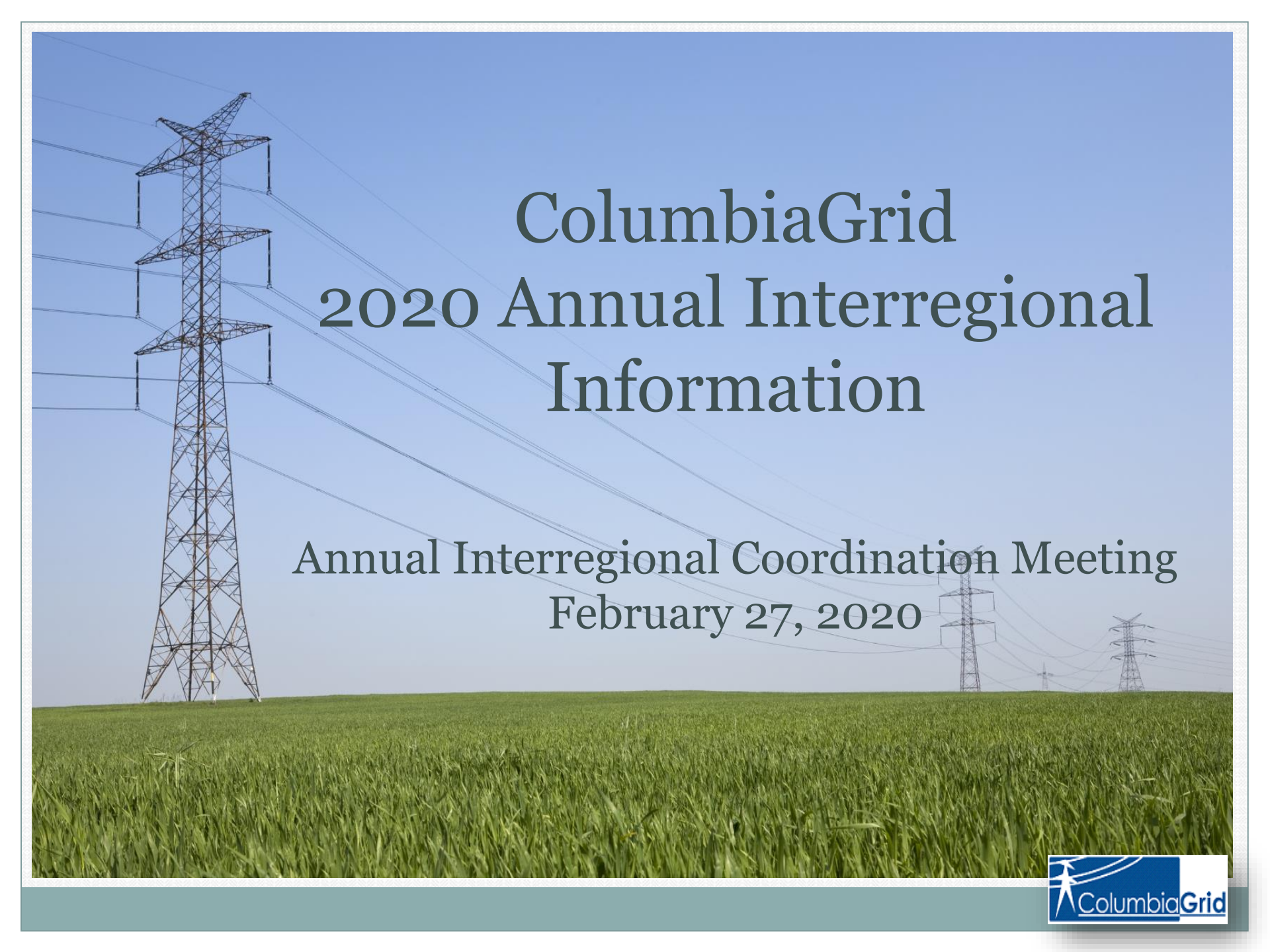




ColumbiaGrid 2020 Annual Interregional Information

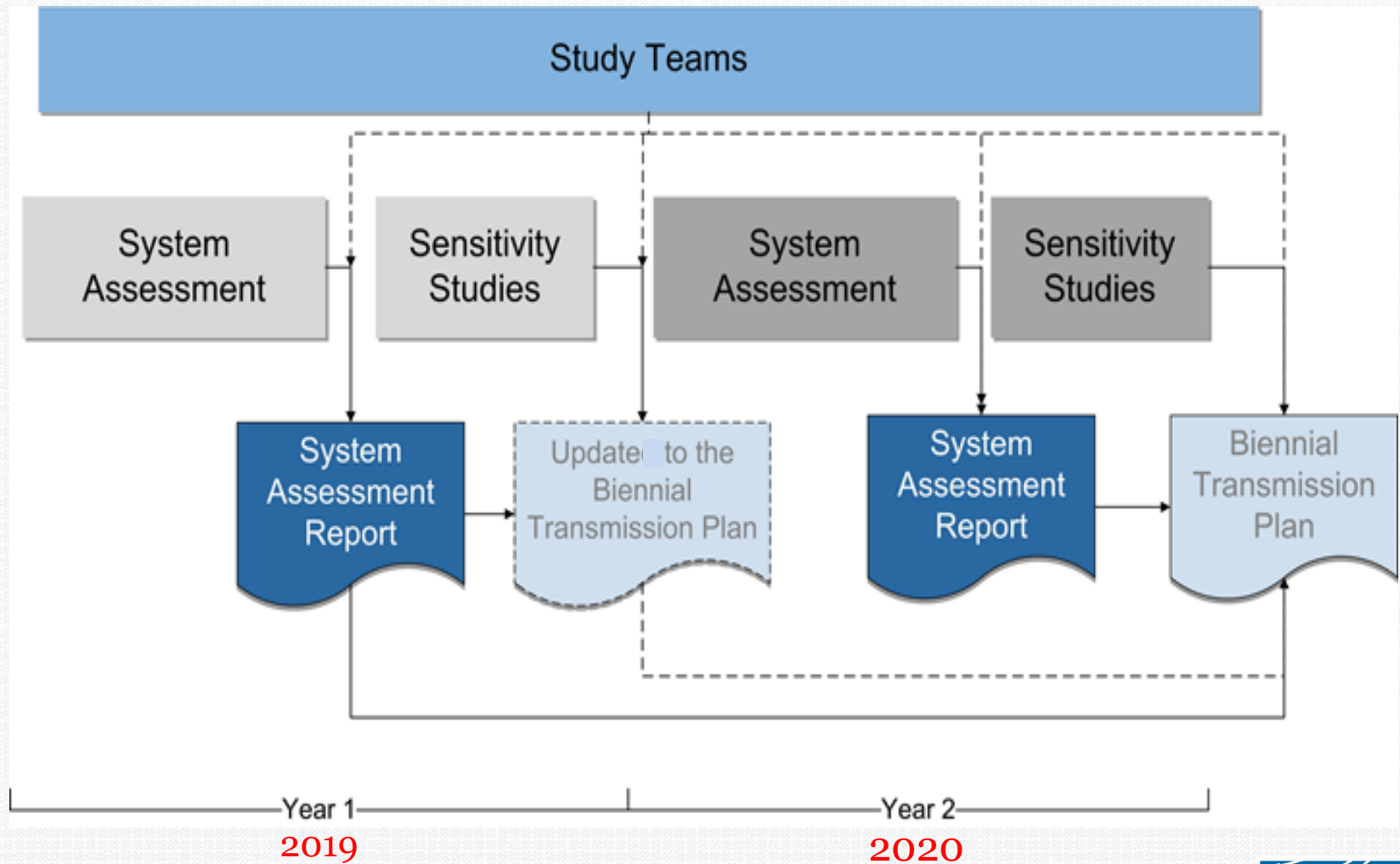
Annual Interregional Coordination Meeting
February 27, 2020

Topics

S

- ColumbiaGrid (CG) planning process
 - 2020 System Assessment
 - 2020 Biennial Transmission Expansion Plan (2020 BTEP)
- Review 2019 System Assessment
 - SA regional Needs identification, summary of study results
- Order 1000
- Information and notifications

CG Planning Process Overview

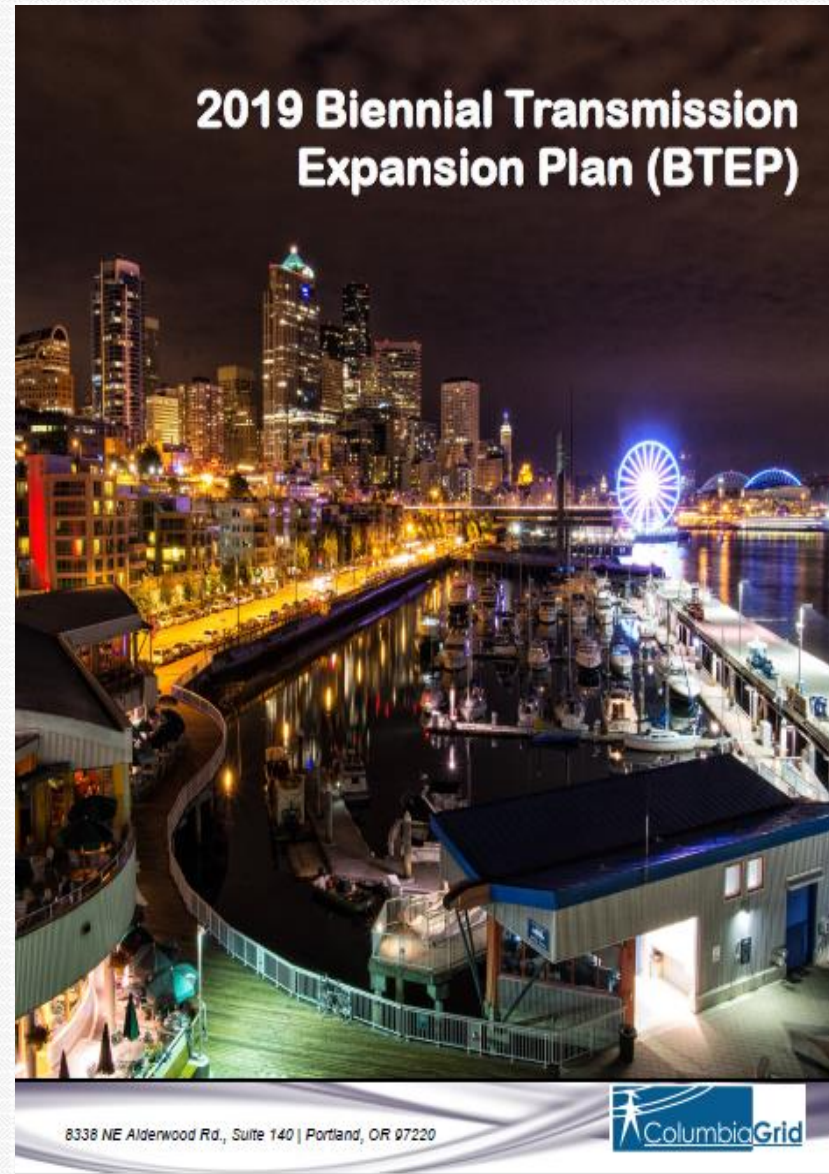


CG Planning Process: Key Activities

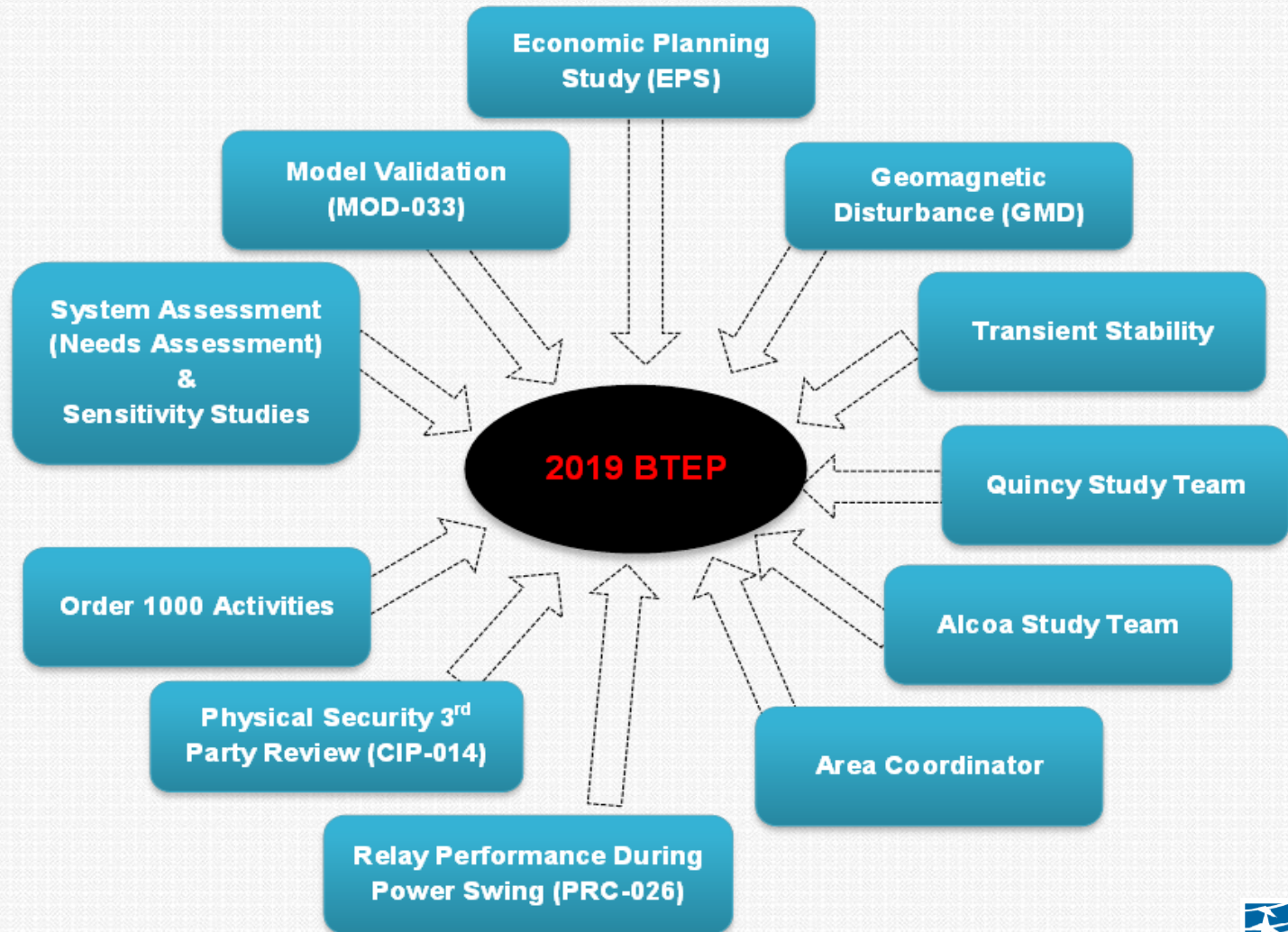
- Key activities in the 2019-2020 planning cycle
 - 2019 Biennial Transmission Expansion Plan (2019 BTEP) approved in February. Posted on ColumbiaGrid's website at: [ColumbiaGrid 2019 BTEP](#)
 - 2019 System Assessment report completed September. Posted at: [2019 System Assessment Report](#)
 - 2020 Draft Study Plan posted January 2020
 - 2020 System Assessment will be completed in June 2020
 - The 2020 Biennial Transmission Expansion Plan will be completed in October 2020

2019 BTEP

- ColumbiaGrid 2019 Biennial Transmission Expansion Plan
Approved February 2019
[2019 BTEP](#)
- Key Contents
 - Ten-year Regional Plan Projects
 - Area Coordinator & Base Case Development
 - System Assessment Results
 - Order 1000 activities
 - Study Team activities
 - Special Studies
 - Economic Planning Study



2019 BTEP



2019 System Assessment

- Final report posted on ColumbiaGrid website at: [2019 System Assessment Report](#)
- Key Contents
 - Statement of Needs
 - Planning Process
 - System Assessment Results
 - Order 1000 activities
 - Other Planning Activities
 - Special Studies
 - Biennial Ten-year Regional Transmission Expansion Plan (Appendix B)



2019 Planning Process– Base Cases

<u>Initial WECC Case</u>	<u>Study Year</u>	<u>Study Case</u>	<u>Study Plan</u>	<u>Contingencies</u>	<u>Dynamics</u>	<u>Notes</u>
19HS3-OP	21	1-2 yr Heavy Summer	Member Use	Yes/Member Use	Yes/Member Use	
19HW3-OP	21	1-2 yr Heavy Winter	Member Use	Yes/Member Use	Yes/Member Use	
21LSP1-S	21	Near Term Light Load	Study	Yes	Yes	Adj Gen/Load Pattern based on feedback to prevent repeat study from 2018
24HS2	24	5 yr Heavy Summer	Member Use	Yes/Member Use	Yes/Member Use	Obtain & apply Gen/load for year +1, Adjust Dynamics if needed
24HW2	24	5 yr Heavy Winter	Study	Yes	No (Next Year)	Obtain & apply Gen/load for year +1
29HS1	29	10 yr Heavy Summer	Study	Yes	No (Next Year)	
29HW1	29	10 yr Heavy Winter	Study	Yes	Yes/Member Use	

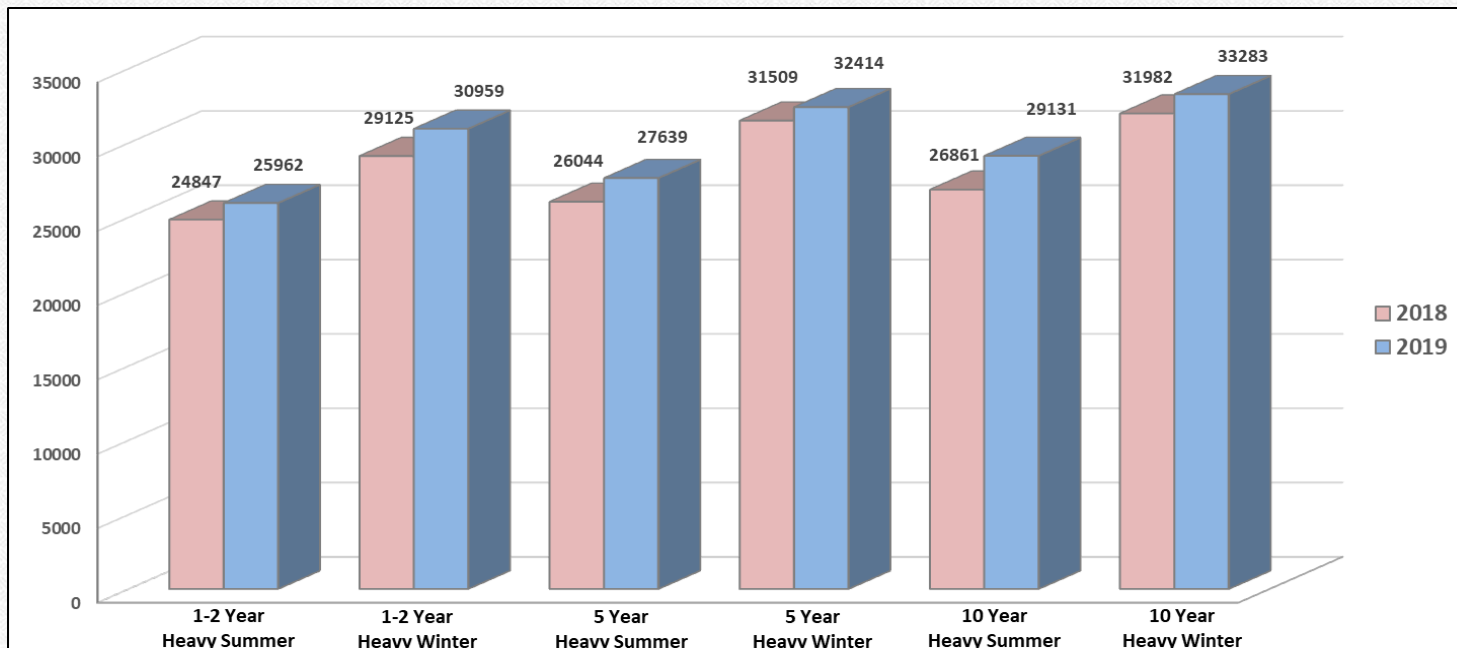
2019 System Assessment: Study Cases

- Four cases were used by ColumbiaGrid in the 2019 System Assessment
 - 2021 Light Spring
 - 2024 Heavy Winter
 - 2029 Heavy Summer and Heavy Winter

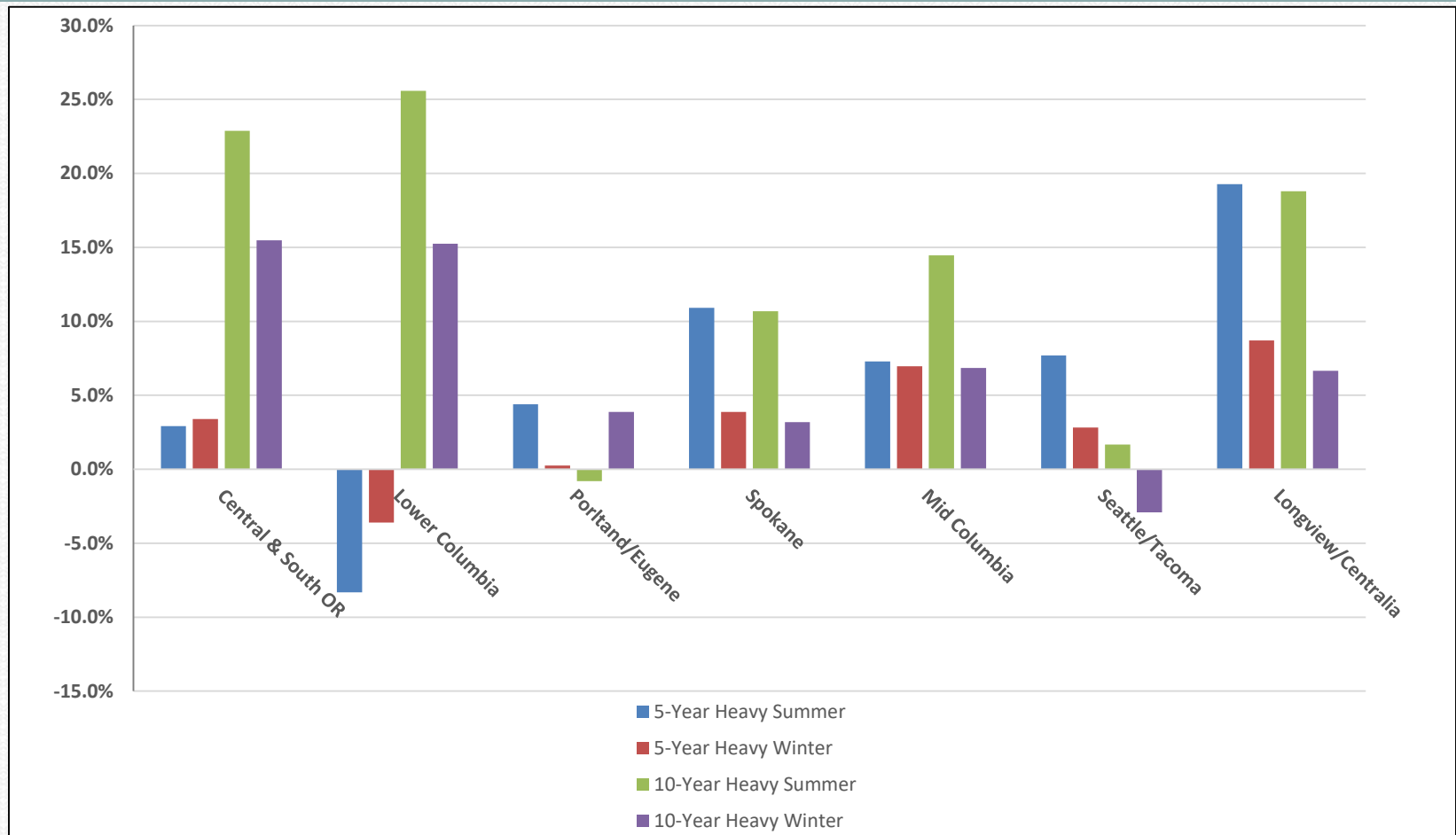
<i>Initial WECC Case</i>	<i>Study Year</i>	<i>Study Case</i>
21LSP1-S	2021	Near Term Light Load
24HW2	2024	5 year Heavy Winter
29HS1	2029	10 year Heavy Summer
29HW1	2029	10 year Heavy Winter

2019 System Assessment: Loads

- Load forecasts for entire NW area increased an average of 6% over levels in the 2018 SA
- Largest forecast increase occurred with the ten-year Heavy Summer case at about 9%



2019 System Assessment: Loads



Comparison of load forecast by load area between 2018 and 2019 System Assessments

2019 System Assessment: Resources

- Adjustments to generation patterns were made for the following reasons:
 - Corrections to better represent expected generation patterns (such as adjusting wind generation output levels) by ColumbiaGrid's planning participants
 - Justified changes to represent a new resource or the retirement of an existing resource
 - Adjustments to the hydro system to align levels within historical operational bandwidths provided by participants

2019 System Assessment: Resources

In the 2019 system assessment, the following adjustments were made to reflect recent retirement status of several coal units in the Northwest.

<i>Modeled Generation Retirements</i>	<i>Date</i>	<i>MW</i>
Boardman 1	2020	600
Centralia 1	2020	700
Centralia 2	2025	700
Total		2000

2019 SA: Transmission Projects

The 2019 SA modeled future projects that planning participants and neighboring entities are committed to build in the 10 year planning horizon to address known transmission deficiencies.

<i>Committed Projects Included in All Cases</i>	Sponsor	Expected In-Service
Columbia 230 kV Bus Section Breaker	Bonneville Power	
Raver 500/230 kV transformer and a 230 kV line to Covington Substation.	Bonneville Power	2020
Santiam- <u>Chemawa</u> 230 kV Line Upgrade	Bonneville Power	2019
Tacoma 230 kV Bus Section Breaker	Bonneville Power	2021
Lower Valley Reinforcement (Hooper Springs)	Bonneville Power	2019
South Cowlitz County Project	Cowlitz County PUD	2019
Lone Pine Substation	Douglas County PUD	2020
Rapids-Columbia 230 kV Line and Columbia Terminal	Douglas County PUD	2020
Rocky Ford - Dover 115 kV Line	Grant County PUD	2019



2019 SA: Transmission Projects

<i>Committed Projects in 5 Year & 10 Year Cases</i>	Sponsor	Expected In-Service
Benton-Othello 115 kV Line Upgrade	Avista	
Irvin Project - Spokane Valley Transmission Reinforcements	Avista	2020
Big Eddy 230/115 kV Transformer #1 Replacement	Bonneville Power	2020
John Day-Big Eddy 500 kV #1 Line <u>Reconductor</u>	Bonneville Power	
Troutdale 230kV Bus Section Breaker	Bonneville Power	
Rocky Reach-Chelan #1 115 kV Re-termination	Chelan County PUD	2022

For a complete listing of transmission projects in ColumbiaGrid's ten-year plan, please refer to Appendix B of the System Assessment report.

2019 System Assessment: Study Results

- The studies primarily focused on contingency analysis to identify potential multi-system issues
 - Thermal overloads
 - Voltage issues
 - Stability
- Six (6) joint areas of concern (or potential needs) were identified for potential thermal overloads
- Five (5) of these areas were identified last year's System Assessment (recurring areas)

2019 System Assessment: Study Results

- One (1) new area of concern was identified for the first time in the 2019 System Assessment
- Two (2) joint areas of concern identified in the 2018 System Assessment no longer have any identified issues and are now considered to be resolved areas.

2019 System Assessment: Study Results

No	Area of Concern or Need	Identified in		Note/Category
		2018 SA	2019 SA	
1	Palouse	YES	NO	Resolved / No Issues Identified
2	Bend	YES	NO	Resolved / No Issues Identified
1	Centralia / Olympic Peninsula	YES	YES	Recurring
2	Othello	YES	YES	Recurring
3	Puget Sound	YES	YES	Recurring
4	Spokane	YES	YES	Recurring
5	Quincy in the Mid-Columbia	YES	YES	Recurring
6	North Oregon Coast	NO	YES	New

2019 System Assessment: Study Results



Approximated locations of joint areas of concern

2019 System Assessment: Study Results

Thermal Issues

- Resolved

Two joint areas of concern that were reported in the 2018 SA were resolved in this year's SA study

- Palouse Area – reduced area forecast
- Bend Area – Pacificorp load tripping operating procedure

- Recurring

Five joint areas of concern that were reported in the 2018 SA were identified again in the 2019 SA

- Centralia Area / Olympic Peninsula Area – possible reactive power deficiencies



2019 System Assessment: Study Results

● Recurring (Cont'd)

- Othello Area – line upgrade project is being planned to address this issue
- Puget Sound Area – These issues addressed by the Puget Sound Area Study Team
- Spokane Area - The Westside substation upgrade project addresses the Westside transformer issue. Bonneville and Avista are jointly working together to address the Bell transformer overload issue. No study team is planned.
- Mid-Columbia Quincy Area – These issues are being addressed by Quincy Area Study Team participants

2019 System Assessment: Study Results

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- New

- North Oregon Coast Area - These issues were alleviated in the 2018 SA due to reduced load projections. An increase in the 2019 SA's area load projection has caused the issues to return.
- Since there is only one ColumbiaGrid Planning Party involved, these issues will be the responsibility of the affected Planning Parties to resolve and no study team is proposed.

2019 System Assessment: Study Results

Voltage issues

This year's study screened for significant voltage deviation, low or high voltage issues in the 2029 heavy summer and 2029 heavy winter cases. Study results showed no voltage problems.

Voltage stability issues and unsolved contingencies

Study results showed 8 areas that did not solve in one or more of the studied cases and also had no known mitigation plans

- Columbia Falls Area – System reconfiguration (switching) or load tripping could mitigate this issue



2019 System Assessment: Study Results

Voltage stability issues and unsolved contingencies (Cont'd)

- Rathdrum Area - System reconfiguration (switching) or local generation can mitigate this issue
- Mid-Columbia Area - Local RAS to run back Wells generation can mitigate this problem.
- Teton Area - The BPA Lower Valley Reinforcement (Hooper Springs) project will mitigate this issue.
- Redmond-Bend Area - A remedial action scheme has been designed to prevent the system from instability.

2019 System Assessment: Study Results

Voltage stability issues and unsolved contingencies (Cont'd)

- Wasco Area - A planned shunt capacitor at De Moss will mitigate this problem.
- Southern Oregon Area - Shedding load or voltage support is needed to prevent the issue.
- Eugene Area - Low voltages in the heavy winter cases may be mitigated by shedding load.

2019 System Assessment: Study Results

Transient stability issues

In the 2019 SA, the 2021 Light Spring case was used for the transient stability evaluation. The following table provides a summary of the transient stability assessment and contingencies needing further review.

Member System Submission	No. of Submitted Contingencies	Contingencies Needing Follow up	Outage Types	Comments
Avista Corporation	1343	2	P1.2	Undamped Oscillations
Puget Sound Energy	723	0	-	
Seattle City Light	854	20	P1.2, P3.2, P5.3, P6.1, P6.2, P6.3	Undamped Oscillations
Tacoma Power	160	0	-	-
Chelan County PUD	73	0	-	-
Grant County PUD	145	0	-	-
Snohomish County PUD	55	0	-	-
Total	3353	22	-	-

Economic Planning Study

- Production Cost Simulation, conducted annually
- Assess potential future system conditions and provide information on projected trends to planning parties
- 2019 EPS study
 - Ten year study scenario (2029)
 - 2019-2020 study results will be included in the EPS section of the 2020 BTEP

Order 1000 Update

- **Current status**

- Jurisdictional parties notice of withdrawal from CG Order 1000 Functional Agreement effective April 2, 2020
- Coincides with NorthernGrid parties request to FERC for an April 1 effective date for NG
- ColumbiaGrid, Avista, and PSE will reassess the Order 1000 FA termination date in the event that FERC does not grant an April 1 effective date for NG

- **Key activities**

- Potential Needs submission window
- Interregional Transmission Project submission window
- System Assessment: Order 1000 Needs identification

Order 1000 Activities: Regional

- To facilitate input from ColumbiaGrid members and the public, a Suggested Potential Needs submission window was opened
 - Suggestions of items to be considered for evaluation as Order 1000 Potential Needs driven by reliability needs, economic considerations or public policy requirements.
 - Interested persons may submit written suggestions of items to be considered for inclusion as Order 1000 Potential Needs and, if included, to be evaluated in the 2020 System Assessment.

Order 1000 Activities: Regional

- **Order 1000 Potential Needs (Cont'd)**
 - Potential Needs submission window open January 1, 2020 through March 31, 2020
 - To date, no suggestions of Order 1000 Potential Needs have been submitted to ColumbiaGrid during this submittal window.

Order 1000 Activities: Regional

- Concurrently, ColumbiaGrid has developed its draft Study Plan for the 2020 System Assessment
 - Posted on ColumbiaGrid website
- Technical studies will be conducted after the Study Plan has been finalized
- Regional planning activities will be documented in the 2020 System Assessment report to be completed by June 2020

Order 1000 Activities: Interregional

- **Interregional Transmission Project (ITP) submission window opened**
 - January 1, 2020 through March 31, 2020
 - ITP submission form is available on ColumbiaGrid's Order 1000 Interregional Overview webpage: [ColumbiaGrid ITP Submission Form](#)
 - In order for an ITP to be considered by ColumbiaGrid in this planning cycle, a proponent must submit the completed form to the Order 1000 mailbox at: order1000@columbiagrid.org by the March 31, 2020 deadline.

CG Planning Activities: Planning Meetings

- Three public meetings have been scheduled for 2020
 - January 23, 2020 Portland, OR
 - May 14, 2020 Portland, OR
 - September 17, 2020 Portland, OR

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



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WESTERN INTERCONNECTION, GOING BEYOND
THE REQUIREMENTS OF
**FERC'S ORDER 890
& ORDER 1000**

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CURRENT PROGRAMS

[Mission, Vision & Values](#)

ColumbiaGrid is a membership non-profit corporation providing regional grid planning in the Northwest portion of the Western Interconnection that strives for excellence and exists to:

- ensure and enhance the reliability of the transmission grid via collaborative, cooperative, cost-effective, efficient and insightful long-term regional transmission ('grid') expansion planning consistent with planning and reliability standards (i.e. our Core services); and

EVENTS

February 17, 2020
[Presidents' Day - Office Closed](#)

February 19, 2020 8:00 - 9:20
[Members' Roundtable Meeting](#)

February 19, 2020 9:30-12:30
[Board Meeting](#)

February 27, 2020 10:00 - 3:00
[Annual Interregional Coordination Meeting](#)

May 14, 2020 9:00-3:00
[Planning Meeting](#)

RECENT ANNOUNCEMENTS

December 17, 2019
[2020 Budget & Meeting Schedule Approved](#)

September 30, 2019
[ColumbiaGrid has completed the 2019 System Assessment](#)

September 13, 2019
[ColumbiaGrid presentation to the WUTC](#)



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CORPORATION DEDICATED TO

**GRID EXPANSION &
RELIABILITY PLANNING**

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**Additional Information
Regarding ColumbiaGrid's
Regional Planning Process is
available at:**

www.ColumbiaGrid.org

Questions



Presenter Contact Information:

Larry Furumasu, Furumasu@ColumbiaGrid.org