BAL-003 standard regarding frequency response versus frequency Bias.

Reliability-based Control SDT — Chair Doug Hils

Doug Hils, Reliability-based Control Standard Drafting Team (RBCSDT) chair, reported to the RS that the RBCSDT field trials are continuing with status conference calls taking place each month. Mr. Hils has concerns with ACE Diversity Interchange (ADI) and with the Bias requirement component of the ACE equation.

Mr. Hils led a discussion on the RCWG concerns with the RC Action Guidelines that the RS developed in conjunction with the BAAL Standards Frequency Trigger Limits. When an FTL-High or FTL-Low is exceeded for more than five minutes, an Intelligent Alarms is initiated with specific RCs actions to correct the situation. The RCs do not take action until the FTL is exceeded for ten minutes. The RS requests Mr. Hils to attain the specific language from the RCWG to incorporate into the Intelligent Alarms, and the RS will authorize the change.

RBC monthly field trial summaries, documents and tools can be found on the RBCSDT Web site, at: http://www.nerc.com/filez/standards/Reliability_Based_Control_FieldTrial_Tools_2007-18-RF.html

Balancing Authority Control SDT (BAL-002, 004, 005, 006 Revisions) — Chair Larry Akens

The BACSDT continues evaluate and revise the subject BAL standards. As a reference the standards under development and their applicable subject matter are:

BAL-002	Disturbance Control Standard (DCS)
BAL-004	Time Error Correction (TEC)
BAL-005	Automatic Generator Control (AGC)
BAL-006	Inadvertent Interchange

Performance Standard Reference Document — Chair (Vacant)

John Swez presented the latest version of the PSRD to the RS. The RS endorsed presenting the PSRD to the OC at the December, 2009 OC meeting to replace the current PSRD version in the OC Operations Manual. Mr. Bilke will be present at the OC meeting to answer any questions.

NAESB Time and Inadvertent Interchange Management Business Practice Standards

RS Chair Bilke reported that the NAESB WEQ T&IIM team is collaborating with the BACSDT to come to consensus on the NERC BAL reliability standards and the NAESB WEQ business practice standards related to the FERC Order 693 directives related to time error correction (TEC) and inadvertent interchange and to coordinate the resulting changes are in synch and do not conflict. The NAESB WEQ Time and Inadvertent Management Task Team has no plan for immediate action, but is waiting on the NERC BACSDT to generate its documentation and draft standards to attain comments that might bring issues and concerns to the NAESB task force.

NERC Active Resources Subcommittee Applications

Consortium for Electric Reliability Technology Solutions (CERTS) project manager Carlos Martinez presented a status of the NERC RS applications, see **Exhibit I**. The significant applications Issues are:

Application	Outstanding Issues
Intelligent Alarms	The RCWG does not take action until the FTL is exceeded for 10 minutes. An option is to continue to broadcast the IAs but change the RC instructions to take action on the event after 10 minutes in accordance with RCWG preferences.
Inadvertent Interchange	CERTS to identify if the tool is blocking year-to-year cumulative balances.
Inadvertent Interchange	RS in conjunction with CERTS to define how to control and track the BAs that are merged, retired, or are new BAs.
Inadvertent Interchange	RS to define the process of Inadvertent Interchange summary reports and disputes.
Inadvertent Interchange	RS to approve requested Inadvertent Interchange applications changes.
Frequency Monitoring and Analysis	RS to define the Frequency events triggers and the frequency response calculation(s).

Resource Adequacy Application

Data mapping software has been modified by CERTS but requires implementation at the NERC site.

Inadvertent Interchange Application

Carry-forward problems were identified as the result of manual entries. Special data lockout software was developed and implemented to address the problem. Validation that the fix is successful is necessary.

The RS suggest that CERTS send e-mail notifications to the balancing authorities' staff that perform inadvertent interchange application data entries for missing and mismatch inadvertent interchange data.

The RS discussed Inadvertent Interchange application training. Mr. Martinez will work with CERTS staff to move all application explanations and guides, including Inadvertent Interchange application instructions, to a single applications website. In addition the RS discussed the most effective way to accomplish face-to-face training for the Inadvertent Interchange application. Messer Badley, Herbsleb, and Martinez will discuss and make recommendations for training on the NERC – RS Inadvertent Interchange application.

WECC Inadvertent Interchange Balances

WECC zeroed the Inadvertent Interchange balances of its 37 balancing authorities on July 1, 2009. The Inadvertent Interchange balances are carried on a separate ledger which will be reduced until they are zeroed out. WECC agreed to the following two items prior to the July 1, 2009 “zeroing action.”

1. The WECC provides the RS a list of the BAs and the amount of Inadvertent that is zeroed out. This can be provided at our July meeting (July 2009).
2. The WECC provides updates at the RS's quarterly meetings of the amount of “off book” inadvertent that has been paid back by BA. Once all the “off book” account is paid off, we will need no further update.

Mr. Badley reported that the On-Peak and Off-Peak (monthly nets and accumulations) Inadvertent Interchange in the WECC is balanced to zero through September 2009. Since the implementation of the Western Interchange Tool (WIT), all disputes with Interchange are resolved within a few days of month-end. There are fewer disputes than prior to July 1, 2009.

The Western Interconnection On-Peak and Off-Peak Inadvertent Interchange for each BA, prior to July 1, 2009, was converted to On-Peak and Off-Peak energy accounts and is being tracked until every BA in the WECC shows a zero balance in these newly created energy accounts. Twenty-one of the 37 BAs in the Western Interconnection have begun diminishing their accounts. The status of these values will be shared with the RS at every meeting.

DOE North American SynchroPhasor Initiative (NASPI)

The RS did not have time to visit this important agenda item during the meeting.

Additional information can be found on the following Web sites:

- <http://www.naspi.org/>
- <http://www.powerit.vt.edu/Fnet.htm>
- www.rtdmsusersgroup.org<<http://www.rtdmsusersgroup.org>>

FERC Study on Frequency Response of Renewable Resources

Mahmood Mirheydar reported that FERC is performing a study to determine if frequency response is an appropriate metric to assess the reliability impacts of integrating renewable resources. If frequency response is an appropriate metric, then use the resulting metric(s) to assess the reliability impact of various levels of renewable resources on the grid. The study is being performed by the Lawrence Berkeley National Laboratory and should be completed in six months. If the report is complete prior to the next RS meeting, Mr. Mirheydar will be able to report on the results, conclusions, and recommendations.

Time Error Monitoring

The subcommittee reported the following time error monitoring statistics:

Interconnection Time Error Totals – Through September, 2009			
	Fast Time Error Corrections	Slow Time Error Corrections	Total Time Error Corrections
Eastern Interconnection	52	0	52
Western Interconnection	23	31	54
ERCOT	35	5	40
Hydro Québec *	-----	-----	-----

* Hydro Quebec has a frequency based time error monitoring process that does not fit this table.

Performance Monitoring

- CPS1 Review

- CPS2 Review
- DCS Review

The NERC compliance program determines control performance standards CPS1, CPS2, and disturbance control standard (DCS) violations, penalties, and monitors corrective actions. The Resources Subcommittee members are required to sign a NERC Confidentiality Agreement prior to reviewing and discussing the CPS1, CPS2, and DCS reports.

The RS did not have time to discuss and review the CPS1, CPS2, and DCS report for performance analysis purposes. The RS may conduct a conference call to discuss these reports. Due to the confidential nature of the data, details of the discussion and review the results of the call cannot be disclosed.

Resources Subcommittee Action Item List

Tom Vandervort reviewed and updated the action item list, which is affixed as **Exhibit J**.

Dates and Locations of Future Meetings

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

Wednesday, January 27, 2010 Thursday, January 28, 2010	8 a.m. – 5 p.m. 8 a.m. – noon	Tucson, AZ, Host: Tucson Electric Power Co. * Coordinator: John Tolo
Wednesday, April 27, 2010 Thursday, April 28, 2010	1 p.m. – 5 p.m. 8 a.m. – 5 p.m.	St. Louis, MO Host: Ameren Co. * Coordinator: Gerry Beckerle
Wednesday, July 28, 2010 Thursday, July 29, 2010	8 a.m. – 5 p.m. 8 a.m. – noon	Pensacola, - first choice Gulfport, - second choice Host: Southern Co Office * Coordinator: Raymond Vice
Wednesday, October 27, 2010 Thursday, October 28, 2010	8 a.m. – 5 p.m. 8 a.m. – noon	Valley Forge, PA Host: PJM Office * Coordinator: Bill Herbsleb
Wednesday, January 29, 2011 Thursday, January 30	8 a.m. – 5 p.m. 8 a.m. – noon	Austin, TX Host: ERCOT Office * Coordinator: Sydney Niemeyer

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

Respectfully submitted,

Tom Vandervort

Thomas J. Vandervort
Resources Subcommittee Secretary

Agenda Resources Subcommittee

October 29, 2009 | 8 a.m.–5 p.m.
October 30, 2009 | 8 a.m.–noon
Arizona Public Service Co. Office
502 S. 2nd Ave
Phoenix, Arizona 85003
Phone: 602-250-1160

1. Administrative (Attachment)

- a. Membership and Guests — Terry Bilke
 - i) RS Organization and Assignments
 - ii) RS Roster
 - iii) RS Survey Contacts
- b. Arrangements — Tom Vandervort
- c. Approval of July 29–30, 2009 Meeting Minutes — Terry Bilke
- d. Approval of the Meeting Agenda
- e. Procedures
 - i) Parliamentary Procedures — Terry Bilke
 - ii) Antitrust Compliance Guidelines — Tom Vandervort
- f. Resources Subcommittee Action Items List (review prior to the meeting) — Terry Bilke
- g. NERC–RS Confidentiality Agreement — Terry Bilke
- h. Resources Subcommittee Scope — Tom Vandervort
http://www.nerc.com/docs/oc/rs/RS_Scope_25June08_revised.pdf

2. Nominations and Recommendations for RS Officers

- a. RS Chair Nomination and Recommendation to the OC Chair — Tom Vandervort
- b. RS Vice-chair Nomination and Recommendation to the OC Chair — Tom Vandervort

- 3. RS Scope and Working Group Scopes (Attachment)**
 - a. RS Scope — Don Badley
 - b. Frequency Working Group Scope — Raymond Vice
 - i) Attachment: Frequency Working Group Scope #1
 - ii) Attachment: Frequency Working Group Scope #2
 - c. Inadvertent Interchange Working Group Scope — Don Badley
 - d. Operating Reserves Working Group Scope — Larry Akens

- 4. Working Group Reports**
 - a. Frequency Work Group — Raymond Vice
 - b. Inadvertent Interchange Work Group — Don Badley
 - c. Operating Reserves Work Group — Larry Akens

- 5. NERC Related Activity (Attachment)**
 - a. OC Meeting – RS Action Items / Assignments — Terry Bilke
 - i) RS to send Balancing Document to RFWG in near future
 - ii) RS to report on Inadvertent Interchange balance status
 - iii) RS and FRRSDT to give OC its plan to collect frequency response data
 - b. OC Subgroup Review Team Questionnaire — Terry Bilke
 - c. FERC Florida Blackout Settlement “ORDER APPROVED STIPULATION AND CONSENT AGREEMENT” Section III Resolution — Terry Bilke, Don McInnis
 - i) Attachment: FERC Order III Settlement, B. Reliability Enhancement Measure, 3. Frequency Response
 - ii) FERC Order, Web site:
http://www.nerc.com/files/Order_FPL_Settlement_10082009.pdf
 - iii) Attachment: EOP-003-0-1b Frequency Response and Bias Standard
 - d. Frequency Response Data Request Initiative — Bob Cummings, Tom Vandervort
 - e. RS Support of FRRSDT Data Collection — Terry Bilke
 - i) Attachment: RS Support of FRRSDT Data Collection
 - ii) Attachment: Frequency Response Update
 - f. Intelligent Alarms – Frequency Trigger Limits (FTLs) Diagnosis — Terry Bilke
 - g. Reliability Metrics Working Group — Jessica Bian, Mark Lauby, Jerry Rust
 - h. Reliability Fundamentals Working Group — Jerry Rust

- i. ACE Diversity Interchange (ADI) Review Group — Don Badley, Doug Hils, Terry Bilke
 - i) Attachment: Doug Hils e-mail regarding ADI Concerns
 - ii) Comments by the Resources Subcommittee
 - iii) ADI Letter of Concern
 - iv) Dynamic Transfer Reference Guidelines link:
http://www.nerc.com/docs/oc/is/IS_Dynamic_Transfer_Guidelines.pdf
 - v) Interchange Reference Guidelines link:
http://www.nerc.com/docs/oc/is/Interchange_Reference_Guidelines.pdf
- j. Update NERC BA Bubble Diagram / Map — Tom Vandervort
http://www.nerc.com/docs/oc/rs/ctrl_nerc.jpg

6. NERC Reliability Standards and Reliability Related Documents (Attachment)

- a. Frequency Response SDT — Bill Herbsleb
- b. Reliability-based Control SDT — Doug Hils, Raymond Vice
- c. Balancing Authority Control SDT — Larry Akens
- d. NERC OC Operating Manual
 - i) Performance Standards Reference Document — John Swez
 - ii) Area Interchange Error Survey Training Document — Don Badley and Inadvertent Interchange Working Group
 - iii) Frequency Response Characteristic Survey Training Document — Raymond Vice and Frequency Working Group
 - iv) Inadvertent Interchange Accounting Training Document — Don Badley and Inadvertent Interchange Working Group
 - v) Time Monitoring Reference Document — Don Badley and Inadvertent Interchange Working Group
- e. NAESB WEQ Time and Inadvertent Management — Terry Bilke
- f. Reliability Concepts Document – Balancing and Frequency Control Chapter — Terry Bilke
 - i) Attachment: Balancing and Frequency Control Chapter
 - ii) Attachment: Alan Oneal e-mail to the RS

7. RS Software Applications (Attachment)

- a. Resources Adequacy (ACE-Frequency) Application System — Carlos Martinez, Terry Bilke

- b. Intelligent Alarms — Carlos Martinez, Terry Bilke
- c. AIE Monitoring Application — Carlos Martinez, Don Badley, Bill Herbsleb
- d. CPS1 & BAAL Monitoring Application — Carlos Martinez, Doug Hils, Raymond Vice
- e. Frequency Monitoring and Analysis Application — Carlos Martinez, Raymond Vice, Terry Bilke
- f. Inadvertent Interchange Training Application — Carlos Martinez, Don Badley, Bill Herbsleb
- g. NERC-CERTS-RS Software Application Training — Terry Bilke
- h. DOE North American SynchroPhasor Initiative (NASPI) — Terry Bilke
 - i) Attachment: RAPIR
 - ii) Attachment: NASPI RTDMS Visualization and Alarm Client V6

8. Frequency and Control Performance (Attachment)

- a. Western Interconnection Frequency Trends and Events — James Murphy
- b. Eastern Interconnection Frequency Trends and Events — Raymond Vice
- c. ERCOT Interconnection Frequency Trends and Events — Sydney Neimeyer
- d. Hydro Quebec Interconnection Frequency Trends and Events — Mike Potishnak
- e. CPS1, CPS2, BAAL Data Trends — Terry Bilke
- f. DCS Data Trends — Terry Bilke
- g. Inadvertent Interchange Accounting — Don Badley
 - i) Balances
 - ii) Mismatches
 - iii) Remaining Transition Issues
- h. AIE Surveys — Terry Bilke, Don Badley, Raymond Vice, Carlos Martinez
- i. FERC Study on Frequency Response of Renewable Resources – Mahmood Mirheydar
- j. Frequency Repository Site – Definition, Content, Realistic Creation

9. Time Error

- a. Eastern Interconnection — Bill Herbsleb
- b. Western Interconnection — John Tolo
- c. ERCOT Interconnection — Sydney Niemeyer
- d. Hydro Québec Interconnection — Mike Potishnak

10. Future Meetings

- a. January 27–28, 2010 Tucson, Tucson Electric Power Co. (tentative) *
- b. April 28–29, 2010 St. Louis, Ameren Corp. (tentative) *
- c. July 28–29, 2010 Pensacola, Alt: Gulfport, Southern Co. (tentative) *
- d. October 27–28, 2010 Valley Forge, PA, PJM Interconnection (tentative) *
- e. January 29–30, 2011 Austin, TX, ERCOT Office (tentative) *

* Future RS meetings need to be held at region, utility, or volunteer facilities

Attendance Resources Subcommittee Meeting

October 29–30, 2009
Arizona Public Service Co. Office
Phoenix, Arizona

Attendance

Terry Bilke, Chair	Y	
Don Badley, Vice-chair	Y	
Sydney Niemeyer	Y	
William Kunkel	Y	
Michael Potishnak	Y	
Bill Herbsleb	Y	
John Swez	Y	
Larry Akens	Y	
Gerald Beckerle	Y	
Raymond Vice	Y	
Robert Rhodes	Y	
James Murphy	Y	
John Tolo	Y	
Tom Vandervort	Y	
David Lemmons	Y	
Stephen Crutchfield	Y	
Carlos Martinez	Y	
Mahmood Mirheydar	Y	
Jerry Rust	Y	
Bob Cummings	Y	
Robert Staton	Y	via Telephone

Exhibit C

Mike Potishnak Minority Opinion:

Mike Potishnak, on behalf of ISO-NE and NPCC, objects to the formation of the ACE Diversity Interchange (ADI) Task Force because the concerns expressed for ADI apply equally to all forms of supplemental regulation. As such it is recommended that the name of the task force be changed to the “Supplemental Regulation Task Force.” Also it is recommended that the task force address all forms of supplemental regulation.

Objective

To be a NERC technical resource to support resolution of balancing resources and demand issues and interconnection frequency issues resulting from control performance.

Scope

The Resources Subcommittee (RS) accomplishes this objective by:

- Reviewing and assisting in the development of generation and load “balancing” standards. Developing any necessary reference documents.
- Reviewing and assisting in the development of interconnection balancing standards to assure problems resulting from balancing do not adversely affect reliability.
- Providing oversight and guidance to working groups and task forces.
- Providing industry leadership and guidance on matters relating to balancing resources and demand issues as well as resulting issues related to interconnection frequency .
- Addressing the reliability aspects of inadvertent interchange creation, accounting, and payback.
- Review balancing authorities’ control performance (e.g., CPS and DCS) on a periodic basis.
- Address technical issues on automatic generation control (AGC), time error correction, operating reserve, and frequency response.
- Respond to other directives and requests of the NERC Operating Committee.

Reliability Standard Expertise

The RS is comprised of members with industry experience and knowledge relating to the NERC “BAL” Resources and Demand Balancing Reliability Standards and other applicable standards.

Reporting

The RS reports to the NERC Operating Committee (OC) and shall maintain communications with other groups as necessary on balancing resources and demand issues and interconnection frequency related issues.

Membership

General Requirements

RS membership requirements are focused on *expertise* related to system control and control performance.

Expertise

The RS must have sufficient expertise within its ranks to fully understand the BAL and other applicable standards.

Commitment and Participation

RS members must be *committed* to their service on the subcommittee. This means preparing for and actively *participating* in all subcommittee meetings in person or on conference calls. It also means writing and reviewing draft reports, serving on standard authorization request and standards drafting teams, if selected, and bringing issues to their Regional Entities, trade organizations, and utilities for further discussion and insight.

Replacing Members

The subcommittee may request a replacement for a member that misses three consecutive meetings without sending a proxy.

Required Membership

NERC OC requires the subcommittee to include, as a minimum, the following voting representation:

Voting Members — Required

1. **Regional representatives.** Each regional reliability council will provide at least one member. The regions will select their representatives based on their expertise in the RS's subject matter.
2. **Interconnections and countries.** If the set of regional representatives does not provide for at least one representative from each interconnection and two representatives from the U.S. and Canada, the subcommittee chairman, working with the NERC staff, will ask for additional members from the regional reliability councils or trade organizations as necessary to fulfill these requirements.

Voting Members — Additional

3. **Additional invited members.** The RS will request additional members as needed for their particular expertise. The subcommittee officers will seek recommendations from trade organizations, Regional Entities, and individual organizations.

Non-voting members — Guests and Observers

RS meetings are open to others who wish to attend as a guest of the subcommittee. The chairman will provide guests and observers the opportunity to contribute to the subcommittee's discussions, provided the subcommittee's voting members have sufficient time to:

1. Complete the debate of their motions, and
2. Complete the meeting agenda.

Officers

The NERC OC chairman appoints the RS officers (the chair and vice chair) for a specific term (generally two years). The subcommittee officers may be reappointed for additional terms. The RS officers are considered members of the subcommittee and may vote.

Meeting Procedures

General

The RS follows the meeting procedures explained in the following two documents:

1. NERC Antitrust Compliance Guidelines, and
2. *Robert's Rules of Order, Newly Revised*.

Quorum

A quorum for conducting business is 50% of the RS members listed on the current subcommittee roster. If a quorum is not present, then the subcommittee may not take any actions requiring a vote of the subcommittee. However, the chair may, with the consent of the members present, allow discussion of agenda items.

Majorities

The subcommittee uses a 2/3 majority of the voting members present for all motions on policy decisions.

Minority Opinions and Personal Comments

The minutes of every RS meeting will include exhibits for minority opinions and personal comments, when provided. The chair shall communicate both the majority and any minority views when presenting subcommittee discussion results with the OC.

Subgroups

The RS may, from time to time, form task forces and working groups as necessary, without OC approval. The subcommittee must review the progress of its subgroups at least annually and decide to either continue or disband these groups as needed.

Typically task forces are usually ad-hoc and are not expected to exist after completing their assignments. Conversely, working groups may be ongoing.

Task force and working group chairs (or delegates) are expected to attend the regular subcommittee meetings to report on assignments.

Frequency Working Group

The Frequency Working Group has a focus on the Interconnections' frequency issues related to control performance. The working group will perform analysis of frequency trends, events and on-going conditions as it deems necessary or as requested.

Inadvertent Interchange Working Group

The Inadvertent Interchange Working Group addresses the reliability aspects associated with the creation, accounting, and payback of inadvertent interchange.

Reserve Working Group

The Reserve Working Group assesses industry reserve needs and provides technical support to standard authorization requests and standards drafting teams for reliability standards whose requirements include all forms of reserve.

Frequency Working Group Scope

Purpose

The purpose of the Frequency Working Group (Freq WG) is to provide technical expertise to support the objectives of the NERC Operating Committee and NERC Programs related to the ongoing analysis of interconnection frequency.

Scope of Activities

The Freq WG will work on items assigned to it by the NERC RS, including but not limited to:

- Provide oversight for frequency data collection, analysis, and tracking processes as required to support on-going analysis of the interconnections.
- Review epsilon values used in balancing standards for each interconnection.
- Perform root cause analyses to determine reasons for changes in observed frequency response.
- Perform technical evaluation of frequency events and performance metrics as related to control performance, or as requested.
- Perform periodic reviews of and generate new technical and training documents related to interconnection frequency and balancing issues.
- Collaborate with other NERC organizations as necessary to assess all technical aspects of interconnection load frequency control trends.
- Provide consultation and detailed technical review of various projects to provide the tools needed by NERC and the industry to analyze, track, and forecast the behavior of interconnection frequency as requested.
- Provide consultation and detailed technical review for development of Standards Authorization Requests (SARs) for new standards or revisions to existing standards concerning interconnection frequency and balancing via the NERC Reliability Standards Development Procedures.

Governance

The Freq WG takes direction from and reports to the NERC RS. Assignments for the Freq WG may be initiated from any source but shall proceed through the RS Chair.

Leadership and Membership

The Frequency Working Group Chair is appointed by the RS Chair.

Membership is open based on technical expertise in frequency analysis and resources-demand balancing.

Meetings

The Freq WG will conduct meetings and conference calls as necessary.

Inadvertent Interchange Working Group Scope

Purpose

The purpose of the Inadvertent Interchange Working Group (IIWG) is to provide technical expertise to support the objectives of the NERC Operating Committee and NERC Programs related to the reliability aspects of inadvertent interchange in the multi-balancing authority NERC Interconnections.

Scope of Activities

The IIWG will work on items assigned to it by the NERC RS, including but not limited to:

- Perform oversight evaluation of inadvertent interchange balances using the NERC Inadvertent Interchange software application.
- Evaluate inadvertent interchange accounting methodologies and calculations as requested.
- Perform periodic reviews of and generate new technical and training documents related to inadvertent interchange or as requested.
- Collaborate with other NERC organizations as necessary to assess all reliability aspects of inadvertent interchange for each multi-balancing authority NERC interconnection.
- Provide consultation and detailed technical review of various projects that provide the tools needed by NERC and the industry to enhance existing inadvertent interchange software applications that summarize, reflect balance/imbalance Balancing Authorities' inadvertent interchange accounts and inadvertent interchange-related parameters; and make recommendations to the RS to renew NERC contracts, terminate contracts, and to retire unnecessary software applications.
- Provide consultation and detailed technical review for the development of Standards Authorization Requests (SARs) for new standards or revisions to existing standards concerning inadvertent interchange via the NERC Reliability Standards Development Procedures.

Governance

The IIWG takes direction from and reports to the NERC RS. Assignments for the IIWG, may be initiated from any source, but shall proceed through the RS Chair.

Leadership and Membership

The Inadvertent Interchange Working Group Chair is appointed by the RS Chair.

Membership is open based on technical expertise in inadvertent interchange.

Meetings

The IIWG will conduct meetings and conference calls as necessary.

Operating Reserve Working Group Scope

Purpose

The purpose of the Operating Reserves Working Group (ORWG) is to provide technical expertise to support the objectives of the NERC Operating Committee and NERC Programs related to the on-going analysis of operating reserves.

Scope of Activities

The ORWG will work on items assigned to it by the NERC RS, including but not limited to:

- Evaluate and analyze the on-going performance of operating reserves, as requested.
- Collaborate with other NERC organizations as necessary to assess all aspects of operating reserves issues.
- Provide consultation and detailed technical review of various projects to provide the tools needed by NERC and the industry for the on-going analysis of operating reserves.
- Perform periodic reviews of and generate new technical and training documents related to operating reserves.
- Provide consultation and detailed technical review for development of Standards Authorization Requests (SARs) for new standards and revisions to existing standards concerning operating reserves via the NERC Reliability Standards Development Procedures.

Governance

The ORWG takes direction from and reports to the NERC RS. Assignments for the ORWG, may be initiated from any source, but shall proceed through the RS.

Leadership and Membership

The Operating Reserves Working Group Chair is appointed by the RS Chair.

Membership is open based on technical expertise in the on-going analysis of operating reserves.

Meetings

The ORWG will conduct meetings and conference calls as necessary.

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 L₁₀ 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

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**NERC
Applications
Status**

Status for NERC Applications and 2009 Change of Scope for Resources Subcommittee

**Phoenix, Arizona
October 28, 2009**

NERC Applications Status

Application	NERC Applications Status
Resources Adequacy (ACE Frequency)	<p>Release 6.0 – Current production version. Release 6.1 – Available now for download and installation, includes MISO and SPP jurisdictional changes</p>
Inadvertent	<p>Release 3.0 – Current production version. Investigating Bill Herbslhw functional questions. Correcting WECC inadvertent recalculation after editing old data Gerry Beckerle request for inadvertent dispute summary reports Working on approved Change of Scope. Plan Release 4.0 for Dec09.</p>
Area Interchange Error (AIE)	<p>Release 1.0 – Current production version.</p>
Intelligent Alarms	<p>Release 1.0 – Current production version. Number of FTL Alarms reduce when compare with 2008. About same number of Short Term Alarms - SLIDE</p>
Frequency Monitoring and Analysis (FMA)	<p>Release 1.0 – Current production version. VTech phasor frequency data for WECC/ERCOT was delayed by 2-months because change of contract from VTech to University of Tennessee. Implementing changes for update disturbance detection and Frequency Response estimates - SLIDE</p>

Status for RS 2009 Approved Changes of Scope

Application	Change of Scope Description	Status
Inadvertent	Capability to notify via email and report in a monthly basis to Regions, BAs and Resources Subcommittee: a) The Regions and BAs that have submitted its monthly inadvertent data and have been accepted by the NERC database, and b) Regions and BAs that have edited their inadvertent data that and have created inadvertent mismatches, c) define and create and automatic process to identify interconnections level mismatches after all disputes have been resolved (July 2006 scenario)	Design completed. Software development in progress. Schedule for December 09 delivery
All Applications Documentation Central Web-Site	Creation of web-site to make available online: a) the NERC applications procedures to access the application software, b) the applications software installation instructions, and c) the applications user guide and functional specification. Every document will be created in PDF.	Design completed. Software development in progress. Schedule for December 09 delivery

FMA Frequency Response Changes

Frequency Event Identification Criteria Using 1-Second Data

Calculate the rolling Standard Deviation for each interconnection frequency for eight consecutive seconds and compare with a pre-define performance threshold, defined using data and statistics for all RS identified past year frequency events. For example, if the Eastern frequency Standard Deviation of any of eight consecutive second periods is greater than 0.006 Hz, this eight second period is consider as having a frequency event.

Frequency Response Estimate Using 1-Second Frequency 1-Minute ACE

$$\text{Frequency Response}_t = - \frac{\text{MWLoss}}{10 \times \Delta \text{Frequency}}$$

$$\text{MWLoss} = \text{Max}(\Delta \text{ACE})_{BA} - 0.6 \times 10 \times \text{Bias}_{BA} \times \Delta \text{Frequency}$$

$$\text{Max}(\Delta \text{ACE})_{BA} = \text{Max}(\text{ACE}_{BA,t+1} - \text{ACE}_{BA,t})$$

$$\Delta \text{Frequency} = \text{Frequency}_B - \text{Frequency}_A$$

$$\text{Frequency}_A = \text{Average Frequency from } t - 2 \text{ Seconds to } t - 16 \text{ Seconds}$$

$$\text{Frequency}_B = \text{Average Frequency from } t + 19 \text{ Seconds to } t + 52 \text{ Seconds}$$

2009 Intelligent Alarms Summary

Resource Adequacy Intelligent Alarms BroadCasted	Frequency Trigger Limit (FTL) Low 5-Minute Intelligent Alarms	Frequency Trigger Limit (FTL) High 5-Minute Intelligent Alarms	Frequency Alarm Limit (FAL) 1-Minute Intelligent Alarms	Long Term 60-Minutes Frequency Intelligent Alarms	Short Term Low Frequency Intelligent Alarms	Short Term High Frequency Intelligent Alarms	Resource Adequacy Intelligent Alarms BroadCasted	Frequency Trigger Limit (FTL) Low 5-Minute Intelligent Alarms	Frequency Trigger Limit (FTL) High 5-Minute Intelligent Alarms	Short Term Low Frequency Intelligent Alarms	Short Term High Frequency Intelligent Alarms
Eastern 2009 Oct	4	0	0	0	46	35	Eastern 2008 Oct	0	0	20	24
Eastern 2009 Sep	0	0	0	0	39	32	Eastern 2008 Sep	0	3	17	16
Eastern 2009 Aug	0	0	0	0	15	13	Eastern 2008 Aug	1	2	10	12
Eastern 2009 Jul	0	1	0	0	24	16	Eastern 2008 Jul	1	0	11	6
Eastern 2009 Jun	1	0	0	0	18	12	Eastern 2008 Jun	1	1	17	9
Eastern 2009 May	0	1	0	0	33	23	Eastern 2008 May	0	0	47	42
Eastern 2009 Apr	1	0	0	0	44	43	Eastern 2008 Apr	3	3	54	42
Eastern 2009 Mar	2	2	0	0	25	19	Eastern 2008 Mar	1	0	41	30
Eastern 2009 Feb	0	1	0	0	26	23	Eastern 2008 Feb	1	3	29	25
Eastern 2009 Jan	0	0	0	0	23	18	Eastern 2008 Jan	2	0	30	23
Eastern 2009 Total	8	5	0	0	293	234	Totals	10	12	276	229
Western 2009 Oct	0	0	0	0	13	7					
Western 2009 Sep	0	0	0	0	19	7					
Western 2009 Aug	0	0	0	0	5	3					
Western 2009 Jul	0	0	0	0	12	4					
Western 2009 Jun	0	0	0	0	3	3					
Western 2009 May	0	0	0	0	5	4					
Western 2009 Apr	0	0	0	0	7	1					
Western 2009 Mar	0	0	0	0	2	1					
Western 2009 Feb	0	0	0	0	3	2					
Western 2009 Jan	0	0	0	0	4	4					
Western 2009 Total	0	0	0	0	73	36					
Ercot 2009 Oct	2	7	0	6	2	3					
Ercot 2009 Sep	1	1	0	2	5	1					
Ercot 2009 Aug	0	0	0	1	4	4					
Ercot 2009 Jul	2	0	0	1	5	3					
Ercot 2009 Jun	4	7	0	8	0	1					
Ercot 2009 May	5	8	0	5	4	2					
Ercot 2009 Apr	3	9	0	7	57	53					
Ercot 2009 Mar	1	7	0	4	39	35					
Ercot 2009 Feb	3	7	0	3	59	87					
Ercot 2009 Jan	2	5	0	2	21	21					
Ercot 2009 Total	23	51	0	39	196	210					

Outstanding Issues

- FTL I-Alarms broadcasted for 5-minutes not GT 5-minutes
RS to define – **Wait for RBCSDT re-review with RCWG**
- Identify if inadvertent is blocking users to impact cumulative,
and up to what year – CERTS to identify
Done for WECC. Done for East by Regional Reps can undo
- How to track inadvertent changes for BAs that do not
exist anymore – CERTS to define – **Capability exist but
requires support-people intervention**
- Modify FMA event detection and FR Calculation – RS to define
- Process for distribution of Inadvertent summary reports
i.e. Disputes – RS to define
- Process to approve requested inadvertent applications
changes – RS to define



Resources Subcommittee October 29–30, 2009 Meeting Open Action Item List

Action Figure	Subject	Action Item/Assignment	Due Date	Completion Date
Terry Bilke	Inadvertent Interchange Data History	072909. Terry to contact SPP staff to transfer Inadvertent Interchange historical data to CERTS for cross-reference purposes. 102909. This action is more accurately addressed by an open action item below assigned to Don Badley and Bill Herbsleb. This action item is closed.	102809	102809
Tom Vandervort	Technical Library	072909. TV to work with Mark Lauby, NERC Director of Long Term Assessments, and other NERC senior management to establish a NERC technical library on the NERC website for reference documents, training documents, and technical documents related to NERC technical requirements, issues, and concerns. 102809. This item to be closed as the Reliability Fundamentals Working Group to develop the subject Technical Library.	102809	102809
Tom Vandervort	RS Scope, Freq WG, IIWG, and ORWG Scopes	102809, TV to prepare the Subject Scopes to bring to the OC for approval during the Dec, 2009 OC meeting.	120809	
Tom Vandervort	Revise RS Meeting Schedule	102809, TV to submit a revised meeting request (for the NERC meeting calendar) to reflect the April 27-28 meeting change in St. Louis.	012710	
Bill Herbsleb, Mike Potishnak	BA Check List for Decertificaton	102809, Bill Herbsleb, Mike Potishnak, and Tom Vandervort to develop some sort of check list on what needs to be done when a BA: <ul style="list-style-type: none"> • Certifies • Decertifies • Merges 	012710	

Action Figure	Subject	Action Item/Assignment	Due Date	Completion Date
		<ul style="list-style-type: none"> Consolidates, Etc. 		
Larry Akens & Reserves WG	DCS Data Entries	072909, Terry asked Larry to compare DCS data entries against the NERC Registry to identify any discrepancies or missing RSGs or BAs. Then to contact Craig Lawrence with the results.	012709	
Resources Subcommittee	NERC OC Operating Manual Docs	<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>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.</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>Performance Standard Reference Document (PSRD) – John Swez</p> <p>Area Interchange Error Survey Training Document – Don Badley and Inadvertent Interchange WG</p> <p>Frequency Response Training Document – Raymond Vice and Frequency WG</p> <p>Inadvertent Interchange Accounting Training Document – Don Badley and Inadvertent Interchange WG</p> <p>Time Monitoring Reference Document – Don Badley and Inadvertent Interchange WG</p> <p>072909, RS needs to review and concur with revisions and then forward to the OC for authorization to post for industry comments 45 days.</p> <p>102809, Terry to present the revised PSRD to the OC to begin the Ops Manual revision process. With OC authorization, the PSRD will be posted for 45 days.</p>	012709	
Resources Subcommittee	NERC Balancing Authority Bubble Map	092909, RS to review and update the NERC Bubble diagram / map, on the NERC RS website. RS to submit enhancements and revisions to the BA bubble diagram to Tom Vandervort by August 14, 2009	012710	

Action Figure	Subject	Action Item/Assignment	Due Date	Completion Date
		102809, TV gave the proposed NERC Bubble diagram revisions to NERC Communications Program (designated custodian). TV will follow-up.		
Don Badley , Bill Herbsleb and Inadvertent Interchange Work Group	Inadvertent Interchange Balances	073108, HIGH PRIORITY Coordinated effort is necessary to attain and incorporate the proper 2006 and 2007 carry-forward inadvertent interchange data. Don Badley to work with Bill Herbsleb, Carlos to aggressively bring all BAs up to date and balance their inadvertent interchange values through January 1, 2007 (the line in the sand – balances going forward). RS members and RS Survey Contacts may be called upon to resolve the mismatches and imbalances. 102909, Don Badley and Bill Herbsleb are addressing the mismatched balances, in progress. Don and Bill may call upon RS members for assistance to resolve mismatches and balance the Eastern Interconnection inadvertent interchange accounts.	012710	
Don Badley	RS Subcommittee Name and Scope Review	072909, Don to review the RS Scope to determine if it captures the correct responsibilities and to evaluate a possible name change to something like the Performance Subcommittee (PS). Terry Bilke, Mike Potishnak, Tom Vandervort will assist Don in the initial effort. 102909, RS will submit revised RS Scope, and initial Freq WG, IIWG, and ORWG Scopes to the OC for approval during the OC Dec, 2009 meeting.	012710	
	NERC-CERTS Project Review			
Carlos Martinez	Inadvertent Interch missing or mismatch data entries	072909, Based on RS suggestion, Carlos to send e-mail notification to BAs' staff that performs Inadvertent Interchange application data entries when triggers show missing or mismatched data. Ongoing effort.	012710	