



ColumbiaGrid

2019 Annual Interregional Coordination Meeting (AICM)

February 19, 2019

In This Presentation



- ColumbiaGrid (CG) planning process
- Planning activities in 2018
 - Core activities
 - Special studies
- Key conclusions i.e. Needs Statement, summary
- Next Steps
 - 2019 Biennial Transmission Expansion Plan (2019 BTEP)
 - Planning meetings
- Information and notifications

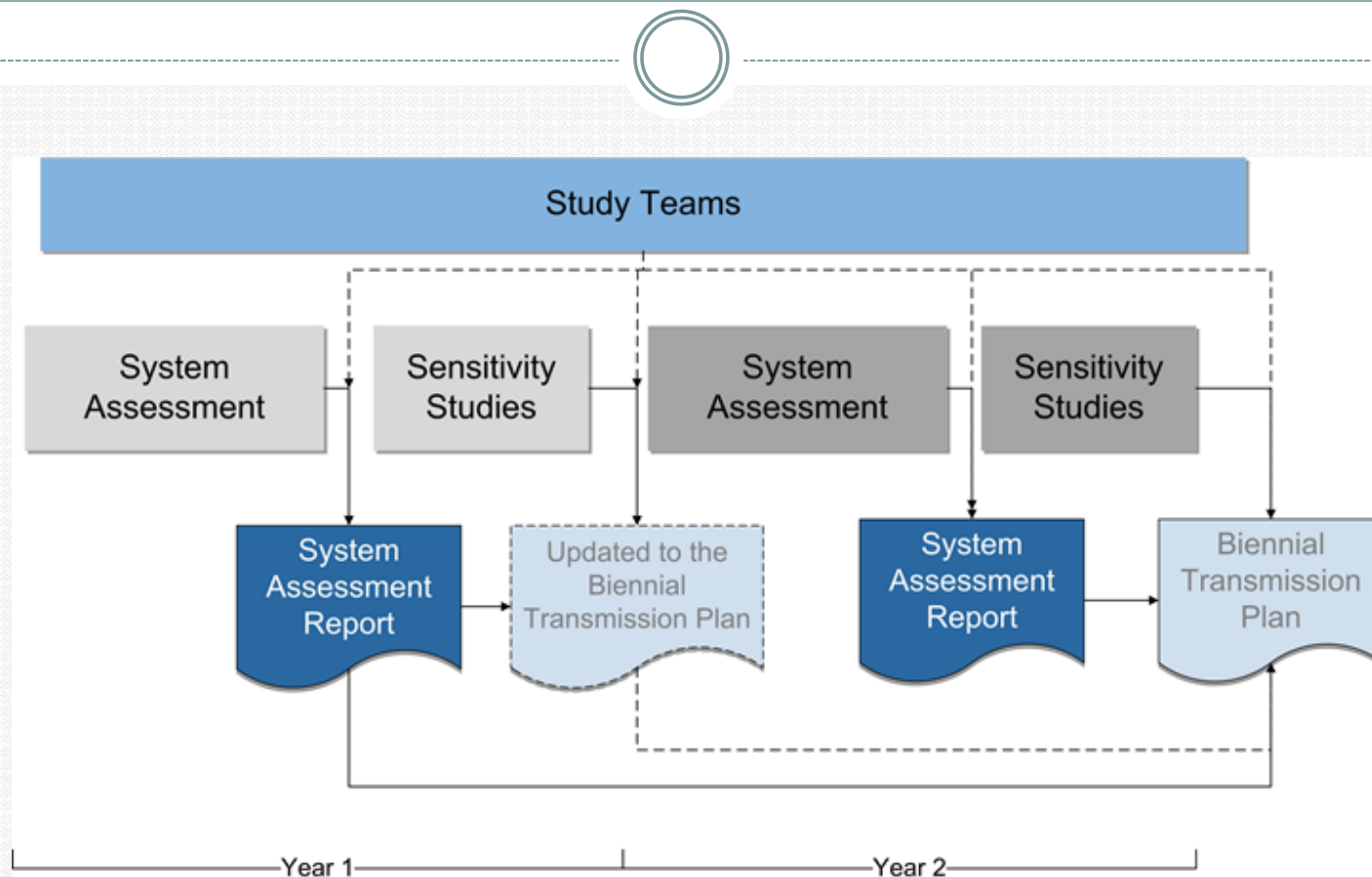
CG Planning Process

CG Planning Process: Overview



- Governed by Planning and Expansion (PEFA) & Order 1000 Functional Agreements
 - One single process
- The planning process produces, at least, 2 key documents
 - System Assessment (SA) report
 - Biennial Transmission Expansion Plan (BTEP)
- Additional studies can be conducted based on member's request

CG Planning Process: Overview



CG Planning Process: Where we are now?



- Finalizing the activities under the 2017-2018 planning cycle
 - The final 2017 and 2018 System Assessment reports have been posted on CG's website at:
<https://columbiagrid.org/basecases-results-overview.cfm>
 - The 2019 Biennial Transmission Expansion Plan (2019 BTEP) is being finalized
 - Anticipated completion: Q1, 2019

CG Planning Process: Where we are now?



- The new planning cycle (2019-2020) has started
 - Since January 1, 2019
 - The announcement for the new cycle was sent to the interested parties in December 2018
 - The draft Study Plan has been issued
 - The first meeting (Order 1000 Needs Meeting) was held on February 14, 2019
 - Anticipated completion: December 2020

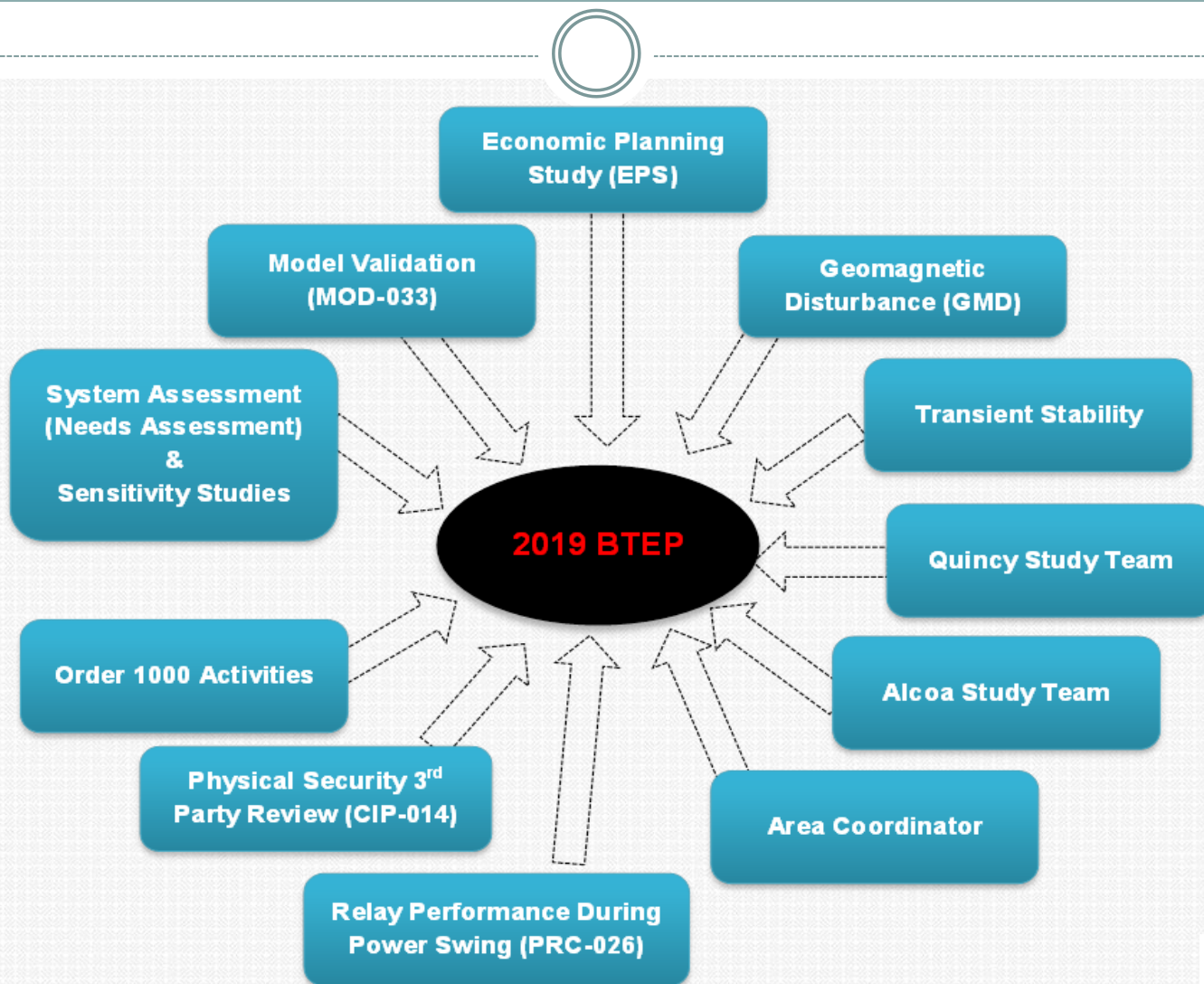
2018 Planning Activities

CG Planning Activities: What we do?



- **Key activities in 2018**
 - System Assessment (Needs Statement) & Sensitivity Studies
 - Base case development (MOD-032 and internal uses)
 - Order 1000 activities
 - Economic Planning Study
 - One Study Team (Quincy)
 - Four special studies (CIP-014, PRC-026, MOD-033, TPL-007)
- All activities were documented in the 2019 BTEP

CG Planning Activities: What we do?



CG Planning Activities: 2018 System Assessment



- **Primary focus:**
 - Evaluate Needs Suggestions
 - Identify regional needs (Needs Statement)
 - Conduct other tasks required by Order 1000
- **Three technical studies were conducted as part of the 2018 System Assessment**
 - Power flow analysis (identified thermal & voltage issues)
 - Stability assessment
 - Angle differences identification

CG Planning Activities: 2018 System Assessment



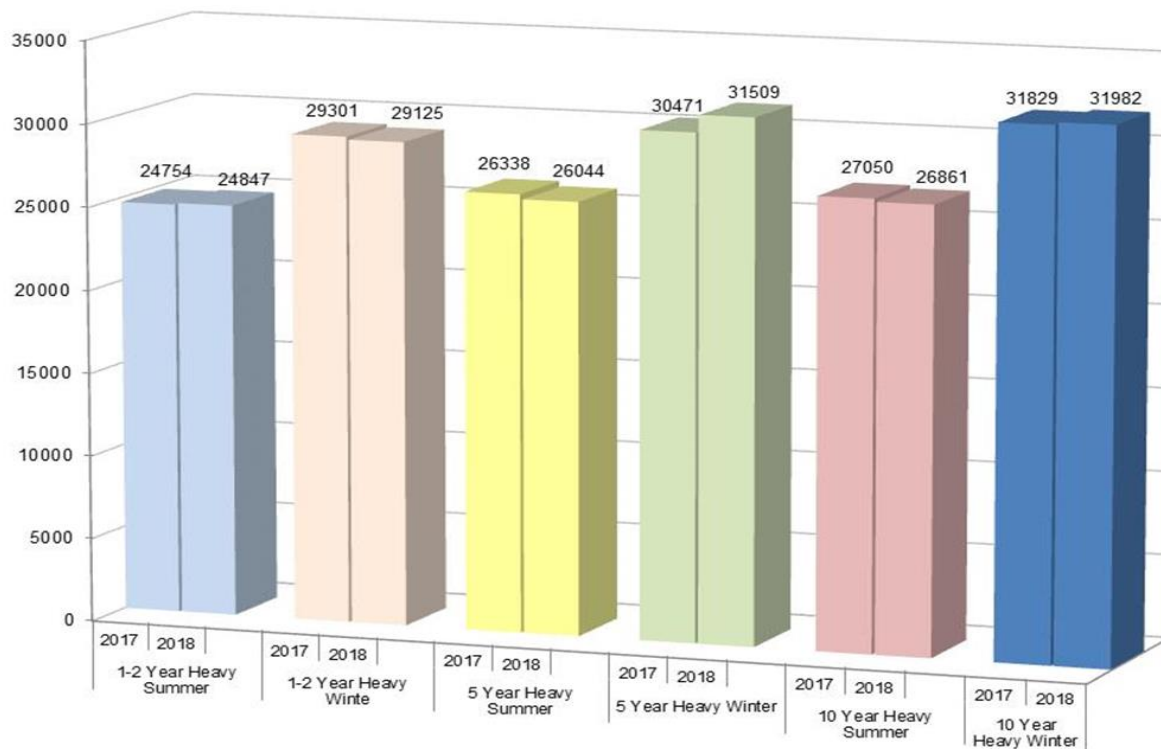
- The results showed eight (8) joint areas of concern
 - Seven (7) “recurring” and one (1) “new” areas
 - No new regional Needs
 - Generally local issues (mitigation plans are being developed)
 - Four (4) areas found in 2017 were no longer identified



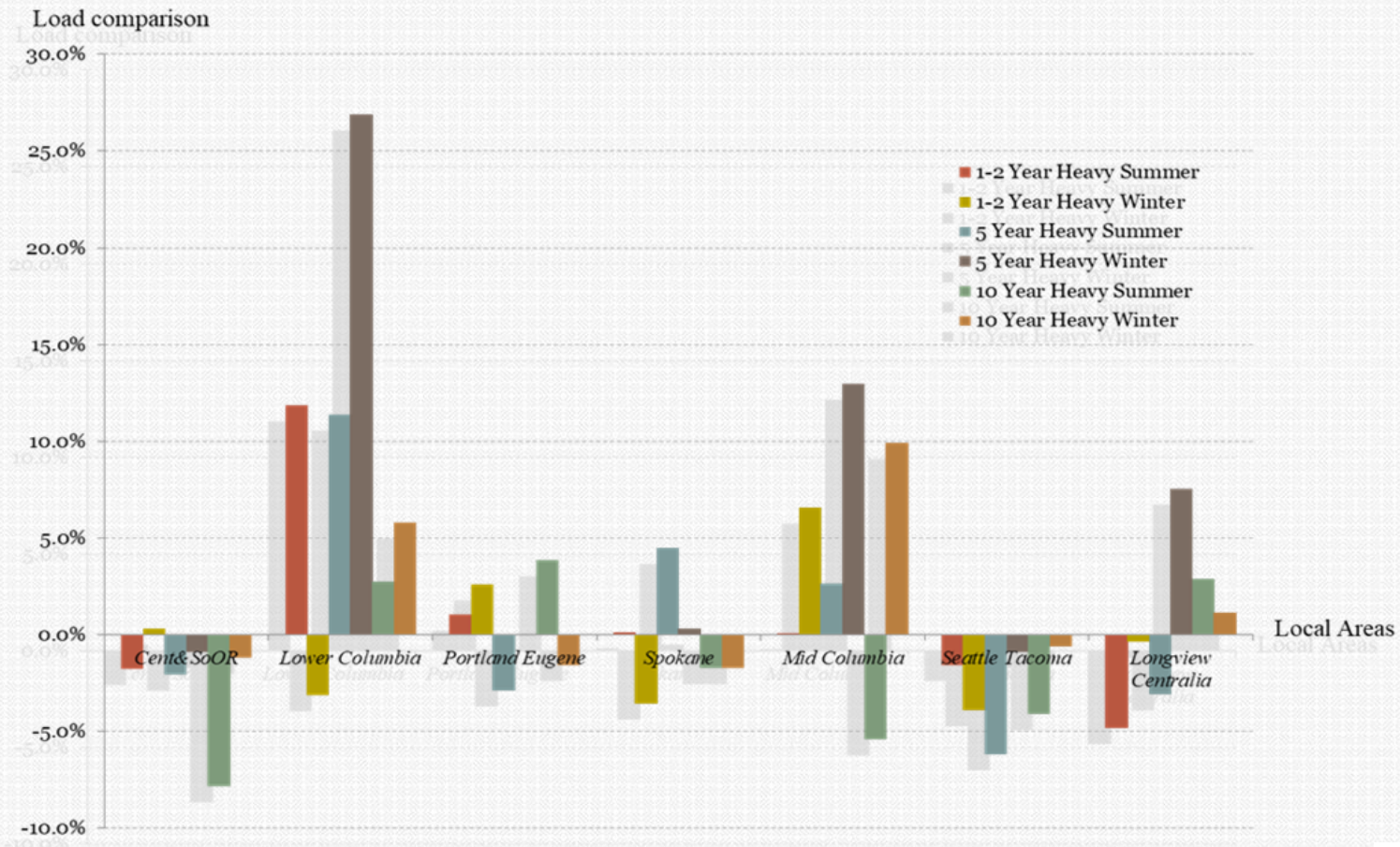
CG Planning Activities: 2018 System Assessment



- The new area was identified, primarily due to much higher load forecast in some pockets



CG Planning Activities: 2018 System Assessment



CG Planning Activities: 2018 System Assessment



- Four areas in 2017 System Assessment were not identified due to:
 - Revised load forecast
 - Implementation of transmission projects
 - Different study scenarios
- The N-1-1 study was conducted as part of the Sensitivity Studies
 - Support CG's member in their TPL-001-4 and PRC-023 compliance

CG Planning Activities: Base Case Development



- Two types of base case development activities
 - MOD-032 process for NW area (Area coordinator)
 - Base case development for CG and member's uses
- In 2018, nine (9) base cases were created
 - Along with the dynamic data (files)
 - These cases were used in CIP-014, PRC-026, TPL, GMD, and other studies

No	Study Year	Study Case	Purpose
1	2019	Near-Term Heavy Summer	Member Use
2	2019	Near-Term Heavy Winter	Member Use
3	2019	Short- Term Light Load	System Assessment Studies & Member Use
4	2022	5 yr Heavy Summer	Member Use
5	2022	5 yr Heavy Winter	System Assessment Studies & Member Use
6	2023	5 yr Heavy Summer	Member Use
7	2023	5 yr Heavy Winter	Member Use
8	2028	Long-Term Heavy Summer	System Assessment Studies & Member Use
9	2028	Long-Term Heavy Winter	System Assessment Studies & Member Use

CG Planning Activities: Order 1000



- Key major Order 1000 activities in 2018
 - Order 1000 Needs Suggestion
 - Order 1000 Needs identification
 - Order 1000 project re-evaluation
 - Regional coordination
 - ITP submission window

CG Planning Activities: Economic Planning Study

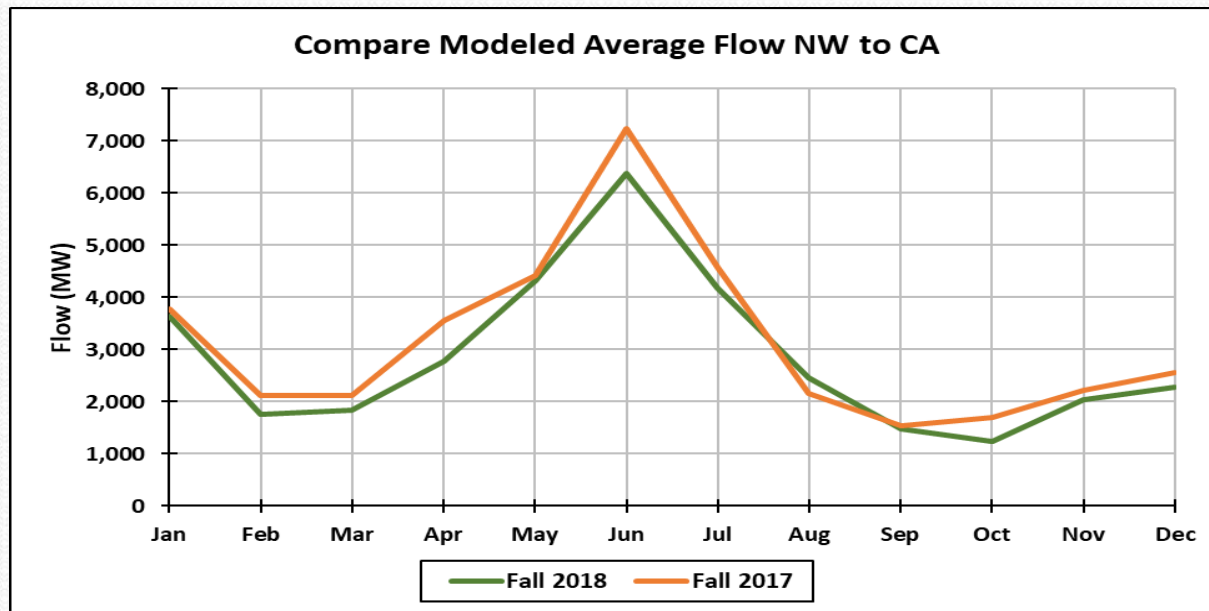


- Production Cost Simulation, conducted annually
- Assess future system conditions and provide additional information to planning parties
- Significant changes in 2018
 - 15 years scenario
 - Additional model improvements (energy storage/pump storage models & UC and ED logic)
 - Testing additional functions in GridView

CG Planning Activities: Economic Planning Study



- Initial findings (subject to additional review)
 - Lower average flow (particularly export from the NW) in the future, compared to the current level



CG Planning Activities: Economic Planning Study



- The average intra-day swings in the ten and fifteen year scenarios is projected to be higher than current levels
- The min flow on major paths appears to be lower than current levels and is projected to shift towards mid-day
- The 2019 studies will re-analyze these results in more details
- For more details, please refer to this section in the 2019 BTEP: <https://columbiagrid.org/biennial-transmission-overview.cfm>

CG Planning Activities: Study Team



- The Quincy Study team analyzed potential impacts from major load increase in Mid-C area
 - Participants included BPA, Chelan PUD, CG, Douglas PUD, and Grant PUD
 - Identified potential issues and developed the mitigation plans
 - Almost complete, final study report is being finalized
 - Target completion: Q1, 2019

CG Planning Activities: Special Studies



- **Four Special Studies were conducted in 2018**
 - Physical Security 3rd Party Review (CIP-014)
 - Relay Performance During Power Swing (PRC-026)
 - Model Validation (MOD-033)
 - Geomagnetic Disturbance Study (TPL-007-1)
- **These studies were conducted to support CG member's compliance efforts**

CG Planning Activities: Special Studies



- CIP-014 study reviewed the risk assessments of 9 substations in the Pacific Northwest
 - From 4 utilities (Avista, Grant PUD, PSE, and SCL)
 - ColumbiaGrid conducted independent studies to determine the applicability and review the risk assessment
 - An independent review report was issued for each review (substation)
- This task was completed in June, 2018

CG Planning Activities: Special Studies



- PRC-026 focused on identifying relays that may operate following major disturbance
 - Satisfied a portion of the requirements
 - The study was initiated in Q2 of 2018 and it was completed in December 2018
 - The simulation incorporated relay models in the base cases and analyzed five major contingencies
 - Another round of the study will be conducted in 2019 (with improved models and additional data)

CG Planning Activities: Special Studies



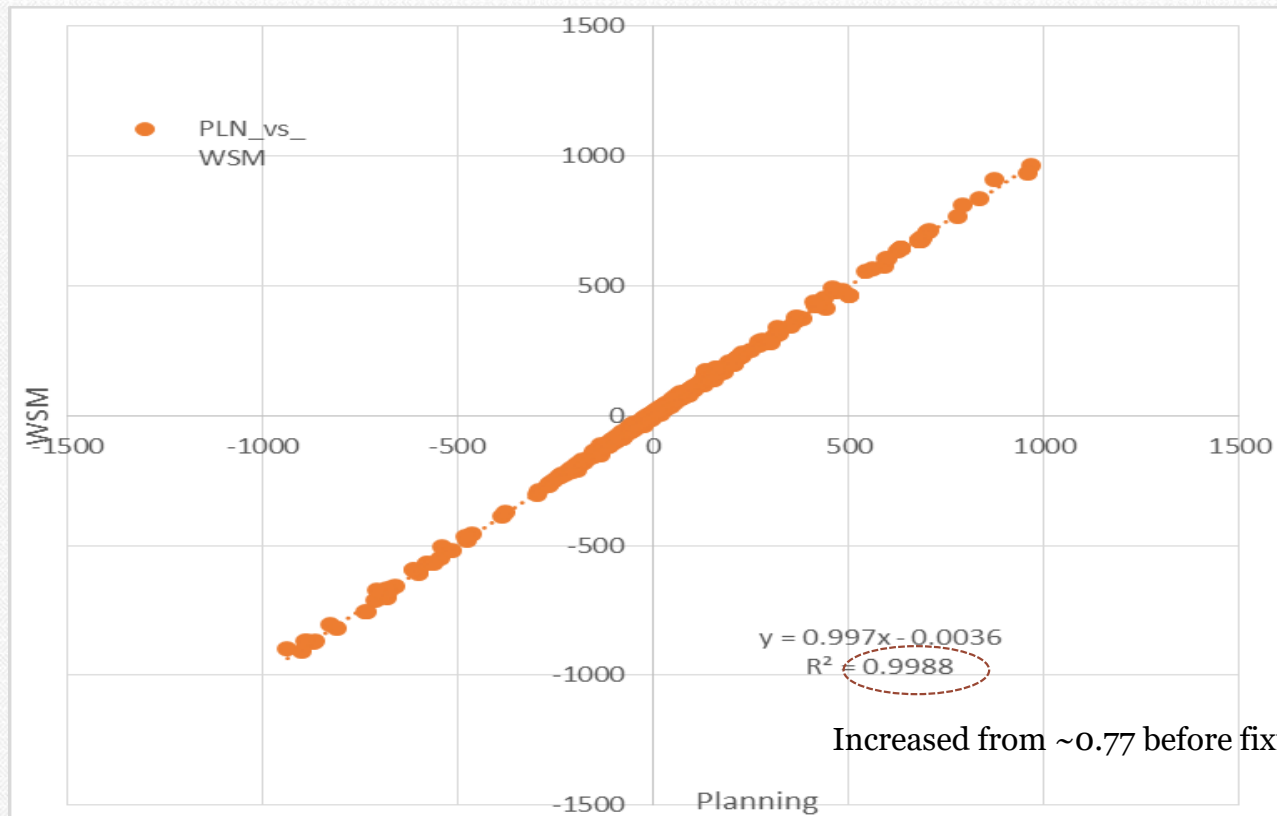
- **MOD-033 consists of 3 major tasks**
 - Developing the benchmark criteria
 - Comparing simulation results with actual events (steady state and dynamic)
- **The study process contains six major steps**
 - Event selection: An outage on August 9, 2017 was selected as the reference
 - Data collection: The WSM state estimator case representing this event was used

CG Planning Activities: Special Studies



- Base Case development: A planning base case was modified to mimic the conditions
- Perform the comparison: Comparing the results from the simulations with the events
- Determine potential fixes: Identify potential issues then request the data owners to review the results and issue potential fixes
- Implement the fixes: Incorporate the fixes and re-perform the comparison analysis
 - R^2 was used as the measurement index

CG Planning Activities: Special Studies



- Report development

CG Planning Activities: Special Studies



- TPL-007-1 determine the maximum effective Geomagnetic Induced Current (GIC) for applicable BES power transformers
 - Focused more on the Northwest planning region
 - Relied on the methodology and information from the TPL-007-1 standard (such as scaling factors)
 - Initiated in late 2017 and completed in late 2018
 - Additional studies will be conducted in 2019

Next Steps

CG Planning Activities: Next Steps



- **2019 BTEP**
 - A draft 2019 BTEP has been posted on ColumbiaGrid's website at: <https://columbiagrid.org/biennial-transmission-overview.cfm>
 - This draft will be presented to the board, seeking approval on Feb 20, 2019
 - Once approved, the final document will be posted on the website at the same location

CG Planning Activities: Next Steps



- 2019 Planning Studies: Current Work plan (mostly similar to 2018)
 - System Assessment & Sensitivity Studies
 - Node-Breaker model evaluation
 - Economic Planning Study
 - Revision of 3 special studies that were conducted in 2018 (MOD-033, GMD, PRC-026)
 - TPL-007-2 and GMD vulnerability assessment

CG Planning Activities: Planning Meetings



- Five public meetings have been scheduled for 2019
 - February 14, 2019: Portland, OR
 - May 9, 2019: Portland, OR
 - August 8, 2019: TBD (Seattle area)
 - October 10, 2019: Portland, OR
 - December 5, 2019: Portland, OR

Information and Notifications

Stay Informed About Future Activities



- **Public notifications**
 - ColumbiaGrid will notify interested persons regarding future activities through email
 - Self-register system
 - Refer to “Join Interest List” on ColumbiaGrid’s main page

Stay Informed About Future Activities



The screenshot shows the ColumbiaGrid website. At the top left is the ColumbiaGrid logo. To the right of the logo is a navigation bar with links: [Join Interest List](#), [Contact Us](#), [Members](#), and [FAQs](#). Below these links is a search bar with a magnifying glass icon and a 'Login' link. A red arrow points from the top right towards the 'Join Interest List' link. Below the navigation bar is a horizontal menu with links: [ABOUT](#), [CORPORATE ACTIVITY](#), [RESOURCES](#), [NEWS](#), [PROGRAMS](#), [PARTICIPATION](#), [DOCUMENTS](#), and [CALENDAR](#). The main content area features a large banner with a background image of power lines. The banner text reads: 'IMPROVING THE **PLANNING, EXPANSION & EFFICIENT USE** OF THE NORTHWEST GRID'. Below the banner is a green button labeled 'LEARN MORE'. Below the banner are three columns of content: 'CURRENT PROGRAMS', 'EVENTS', and 'RECENT ANNOUNCEMENTS'. The 'CURRENT PROGRAMS' column contains a link to 'Mission and Vision' and a paragraph about ColumbiaGrid's mission. The 'EVENTS' column lists several upcoming meetings with dates and times. The 'RECENT ANNOUNCEMENTS' column lists recent news items, including the 'Final Agenda and Hotels are posted | 2018 Annual Interregional Coordination Meeting' and the 'Interregional Transmission Project (ITP) proposal window is currently open through March 31, 2018'.

ColumbiaGrid

[Join Interest List](#) | [Contact Us](#) | [Members](#) | [FAQs](#)

Search 

[Login](#)

[ABOUT](#) | [CORPORATE ACTIVITY](#) | [RESOURCES](#) | [NEWS](#) | [PROGRAMS](#) | [PARTICIPATION](#) | [DOCUMENTS](#) | [CALENDAR](#)

IMPROVING THE **PLANNING, EXPANSION & EFFICIENT USE** OF THE NORTHWEST GRID

[LEARN MORE](#)

CURRENT PROGRAMS

[Mission and Vision](#)
ColumbiaGrid's mission is to improve the reliability and efficient use of the Northwest's transmission grid. ColumbiaGrid performs grid expansion planning, and develops and implements solutions related to the expansion, operation, reliability, and use of the interconnected Northwest transmission system. In carrying out its mission, ColumbiaGrid endeavors to provide sustainable benefits for its members and the region, while considering environmental concerns, regional interests, and cost-effectiveness. [ColumbiaGrid Work Plan](#)

EVENTS

February 19, 2018
[Presidents' Day - Office Closed](#)

February 21, 2018 8:00 - 9:20
[Members' Roundtable Meeting](#)

February 21, 2018 9:30-12:30
[Board Meeting](#)

February 22, 2018 9:00 - 3:00
[Annual Interregional Coordination Meeting](#)

April 12, 2018 9:00-3:00
[Planning Meeting](#)

RECENT ANNOUNCEMENTS

February 02, 2018
[Final Agenda and Hotels are posted | 2018 Annual Interregional Coordination Meeting; February 22, 2018 Folsom, CA](#)

January 03, 2018
[Interregional Transmission Project \(ITP\) proposal window is currently open through March 31, 2018](#)

Grid

Questions

36

PAUL DIDSAYABUTRA
PAUL@COLUMBIAGRID.ORG

LARRY FURUMASU
FURUMASU@COLUMBIAGRID.ORG