Introductions and Chair’s Opening Remarks
Planning Committee (PC) Chair, Dave Weaver, presided over the meeting. The meeting announcement, agenda, and list of attendees are Exhibits A, B, and C respectively. Final meeting presentations and the complete agenda package are posted on the Planning Committee Website.

NERC Antitrust Compliance Guidelines and Public Announcement
The PC Secretary, Ganesh Velummylum, reviewed the Antitrust and Public Announcement policies of NERC.

Agenda Items
1. Administrative
   a. Arrangements - Secretary Ganesh Velummylum, NERC
   b. Safety Briefing – Hyatt Regency Jacksonville Staff
   c. Announcement of Quorum
      A quorum was declared by the PC Secretary with 28 present members. A quorum existed for all votes on both days.
   d. Planning Committee Members
   e. Future Meetings

2. Consent Agenda — Chair, David Weaver
   a. December 9-10, 2014 Draft PC Meeting Minutes
   b. March 10-11, 2015 Meeting Agenda
      December 2014 meeting minutes were posted for PC member review with Paul Kure suggested some minor edits to the meeting minutes. The March 2015 meeting agenda was reviewed. With no further discussion, the minutes and agenda were approved.

      Note: There were some changes in the order of presentation in order to accommodate the scheduling needs of various presenters. These minutes are presented in the order of the agenda as posted.
3. Chairs Remarks
   
a. **ERO Strategic Plan and RISC Update**
   Dave Weaver emphasized the importance of aligning the PC Strategic Plan with the ERO Strategic Plan. Dave also mentioned that the 2015 – 2018 PC Strategic Plan has been updated to incorporate all planning related RISC priorities that have been approved by the Board at the November 2014 Board meeting.

b. **Board and Member Representative Committee Update**
   Dave Weaver mentioned that Stephen Berberich of California ISO emphasized the need for a different approach to reliability assessment as more renewables are interconnected to the grid. Gerry Cauley stressed the need to push for Grid Resiliency. RISC committee will reach out to leadership to solicit input to identify risk in the industry. NERC Board to replace Bruce Scherr with George Hawkins.

4. Committee Business
   
a. **2014 Probability Assessments – Kevan Jeffries**
   Kevan Jeffries provided updates on the reports key highlights. A NERC editorial review needs to be completed on the report. All twenty assessment areas are compliant. The assessment included scenarios to keep additional resources to serve operating reserves. Probability assessments challenges are the following:
   - Assessment areas are getting bigger each year
   - RTO versus NERC driven assumptions
   - Transmission assumptions

   It was recommended that a centralized probabilistic assessment be initiated in the future. This effort could possibly be implemented by reconvening the Generation and Transmission Reliability Planning Models Task Force (GTRPMTF) that was formed a few years ago. Phil Fedora of NPCC requested some clarification for the conclusion and recommendation section of the report. David Jacobson had concerns about inconsistency in the external modeling area. Herb Schrayshuen asked if the missing load in SPP has been modeled in MISO and Kevan responded yes. John Moura, NERC staff, supported the effort for process improvement and conducting future assessment that can provide value. He mentioned that we need to reconvene GTRPMTF and ask the PC to provide direction. Kevan asked the PC to endorse the report. Phil Fedora moved the motion to accept the report, subject to his recommended changes. Paul Kure of RFC seconded the motion. The report was endorsed by the PC. The PC also approved the motion to reconvene GTRPMTF and requested that a scope document would need to be developed to entail the task and duties of GTRPMTF.

b. **Integration of Variable Generation Task Force (IVGTF) Status Update – Noha Abdel-Karim, NERC Staff**
   Noha Abdel-Karim, NERC staff, provided updates on the efforts being carried out by IVGTF leadership to develop a transition plan for the task force. There were still some outstanding recommendations in tasks 1-3 that needed further action. These actions could be defined in a guidance document for those recommendation that cannot be delegated to the NERC, LTRA, and Special Assessments or to the Essential Reliability Services Task Force (ERSTF). Chuck Chakravarthi of Southern Company suggested removing market rules from tasks 1-3. Herb Schrayshuen said NERC has referred market related matters to market solution and iterated it is not NERC’s purview to touch on market related issue. Jason MacDowell, of
General Electric, echoed the formation of a taskforce to address items in tasks 1-3. Chair Dave Weaver asked for volunteers for the task force. The following are the PC volunteers:

- Jason MacDowell
- Jason Marshall
- David Jacobson
- Steven Huber
- Gary Brownfield

c. **Physical Security Guidelines CIP-014, Steve Crutchfield, NERC Staff**

Steve Crutchfield, NERC Staff, provided the following update. FERC approved the standard and directed NERC to remove the term “widespread” from Reliability Standard CIP-014-1. FERC also directed NERC to make an informational filing, addressing whether CIP-014-1 provides physical security for all “High Impact” control centers necessary for the reliable operation of the Bulk-Power System. FERC directed NERC to submit this filing within two years after the effective date of the standard.

The Physical Security Standard Drafting Team (PSSDT) met January 27, 2015 and revised the standard to address the directive. The PSSDT also added the rationale and guidelines to only include transmission station or substation, which would have a critical impact on the operation of the Interconnection in the event the asset is rendered inoperable or damaged. The guidance will address best practices and effective approaches to meet each requirement. The PSSDT received authorization to post the revised standard and associated documents from the Standards Committee on February 18, 2015. The posting runs February 20 – April 9, 2015 and will be for a 45-day comment and initial ballot period. Assuming a successful ballot, the standard will be presented to the NERC Board in May 2015, for adoption and subsequent filing with FERC. The project has a deadline of July 27, 2015 to file a petition with FERC that addresses the directive.

d. **Essential Reliability Services Task Force (ERSTF) – Brian Evans Mongeon, Co-Chair**

Brian Evans Mongeon, ERSTF Co-Chair, provided updates on ERSTF activities for the past 3 months. Pilots were conducted for measures 1, 2, 3, and 6 as approved by the OC and PC at the December 2014 meeting.

Measure 7 was submitted for PC endorsement.

- Measures 1 and 3 identify the parameters and data required to measure historical inertia at the Interconnection and BA level respectively.
- Measure 2, which is the Rate of Change of Frequency (RoCoF), is extrapolated from Measure 1, and can be achieved for Interconnection level data. Measure 6 identifies Ramping Capability Requirements at the Balancing Authority level. Data requests were sent to nine entities for evaluating the four endorsed measures (the entities volunteered). The entities submitted historical, present, and forecasted data and the results were evaluated by sub-groups for the submitted entities.
- Measures 1, 2 & 3: (SIR and Freq Deviation) - Declining trend in inertia was observed in a few areas, such as ERCOT, ISO-NE, MISO, and IESO. However, other areas had no significant changes or trends to date. Interconnect level measure still a challenge.
- Measure 5: Real-Time Inertial Model would not be an ERSTF Measure, rather will be finalized as a ‘good practice’ recommendation.
- Measure 6: (Net Demand Ramping Variability) - Entities reported issues they uncovered while performing the analysis. It appears this measure is warranted to monitor for emerging load profile changes (Distribution Resource Impacts).
• Measure 8: Voltage performance on the system would be dropped and replaced with Measure 10: Evaluation of Short Circuit Ratio with FIDVR type.

• Measure 9: overall system reactive performance is being evaluated by the task force.

Brian requested PC endorsement of Measure 7. Measure 7 tracks the rotating and non-rotating dynamic reactive capability per total megawatt load on the system (BA Level) for various areas at critical load levels (i.e. peak, shoulder, and light load). Noman Williams moved a motioned to endorse Measure 7 and Carl Turner seconded. The motion was endorsed by the committee with no objections.

e. Reliability Assessment Subcommittee Update – Layne Brown, RAS Chair
Layne Brown, RAS Chair, provided update on RAS activity and work plan for 2015. The target release date for 2015 Summer Reliability Assessment will be in May 2015. The 2015 Long Term Reliability Assessment and 2015/2016 Winter Reliability Assessment target release date will be in December 2015 and November 2015 respectively. The reliability assessment guidebook is developed to reflect new considerations for roles of Assessment Areas vs. Regions and to enhance guidance to ensure thorough peer review. Reliability Assessment Guide Book development is put on hold for the moment. The purpose of developing the Reliability Assessment Glossary is to strive for consistency in definitions used for all assessments. It is currently under development by NERC staff and RAS. The PC is to review it in December, 2015. The 2015 reliability assessment enhancements are focused to ensure regional oversight and more involvement of assessment area representatives in the peer review process.

f. 2015 Summer Reliability Assessment (SRA) Update – Layne Brown, RAS Chair
Layne Brown, RAS Chair, provided update on 2015 SRA development. SRA will assess extreme load scenarios with typical and extreme generation outages – this will determine whether the reserve capacity is adequate for each scenario. This assessment uses GADS forced outage data. The 2015 SRA data request includes a request for extreme load forecasts (e.g. 90/10 forecast). The initial data and draft narratives are due to NERC and the RAS for review on April 3, 2015. The target release is the week of May 18, 2015.

g. Potential Reliability Impacts of EPA’s Proposed Clean Power Plan – Phase 1 Report – Tom Coleman, NERC Staff and John Moura, NERC Staff
Tom Coleman provided an update on the NERC EPA Clean Power Plan Phase 1 analysis.

NERC’s Phase 1 assessment consists of a three part analysis:

• Part 1 of the study will consist of a scenario analysis around natural gas prices and the impact of implementation of the CPP. The analysis will identify resource adequacy needs.

• Part 2 of the study will consist of a transmission adequacy assessment as well as identification of infrastructure upgrades needed to support the scenario analysis of part 1. Information on upgrades for Part 2 will be sourced from industry survey from TO’s and GO’s.

• Part 3 of the study will be NERC’s independent evaluation of existing studies completed by industry stakeholders. NERC will analyze and report on key information from these studies to identify cumulative impacts on a region-wide basis.

Tom Coleman gave an overview of the results for part 1. The assumptions used for the study are publically available data. The natural gas price used for the assessments are based on EIA – AEO 2014 natural gas price. EPA’s proposed Clean Power Plan Causes a shift in the Generation Mix.
• Coal utilization diminishes; large shift to behave as peaking units
• Natural Gas demand escalates; Surpasses coal in overall generation
• Increased renewables and transmission infrastructure needed to accommodate shifts in resource mix.

Increase utilization of natural gas generation could potentially cause an increased risk of some pipeline constraint. Carbon penalty value is set based upon the minimum allowance value required to change power pool economic dispatch for the affected units to displace sufficient coal unit generation to meet the state/regional mass cap. Carbon penalties should vary by state/region and, in some cases, can be sufficient to change power flows between states/regions. Coal utilization drops in 2020 and we see an increase in renewables and natural gas in 2020 and beyond.

John Moura gave an update on the preliminary transmission adequacy results. John iterated that the purpose of this study, which used an Aurora output model to run power system steady state analysis, is to look for large power transfer from region to region. New generation resource sites are chosen based on close proximity to both the pipeline and the land field. Of these sites, 80% are greenfiel and 20% are brownfield. The model will build reactive support to maintain voltage profiles on the system. There are approximately 6000 miles of BES that need be rebuilt. The lead time to build these facilities will take us beyond 2030.

h. ERO Enterprise Data Use and Administration - Howard Gugel, NERC Staff
Howard Gugel, NERC Staff, gave an overview of the objective of establishing an ERO Enterprise database. Existing data, which has been collected for a specific purpose, cannot be accessed for other general applications and cannot be integrated across the enterprise. The new database will be used to support the analysis of Long Term Reliability Assessment for load forecasting, generation, and transmission projections. The new database will also bring added value for the enhancement of GADS, TADS, and DADS performance data used for the development of the State of the Reliability Report. The database will also be used to support the future needs of probabilistic assessment, ERSTF measures, and assessment of natural gas generation risk.

i. Modeling Update - Bob Cummings, NERC Staff
Bob Cummings, NERC Staff, provided update on NERC’s Case Creation Designee. NERC’s Case Creation Designees will focus on modeling metrics to ensure the quality and fidelity of models. Case quality screens for data errors, dynamic model problems and case solution testing. MOD-032-1 and MOD-033-1 implementation will require data collection and system model validation. In order to validate the quality of the models, it was recommended that a NERC case creation designee be formed. The designee will collect date from planning coordinators and test the models against NERC quality metrics. It will also provide feedback to Planning Coordinators and equipment owners for errors or problems found during case creation or quality and validation testing. Designees function would include also include a process for correcting cases already in use and the immediate posting of modifications to cases for problems and notification of case users. The process for creating a model on request for system events will be designated by the ERO for analysis of those events. Core cases to be created are spring light-load, winter and summer peak for seasonal planning studies and event analysis. July 2015 is the target date for selection of a NERC Designee.
j. **Department of Energy Research and Development Program Status Report – Dr. Emmanuel Taylor, U.S. Department of Energy**

Dr. Taylor provided update on DOE research projects. Three key areas of focus are reliability, security and grid resiliency. Energy Infrastructure Modeling and Analysis Division addresses dynamics, complexity, and uncertainty, through modeling, measurement and risk assessments to improve energy infrastructure decision making. Two area of focus are Transmission Reliability and Advance Grid Modeling. One research project of key interest is Dynamic Protection and Control. The objective of this project is to integrate power system and dynamic simulation models and apply or simulate system protection and control response that we would actually see during a disturbance. Oak Ridge National Library (ORNL) developed macros to populate a planning model with a protection scheme. TS Link enables PSS/E – CAPE software’s to co-simulation by passing info between time steps. CAPE models unbalance faults and then models the system protection response. CAPE/ATP integration enables transient and unbalanced fault analyses.

k. **Performance Analysis Subcommittee (PAS) Update – Melinda Montgomery, PAS Chair**

Melinda Montgomery provided update on PAS activity over the past three months.

1. The 2015 State of the Reliability Report (SOR) is on target for NERC Board consideration for acceptance on April 22, 2015. Draft due to PC/OC reviewers on April 8, 2015. PC reviewers for the 2015 SOR report are the following:
   - Herb Schrayshuen
   - Carl Turner
   - Gary Brownfield

2. The following are the proposed changes to the M-16 Metric Description:
   
   a. Availability (APC) – The overall percentage of the Bulk Electric System AC Transmission Elements, operated at 200kV or above, that is available for service, as influenced by outage durations from both Automatic and non-Automatic events. Momentary outages are not considered in this metric.

   b. Unavailability (This metric also includes the overall percent of Bulk Electric System AC Transmission Elements, operated at 200kV or above, that are unavailable for service (i.e. out of service) due to Sustained Automatic and Non-Automatic Outages. These outages will be broken down in Automatic (sustained) and Non-Automatic (operational) outages. The metric includes automatic outages and operational outages. Operational outages only exist for 200kV and above.

   Herb Schrayshuen motioned to approve and Russ Schussler seconded. Changes to propose metric definition of M-16 was approved by the PC.

3. Discussion of proposed compliance metrics. Definition: CP-1 (Risk Focus) is a quarterly count of newly reported potential violations initially determined by compliance enforcement staff at the regions to be a Serious or likely Serious Risk Violation. Definition: CP-2 (Impact Focus) is a quarterly count of the number of newly reported Compliance Exceptions or Potential Violations by impact tier level.

   These metrics should enable risk reduction using approaches proven in other industries and fields of study for example industry safety, quality control, and process improvement. PC reviewers reviewed the white paper for both CP-1 and CP-2 proposal. Comments were received and incorporated into the
final Compliance Metric White Paper. Additional comments received from the OC meeting this week will be incorporated into the white paper. Recommendations from the Compliance Metrics White Paper will be presented to the RISC in the near future. The PAS is to work with the EAS to make changes discussed in the OC meeting, and will represent the metrics at the next PC meeting. A description of the proposed metrics of CP-1 and CP-2 will be included in 2015 SOR report.

I. AC Substation Equipment Failure Report - Michael Lombardi, ACSETF Chair

Michael Lombardi, Manager of System Studies, NPCC provided update on actionable recommendations from report. The purpose of the ACSETF failure report is to analyze system failure and look at key factors to make recommendations. The PC endorsed the ACSETF final report at the December 2014 PC meeting, subject to the ACSETF refining the recommendations into actionable recommendations with a business plan to help prioritize implementation of each recommendation. The report was revised to include these actionable items for each of the recommendations for Event Analysis.

Recommendation Refinements include:

- NERC Events Analysis (EA) shall include in its Reference Material for Events Analysis an Addendum to provide a checklist of considerations for collection of ac substation equipment failure data
- Events Analysis shall identify the contribution that bus configurations had on disturbance events associated with ac substation equipment failures
- TADSWG to evaluate the collection of addition details regarding initiating and/or sustaining cause information for AC station equipment failures

Michael Lombardi asked for ACSETF to be retired. Brian Evans-Mongeon motioned and Ed Scott seconded. No members abstained or opposed. The ACSETF was officially retired on March 2015 by the PC.

m. FAC 003 Minimum Vegetation Clearance Distances (MVCD) EPRI and NERC Research Work – Bob Cummings, NERC Staff

Bob Cummings gave a quick overview of the Research Work. March 2013 — NERC was directed to conduct testing to support appropriate Minimum Vegetation Clearance Distances (MVCD) in FAC-003-3 (Order 777). The test plan included selected representative sets of vegetation in and around transmission rights-of-ways with switching impulse tests performed for representative combinations of vegetation shapes and voltages for: Vertical (grow-in) and Horizontal (blow-in). Conservatism shown by re-testing of configurations yielded the lowest gap factor with wooden dowels replacing metal rods. A wooden dowel more closely represents electric field effects of natural vegetation. The final series of withstand tests was completed with fully natural trees, without attachments, to verify the gap factors determined in the above testing. Preliminarily testing demonstrated that a gap factor of 1.0 may be more appropriate than the present value of 1.3 contained in FAC-003-3. Existing FAC-003-3 gap factor of 1.3 versus preliminarily determined gap factor of 1.0 shows increase in MVCD of ½ foot to 3½ feet with 1.0 gap factor (230 kV and above). NERC will use Webinar and Informational Alert to communicate the conclusions developed through testing. In June 2015 — the NERC final report will be filed with FERC. Standard Authorization Request will be needed to adjust MVCD values in FAC-003-3.
n. Transmission and Frequency Performance with High Levels of Renewables – Nick Miller, General Electric

Nick Miller, of General Electric (GE), provided an overview of studies performed on Western Interconnection. The Western Interconnection is limited by stability constraint. The Western Interconnection can be made to work well with both high wind, solar, and substantial coal displacement; using good, established, planning & engineering practice and commercially available technologies. The frequency response of wind plants for frequency drop uses inertial energy from rotating wind turbine to supply power to the grid and are more responsive at higher wind speeds. System-wide transient stability can be maintained with high levels of wind and solar generation with both traditional and non-traditional approaches. For the conditions studied, system-wide FR can be maintained with high levels of wind and solar generation if local stability, voltage, and thermal problems are addressed with traditional transmission system reinforcements (e.g., transformers, shunt capacitors, local lines). Limited application of non-traditional frequency-responsive controls on wind, solar PV, CSP plants, and energy storage are effective at improving both frequency nadir and settling frequency, and thus FR. Refinements to these controls would further improve performance. Using new inverter base controls to ensure adequate FR adds complexity, but also flexibility, with high levels of wind and solar generation.
From: Bridget Maddox
Sent: Friday, February 06, 2015 4:47 PM
To: Bridget Maddox
Subject: NERC Meeting Announcement: Standing Technical Committee's Meetings - March 2015 - Jacksonville, FL
Meeting Announcement
Standing Technical Committee’s Meetings

March 10-11, 2015 | Jacksonville, FL

Meeting Location and Lodging – [Hotel Reservation Link](#) or call 1-800-421-1442

Hyatt Regency Jacksonville Riverfront
225 East Coastline Drive
Jacksonville, FL 32202
1-904-588-1234

**Room Block Code:** NERC - $149/night group rate + tax

**Hotel cut-off date:** February 13, 2015

**NOTE:** After the cut-off date the hotel will release this block of rooms and only accept reservations on a space-available basis at the prevailing room rate


**Check-in:** 3 p.m., **Check-out:** Noon - Check with the hotel directly for early cancellation/departure fees

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<th>Tuesday, March 10</th>
<th>Wednesday, March 11</th>
<th>Thursday, March 12</th>
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<td>CIPC Working Lunch</td>
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<td>RCM (Formerly REMG)</td>
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<td>Control System Security Working Group Meeting</td>
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<td>8 a.m. – 12 p.m.</td>
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</table>
NERC will provide a working lunch for OC, PC, CIPC on Tuesday, 3/10 prior to their respective committee meetings. Schedule includes other associated NERC meetings.

For more information or assistance, please contact Bridget Maddox (via email) or at 404.446.9627

--- You are currently subscribed to erstf as: michelle.marx@nerc.net To unsubscribe send a blank email to leave-1373437-983136.495900983f5c293cd9254237d88ebfc6@listserv.nerc.com
Agenda
Planning Committee Meeting
March 10, 2015 | 1:00-5:00 p.m. (EST)
March 11, 2015 | 8:00 a.m. to 12:00 p.m. (EST)

Hyatt Regency Jacksonville Riverfront
225 East Coastline Drive
Jacksonville, Florida 32202
904-588-1234
Conference Room: TBD

Introductions and Chair’s Opening Remarks

NERC Antitrust Compliance Guidelines and Public Announcement

Agenda Items
1. Administrative — Secretary
   a. Arrangements
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   e. Future Meetings

2. Consent Agenda — Chair, David Weaver
   a. December 9-10, 2014 Draft Meeting Minutes
   b. March 10-11, 2015 Meeting Agenda

3. Update on the February 12, 2015 Board of Trustees Meeting, Dave Weaver, PC Chair

4. Committee Business
   a. 2014 Probabilistic Assessment— Kevan Jefferies, RAS ProbA Chair
      
      | Objective: Present results, key findings and request PC endorsement |
      | Presentation: Yes | Duration: 15 minutes | Background Item: Draft 2014 Probabilistic Assessment Report |
      | Personal Notes: |

   b. Integration of Variable Generation Task Force (IVGTF) Report Status Update — Noha Abdel-Karim, NERC Staff
      
<pre><code>  | Objective: Present overview of the Final IVGTF Summary Report and the transition plan work |
  | NERC requests PC approval to disband the IVGTF |
  | Presentation: Yes | Duration: 20 minutes | Background Item: IVGTF - Summary and Recommendation of 12 Tasks Report |
  | Personal Notes: |
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<table>
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<th>Item</th>
<th>Description</th>
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</table>
| **c.** | **Update on Physical Security Guidelines CIP-014, Steve Crutchfield, NERC Staff**  
Objective: Update on Guidance Development as well as current drafting team activities  
Presentation: Yes | Duration: 15 Minutes  
Background Item: none  
Personal Notes: |
| **d.** | **Essential Reliability Services Task Force (ERSTF) Update – Brian Evans-Mongeon, Co-Chair of ERSTF**  
Objective: The ERSTF had 4 measures endorsed by the OC and PC in December for framework pilot effort. The task force received data from the entities and analyzed the measures. In addition, the task force also continued evaluating other 5 measures simultaneously. The Framework Report Version 1 was finalized and posted in January 2015. This presentation will review the results obtained from the framework pilot, the status of the remaining 5 measures, and way ahead for the task force.  
Presentation: Yes | Duration: 30 minutes  
Background Item: ERSTF Framework Report  
Personal Notes: |
| **e.** | **Reliability Assessment Subcommittee (RAS) Update – Layne Brown, RAS Chair**  
Objective: Review of the recent Reliability Assessment Subcommittee efforts. 2015 Assessment Report status update and schedule. Improved peer review process and enhanced data presentation plans.  
Presentation: Yes | Duration: 15 minutes  
Background Item: None  
Personal Notes: |
| **f.** | **2015 Summer Reliability Assessments – Layne Brown, RAS Chair**  
Objective: The objective is to present the PC with updates for the 2015 Summer Reliability Assessment, including a review of proposed enhancements to data collection and presentation.  
Presentation: Yes | Duration: 15 minutes  
Background Item: None  
Personal Notes: |
| **g.** | **EPA’s Proposed Clean Power Plan – Phase 1 Update – Noha Abdel, Thomas Coleman, Amir Najafzadeh, NERC Staff**  
Objective: Overview and a status update of Phase I report  
Resource Adequacy Study – Status update on timeline and preliminary results  
Transmission Adequacy Study: Overview of study objectives, assumptions and study output  
Presentation: Yes | Duration: 45 minutes  
Background Item:  
- December 18, 2014 – PC EPA Steering Committee meeting minutes*  
- Jan. 9, 2015 - PC EPA Steering Committee meeting minutes*  
Personal Notes: |
| **h.** | **ERO Enterprise Data Use and Administration – Howard Gugel, NERC Staff**  
Objective: Discuss the ERO’s need for data from a strategic and tactical perspective. At its December 2014 meeting, the OC discussed the volume of data being requested from reliability entities to support various ERO projects.  
Presentation: Yes | Duration: 15 Minutes  
Background Item: none  
Personal Notes: |
| **i.** | **Department of Energy Research and Development Program Status Report – Dr. Emmanuel Taylor, U.S. Department of Energy**  
Objective: Review and discuss the DOE’s goals and objectives of its Research and Development program regarding planning reliability and to investigate emergent issues that impact the reliability of the BES.  
Presentation: Yes | Duration: 20 minutes  
Background Item: none  
Personal Notes: |
j. Performance Analysis Subcommittee (PAS) Update – Melinda Montgomery, PAS Chair

Objective: Endorse a revision to ALR6-15 (Element Availability Percentage) and a white paper that contains recommendations for compliance metrics ALR CP-1 and ALR CP-2. Provide update on State of Reliability Report and request reviewers.

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| yes          | 30 minutes | Revised ALR6-15 (Element Availability Percentage and Unavailability Percentage)*
|              |          | Draft Compliance Metric White Paper*
|              |          | Compliance Metrics Consideration of Comments*
|              |          | Draft ALR CP-1*
|              |          | Draft ALR CP-2*

k. AC Substation Equipment Task Force (ACSETF) - Michael Lombardi, ACSETF Chair

Objective: To provide status update as directed by PC to prioritize recommendations and make them actionable.

The AC Substation Equipment Task Force (ACSETF) was formed to analyze one of NERC’s top priority reliability issues – AC Substation Equipment Failures. As reported in the NERC 2013 State of Reliability Report, AC substation equipment failures have been observed to be a significant contributor to disturbance events, and have a positive correlation to increased transmission severity for outages associated with them. The task force developed a report for the industry which summarizes trends in disturbance events resulting from AC substation equipment failure, identification of root and contributing causes and recommendations for actions which was presented at the December 2014 Planning Committee and Operating Committee meetings.

The PC endorsed the ACSETF final report, subject to the ACSETF refining the recommendations into actionable recommendations with a business plan to help prioritize implementation of each recommendation.

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l. NERC FAC-003 Vegetation Management Research Work with EPRI - Neil Burbure, NERC Staff

Objective: To provide an update on:

1. Preliminary results from research work conducted by NERC and EPRI to empirically validate the gap factor used in the calculation of the Minimum Vegetation Clearance Distances specified in the currently enforceable version of the NERC vegetation management Reliability Standard, FAC-003-3, which is designed to avoid flashovers between conductors and vegetation. The work is being completed to fulfill the directive in paragraph 59 of Revisions to Reliability Standard for Transmission Vegetation Management, Order No. 777, 142 FERC ¶ 61,208 (2013).
2. Future steps

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m. Transmission and Frequency Performance with High Levels of Renewables – Nick Miller, General Electric

Objective: Nick Miller of General Electric, will present an overview of the key findings of the recently-completed National Renewable Energy Laboratory (NREL) study Transient Stability and Frequency Response of the US Western Interconnection under conditions of High Wind and Solar Generation. The study results show the necessity of carefully engineering the integration of renewables in order to maintain transmission system voltage and stability performance. The study also provides insights to areas of analysis that must be pursued for successful integration. Key findings include:
1. Ability of WI to meet NERC FRO under high (>30% annual energy) from wind and solar
2. Efficacy of alternatives to synchronous generation (wind, solar, storage, demand based controls) to mitigate FR concerns
3. Impact on large-scale (e.g., California-Oregon Interface) and regional (e.g., eastern Wyoming/Colorado) transient stability
4. Stability impacts of high and very high levels of displacement of thermal (especially coal) generation

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5. Planning Committee and Subcommittees Project Queue Review
   a. Planning Committee Work Plan

*Background materials included.
** Background materials will be provided prior to the meeting.
Attendees
Planning Committee Meeting
Jacksonville, FL – March 9-10, 2015

PC Officers
Chairman David Weaver
Vice Brian Evans-Mongeon
Secretary Ganesh Velummylum

Voting PC Members
Investor-owned Utility – Ed Scott
Investor-owned Utility – Gary T. Brownfield
State/Municipal Utility – Arthur Iler
State/Municipal Utiltiy – Andrew Wade Tudor
Cooperative Utility – Russ Schussler
Cooperative Utility – Paul McCurley
Federal/Prov. Utility – Alain Pageau (S. Fortin)
Federal/Prov. Utility – Bing Young
Federal/Prov. Utility – Ian Grant
Federal/Prov. Utility – David Jacobson
Trans. Dependent Utility – Carl Turner
Merchant Elec. Generator – Kyle Vanderhelm (B. Ramaekers)
Merchant Elec. Generator – Michael Goggin
Large end-use Elec. Customer –
Large end-use Elec. Customer – John Hughes
Small end-use Elec. Customer – Darryl Lawrence
Small end-use Elec. Customer – H. Schrayshuen
ISO/RTO - Mark Westendorf
ISO/RTO – Mark Sims
RRO/FRCC – Pedro Modia
RRO-MRO - Dale Burmester
RRO-NPCC – Phil Fedora
RRO-RFC - Paul Kure
RRO-SERC – Doug McLaughlin
RRO-SPP – Noman Williams
RRO-TRE –
RRO-WECC – Layne Brown – (B. Suddeth)
State Government – Parveen Baig
State Government –
Electricity Marketer – J. Marshall
Electricity Marketer – Steven Huber

Non-Voting Members
U.S. Federal –

PC Subgroup Chairs
K.R. Chakravarthi, Vice Chair SAMS
John Simonelli, Chair SAMS
Michael Lombardi, NPCC

Melinda Montgomery, Entergy Services, Inc.

Guests
John Seidel, Quanta Technology
Guarav Karandikar, SERC
Raymon Kershaw, ITC
Brad Woods, Texas RE
Jason McDowell, GE Energy Consulting
Caroline Beaulieu-Cote, Hydro-Quebec
Andrew J. Tudor, TVA
Tony Gott, AEC
Emmanuel Taylor, US DOT
Jacob Lucas, FERC
Vince Ordax, FRCC

NERC Staff
Michelle Marx
Pooja Shah
Bob Cummings
Elliott Nethercutt
John Moura
Stephen Crutchfield
Howard Gugel
Mani Mardhekar
Noha Abdel-Karim
Thomas Coleman