Proposed Study Scope for the 2022-2023 NorthernGrid Planning Cycle

Member Planning Committee Approval Date: TBD

Executive Summary

This Study Scope outlines the NorthernGrid 2022-2023 regional transmission planning process, as required under FERC Orders No. 890 and 1000, in accordance with each Enrolled Party's Open Access Tariff (OATT) Attachment K – Regional Planning Process and NorthernGrid Planning Agreement.

The NorthernGrid Regional Transmission Plan evaluates whether transmission needs within the NorthernGrid may be satisfied by regional and/or interregional transmission projects. The NorthernGrid Regional Transmission Plan provides valuable regional insight and information for all stakeholders to consider and use in their respective decision-making processes.

The study scope for NorthernGrid's 2022-2023 Transmission Plan was developed using the following process:

- Identification of the Baseline Projects of Enrolled Parties. Baseline Projects are the transmission projects included in the Enrolled Parties' Local Transmission Plans.
- Evaluation of combinations of the Enrolled Parties Baseline Projects and Alternative Projects to identify whether there may be a combination that effectively satisfies all Enrolled Party Needs.
- Use of Power flow and production cost analysis techniques to determine if the modeled transmission system topology meets the system reliability performance requirements and transmission needs.
- Selection of the Regional Combination that effectively satisfies all Enrolled Party Needs into the NorthernGrid Regional Transmission Plan.

Overview of Key Observations:

Regional Summary of Needs

The regional needs were sourced from member data submissions, including load forecasts, resource additions and retirements, anticipated transmission topology, and public policy requirements. Data submissions were received from NorthernGrid's 13 members:

- Avista (AVA)
- Bonneville Power Administration (BPA)
- Chelan PUD (CHPD),
- Idaho Power Company (IPC)
- Montana Alberta Tie Line (MATL)
- NV Energy (NV E)
- NorthWestern Energy (NWMT)
- PacifiCorp East and West (PACE and PACW)
- Portland General Electric (PGE)
- Puget Sound Energy (PSE)
- Seattle City Light (SCL)
- Snohomish PUD (SNPD)
- Tacoma Power (TPWR)

- **Load Forecast**
  - An average of 0.6% annualized load growth for the entire membership was observed between 2026-2032.
  - Utilities reported 0.4% decline to 1.1% increase annualized load growth for the 2026-2032 timeframe.
  - With the addition of NV Energy, NorthernGrid is primarily a summer peaking system.
  - The 2032 winter peak load for the NorthernGrid footprint is 49,247 MW.
  - The 2032 summer peak load for the NorthernGrid footprint is 54,208 MW.
- **Generation Retirements** - Members reported 30,527 MW of generation retirements.
- **Resource Additions** – Members reported 6,669 MW of generation additions; batteries are included in the resources.
- **Proposed Member Transmission** - Members are proposing 141 new and upgraded transmission projects, primarily for local load service and increased reliability.
- **Proposed Regional Transmission** - There are 13 regional projects for consideration.
- **Proposed Non-incumbent Regional** – There are 4 non-incumbent regional projects for consideration: Cascade Renewable Transmission System, Cross-Tie, SWIP North, and Loco Falls Greenline.
- **Proposed Non-Incumbent Interregional** – No interregional projects were submitted to the NorthernGrid region.

Case Analysis

The NorthernGrid Regional Transmission Plan will assess the existing system and committed projects along with combinations of planned and proposed transmission and resource changes for their ability to reliably serve the annual variations in 2032 load and generation dispatch conditions.

Initial analysis of the data submissions indicates that the NorthernGrid region experiences peak loading conditions during the summer; with the next highest load occurring in the winter. The NorthernGrid Study Scope will outline the analysis needed to assess the transmission system for a ten-year future and will include detail on how both reliability and the congestion will be assessed. NorthernGrid plans to use approved Western Electric Coordinating Council (WECC) base cases for the reliability analysis and the Anchor Data Set for the production cost analysis.

The NorthernGrid footprint is vast and covers varied terrain; because of this, four different stress conditions have been selected. Both winter and summer conditions will get studied to capture the inherent winter-peaking and summer-peaking entities. There have been increasingly more instances of northbound flows over the California-Oregon Intertie (COI); this notion, together with the increased electrification in the northwest and solar in the southwest led to a light spring case. There is a significant amount of proposed wind in the state of Wyoming; this base case will get selected from the Anchor Data Set.

Cost Allocation

PowerBridge (Cascade Renewable), Great Basin Transmission (SWIP North), and TransCanyon (Cross-Tie) have all been deemed Qualified Developers by the Cost Alocation Task Force; any of these projects that get selected into the Regional Transmission Plan will undergo Cost Allocation.

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Introduction and Purpose Statement

The objective of the transmission planning study is to produce the NorthernGrid Regional Transmission Plan, through the evaluation and selection of regional and interregional projects that effectively satisfies all the transmission needs within the NorthernGrid region. The regional needs were sourced from member data submissions, including load forecasts, resource additions and retirements, projected transmission, and public policy requirements.

The committees for NorthernGrid are as follows:

- **The Member Committee (MC)** is composed of NorthernGrid member representatives. The MC is responsible for membership approval, budget development and approval, and vendor management.
- **The Member Planning Committee (MPC)** is composed of transmission planner representatives from all NorthernGrid members. The MPC is responsible for development of the regional transmission plan.
- **The Enrolled Parties Planning Committee** is composed of Federal Energy Regulatory Commission (FERC) jurisdictional utilities. Collectively these members are responsible for regional transmission planning compliance. There are two sub-committees of this primary committee:
    - **The Enrolled Parties and States Committee (EPSC)** is responsible for state engagement in the regional transmission planning process.
    - **The Cost Allocation Task Force (CATF)** is composed of enrolled parties and states representatives and is responsible for cost allocation compliance.

Regional Transmission Plan Development

Regional Transmission Plan Development Process Overview

NorthernGrid began the process to develop a regional transmission plan by requesting members to submit data pertaining to forecasted loads, resource additions and retirements, transmission additions and upgrades, and public policy requirements. The plan spans the 2022- 2032 time period.

The regional plan will be developed over the course of two years, beginning March 31, 2022 and ending December 31, 2023. A summary of the key deliverables in Year 1 and Year 2 is included below. Deliverables not defined by Attachment K are subject to change.

General Schedule and Deliverables

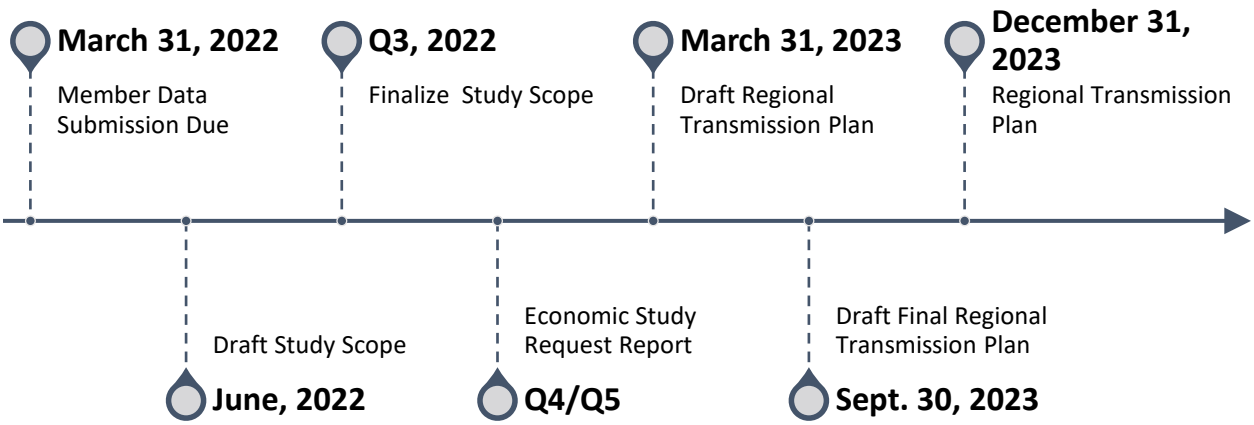

Figure 1: General Timeline of Deliverables

Stakeholder Engagement

Stakeholders are invited to participate in the public meetings and comment periods. They will also have active involvement in the development of the regional transmission plan. The first period for stakeholder comments begins with the publishing of the Draft Study Scope. There are three main opportunities to provide comment, and they are in response to the following publications: the proposed Study Scope, the Draft Regional Transmission Plan, and the Draft Final Transmission Plan.

Regional Summary of Needs

Current Transmission System

The NorthernGrid system is depicted below in Figure 2: NorthernGrid Balancing Authority Areas and the existing transmission is depicted in Figure 3: Existing NorthernGrid transmission.

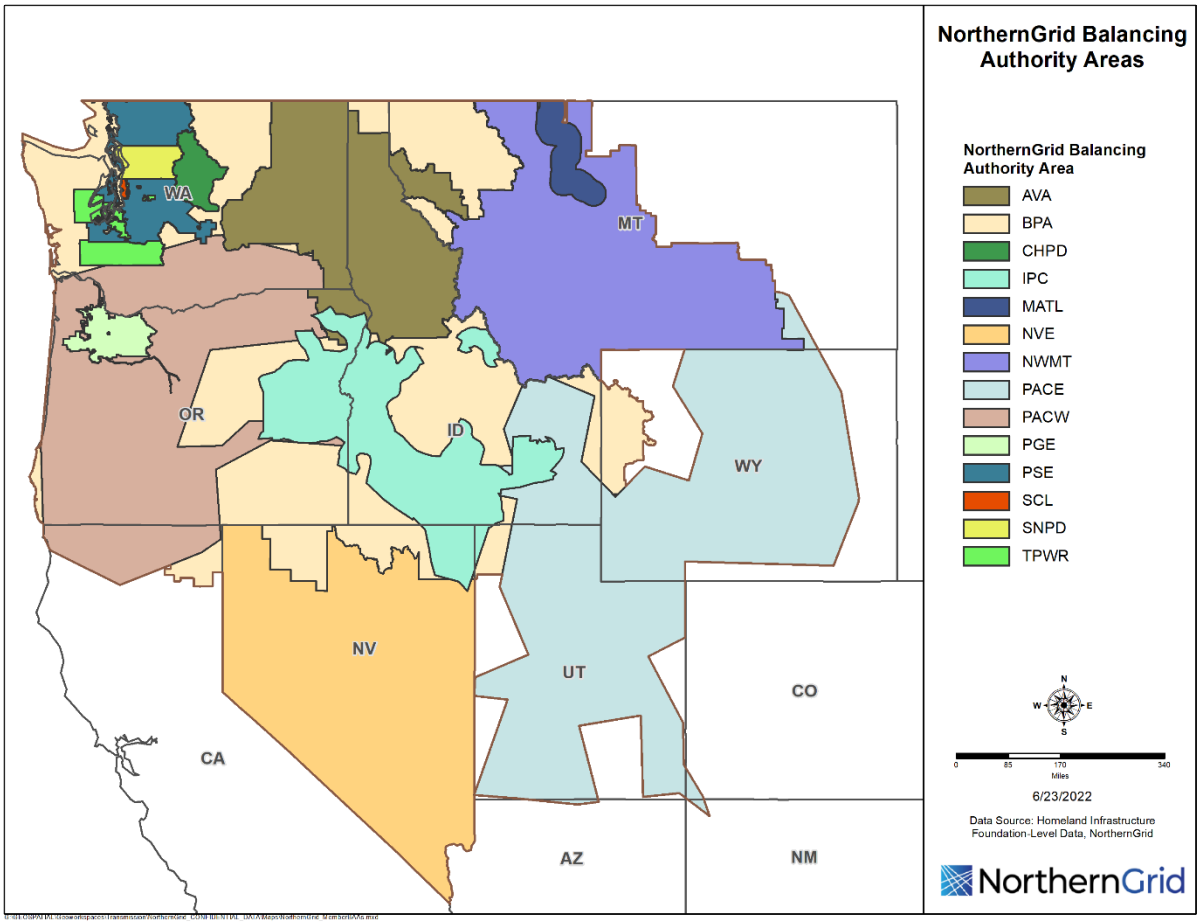

Figure 2: NorthernGrid Balancing Authority Areas

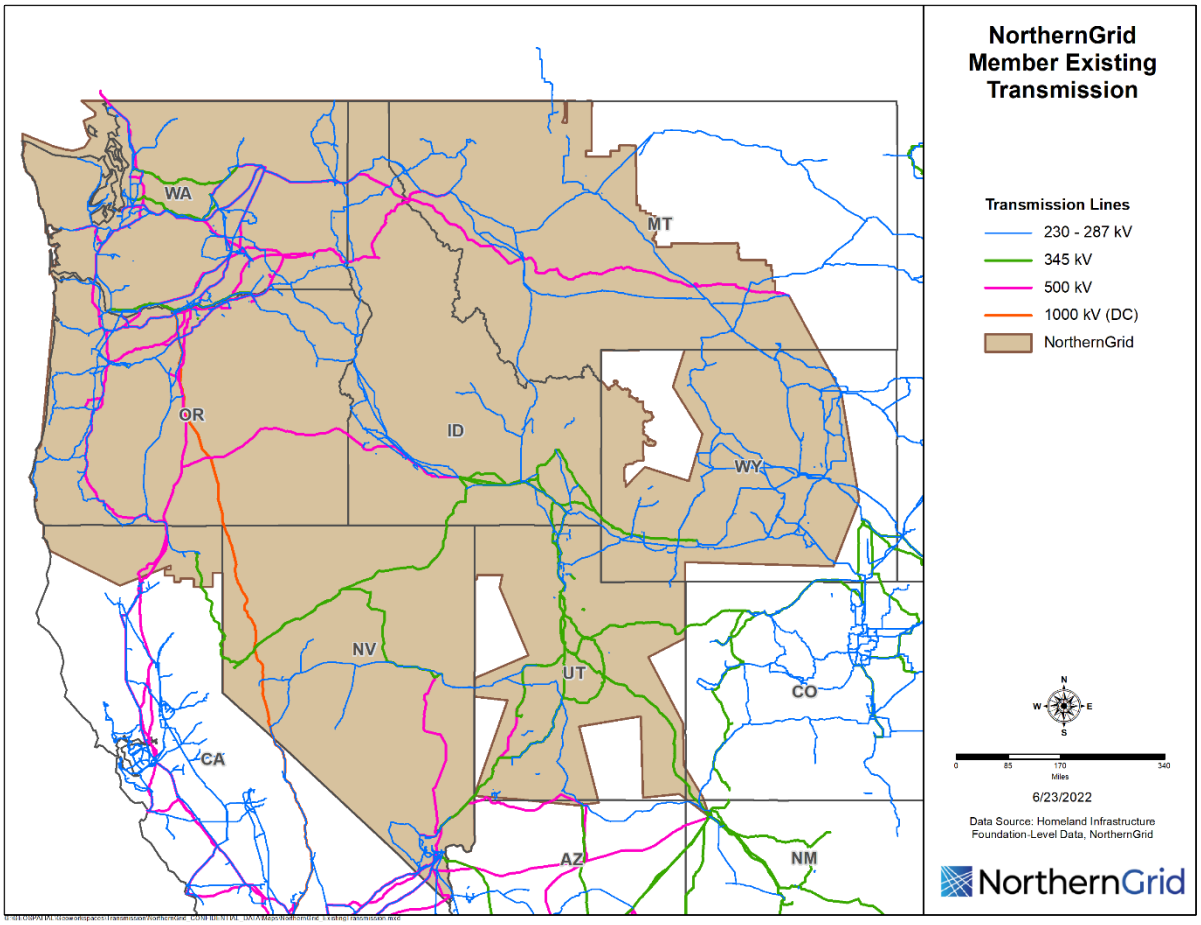

Figure 3: Existing NorthernGrid transmission

Data Submission Summary

This section summarizes the data submission results that NorthernGrid received from its 13 members. The NorthernGrid is made up of Avista (AVA), Bonneville Power Administration (BPA), Chelan PUD (CHPD), Idaho Power Company (IPC), Montana Alberta Tie Line (MATL), NV Energy (NV E), NorthWestern Energy (NWMT), PacifiCorp East and West (PACE and PACW), Portland General Electric (PGE), Puget Sound Energy (PSE), Seattle City Light (SCL), Snohomish PUD (SNPD), and Tacoma Power (TPWR). The member Balancing Authority Areas (BAA) are illustrated in Figure 9 below.

The NorthernGrid members that are registered as Balancing Authority Areas are required to submit a ten-year load and resource forecast to the Western Electricity Coordinating Council (WECC) annually. This forecast includes identification of forecasted generation resources and transmission facilities. The NorthernGrid leverages this submission for the biennial regional transmission plan. Each member submitted their data and the NorthernGrid summarized the data pertinent to the NorthernGrid region: load, generation resource retirements, generation resource additions, and 230 kV and above transmission additions. A summary of each member's data submission is shown in *Figure 4: 2022-2023 NorthernGrid Summary*. Resource additions do not necessarily reflect *planned* resource additions but may represent *conceptual* resource needs required to meet public policy goals. Conceptual resource needs are

based on the existing IRP preferred portfolio and may change during subsequent Biennial Planning Cycles.

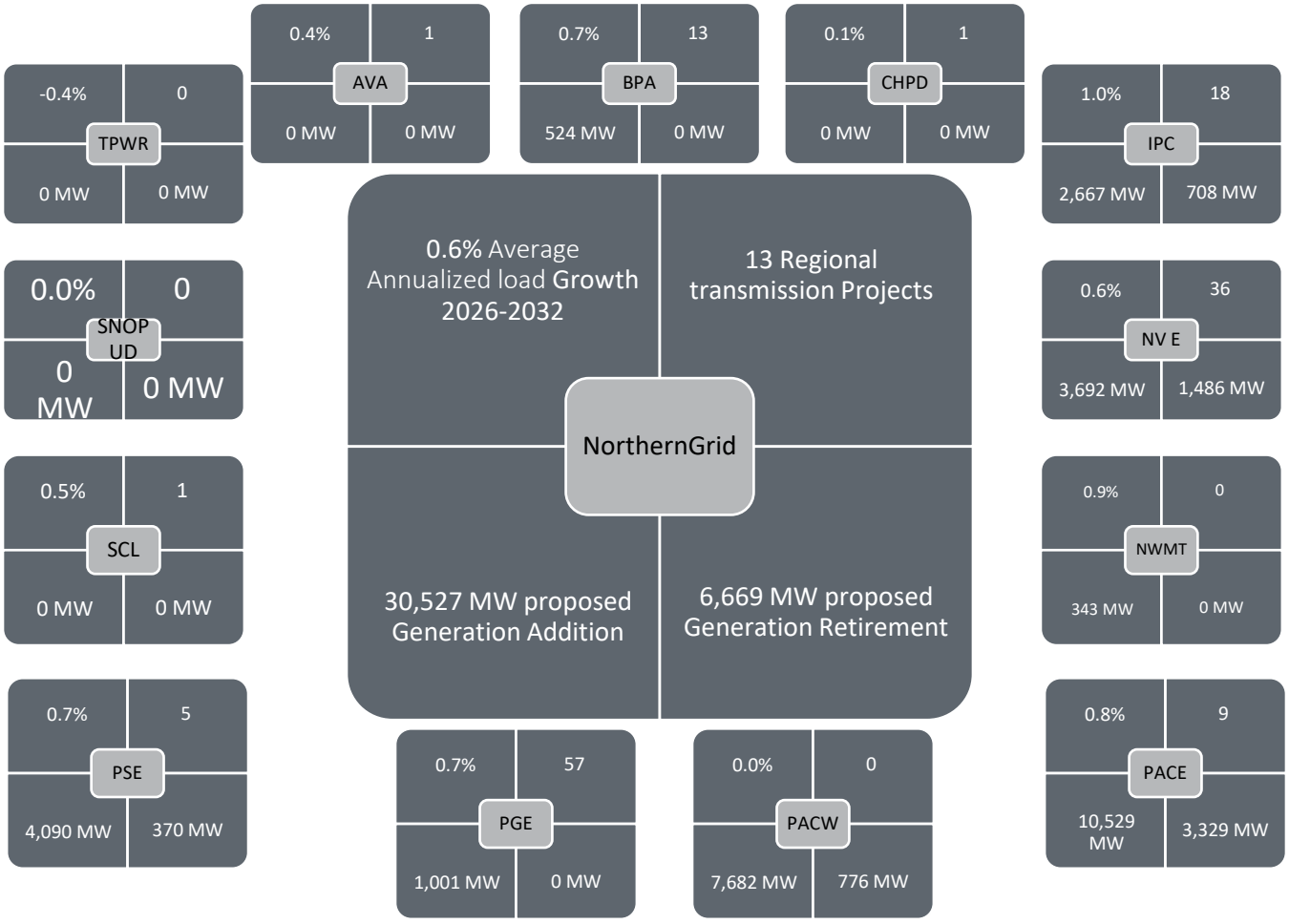

Figure 4: 2022-2023 NorthernGrid Summary.

In each "Cloverleaf", the center box identifies the area being summarized. The upper left corner shows the average annualized load growth for 2026-2032, the years for which complete load data was submitted. The upper right corner shows the number of transmission projects submitted by the utilities. The lower left corner shows the total MW of generation installations and the lower right corner shows the total MW retirements.

Observations:

1. NorthernGrid total regional load is predicted to grow at an average of 0.6% annually.
2. In total, there were 141 transmission projects submitted by participating utilities, only 13 of which were deemed to be regionally significant.
3. There is a net generation increase predicted for the NorthernGrid footprint.

Local Summary

The NorthernGrid members have projected the need for 128 new and upgraded transmission system projects in the local transmission planning processes. These projects primarily support local load service and reliability and have not been deemed to be "regionally significant".

Loads Summary

Table 1: NorthernGrid Load Projections for 2022-2023 Planning Cycle; all values are in MW

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2022	28755	28142	26116	25459	27071	29896	32101	32017	28885	26364	26586	29375
2023	29254	28134	26377	25132	26666	30795	32452	32126	28754	25754	26267	29565
2024	29578	28373	26670	25394	26991	31142	32776	32493	29034	26064	26577	29885
2025	35034	33873	31860	30213	31094	35631	37469	37222	32967	30723	32040	35507
2026	47113	45250	42794	40477	42224	48829	51878	50997	45382	41585	43332	47607
2027	47433	45547	43127	40840	42549	49248	52335	51497	45777	41903	43616	47899
2028	47720	45937	43480	41155	42882	49603	52742	51878	46154	42221	43851	48070
2029	48102	46306	43791	41533	43179	50174	53239	52322	46560	42658	44188	48410
2030	48401	46593	44096	41829	43528	50550	53593	52750	46906	42936	44521	48719
2031	48703	46860	44406	42106	43849	50862	53930	53094	47296	43181	44721	48980
2032	48958	47092	**44709**	42286	44063	51147	**54208**	53418	**47493**	43363	45037	**49247**

Key Observations:

- The seasons are grouped by color: winter, spring, summer, fall.
- The peak loading for the winter season months of December through February is 49,247 MW.
- The peak loading for the spring months of March through May is 44,709 MW.
- The peak loading for the summer season months of June through August is 54,208 MW.
- The peak loading for the fall months of September through November is 47,493 MW.
- The summer peak is much larger than any of the other seasonal peaks indicating in this cycle that NorthernGrid is a summer-peaking region.

A majority of the NorthernGrid area is forecasted to have minimal peak load growth. Moderate winter and summer peak loads are predicted by PGE. However, the Puget Sound area outside of the major population centers of Seattle and Tacoma anticipate moderate winter and high summer load growth driven by increased air conditioning installations. Similarly, NWMT forecasts moderate peak load growth in both winter and summer. Finally, IPC is expecting moderate winter and high summer peak load growth as its population continues to expand.

Load Changes

The load changes across the region are varied; in some instances, load expectations are for growth and in others, load expectations are for declining load. *Figure 5: Annual Summer Load Growth* and *Figure 6: Annual Winter Load Growth* graphically display the different load expectations by summer.

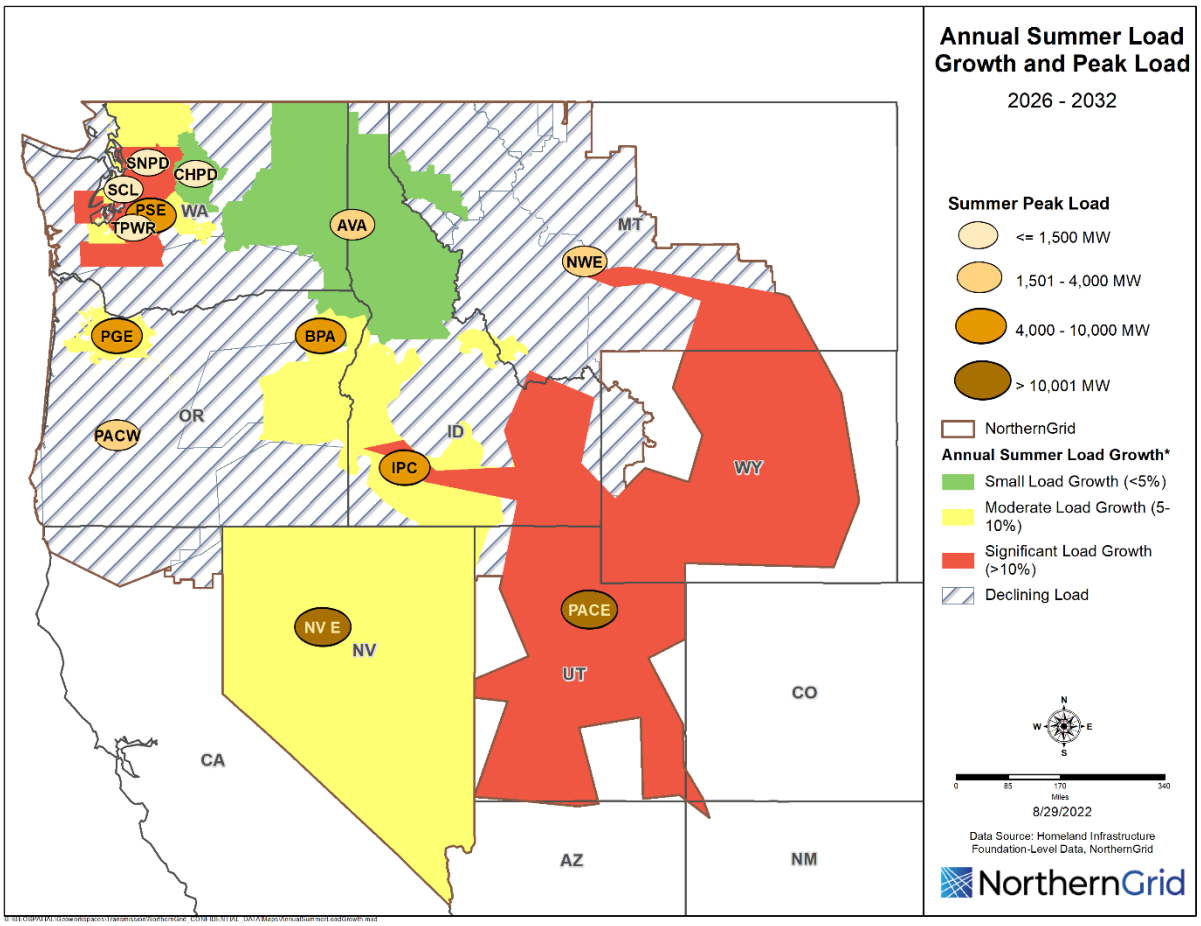

Figure 5: Annual Summer Load Growth

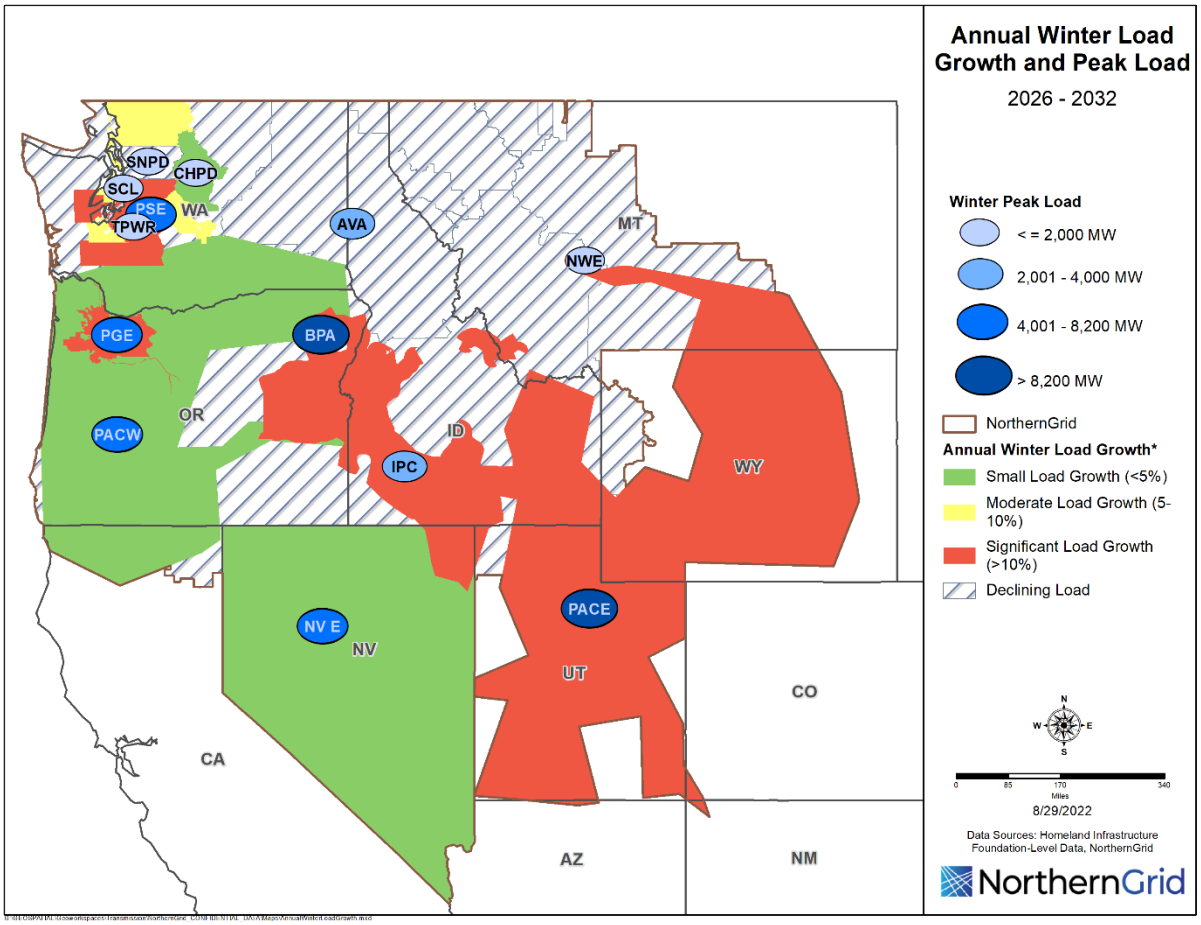

Figure 6: Annual Winter Load Growth

Table 2: NorthernGrid Load Projections from 2020-2021 Planning Cycle

2020-2021 Cycle	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2024	43226	41133	38372	35755	35684	38910	41942	41617	36882	35815	40021	43635
2025	43434	41466	38520	36017	35925	39121	42216	41861	37077	35921	40211	43828
2026	43455	41479	38600	35991	35972	39202	42364	42014	37107	35996	40197	43844
2027	43624	41645	38762	36133	36083	39401	42562	42244	37269	36124	40325	43995
2028	43813	41681	38915	36269	36232	39583	42812	42499	37475	36285	40487	44171
2029	43995	42010	39059	36435	36402	39793	43064	42774	37651	36463	40655	44367
2030	44266	42261	39304	36659	36645	40055	43383	43109	37892	36699	40860	44595

Key Observation regarding the 2020-2021 cycle:

- NorthernGrid was considered both a winter- and summer-peaking region; the winter peak of 44,595 MW in December is not considerably different than the summer peak of 43,33 MW in July

Table 3: Summary of Enrolled Party loads and resources Submittal

•	% Change from Previous Cycle
AVA	3.1%
BPA	-19.9%
CHPD	3.3%
IPC	15.2%
NV E	7.6%
NWMT	-2.5%
PACE	9.2%
PACW	0.1%
PGE	8.6%
PSE	12.0%
SCL	-5.7%
SNOPUD	-2.0%
TPWR	18.3%

The % Change from Previous Cycle values reflect the change between the maximum load predicted from the 2020-2021 planning cycle to the maximum load predicted in this 2022-2023 planning cycle. Load projections created this cycle may have new and/or different regulatory requirements factored into the calculations. In some instances, utilities are expecting to see a large change in consumer behavior. These factors and more get taken into consideration during the development of load forecasts.

Changes to the NorthernGrid footprint from the 2020-2021 to the 2022-2023 planning cycle

A comparison of the NorthernGrid 2030 load from the 2020-2021 cycle to the 2032 load in this 2022-2023 cycle yields the main difference that with the addition of NV Energy and withdrawal of Grant County PUD, NorthernGrid is now considered a primarily summer-peaking region rather than a summer/winter seasonal peaking region.

Resources Summary 2022-2032

As stated in the introduction of the Study Scope, there are approximately 39 GW of resources being developed within the NorthernGrid region along with approximately 6 GW of resources being retired.

All future resources are based on member resource planning processes. The Enrolled Parties determine resource additions through the development of their Loads and Resources needed for base case development. In some instances, the Integrated Resource Planning (IRP) requirements needed to meet state mandate may inform the development of the Loads and Resources data. Many of the resource additions presented are based on the existing IRP preferred portfolio which may change during subsequent biennial planning cycles. Members may include conceptual resource additions beyond what is included in their Loads and Resources submittal to more closely align resource needs with goals set forth by public policy requirements.

Figure 7: Proposed Generation Additions and Figure 8: Proposed Resource Retirements the proposed generation changes by type and by geographic area. Appendix A: Generation Changes lists the entire breakdown of resources; the majority of the proposed resources are renewable in nature. The generation plots reflect the area in which the actual generation project is being proposed.

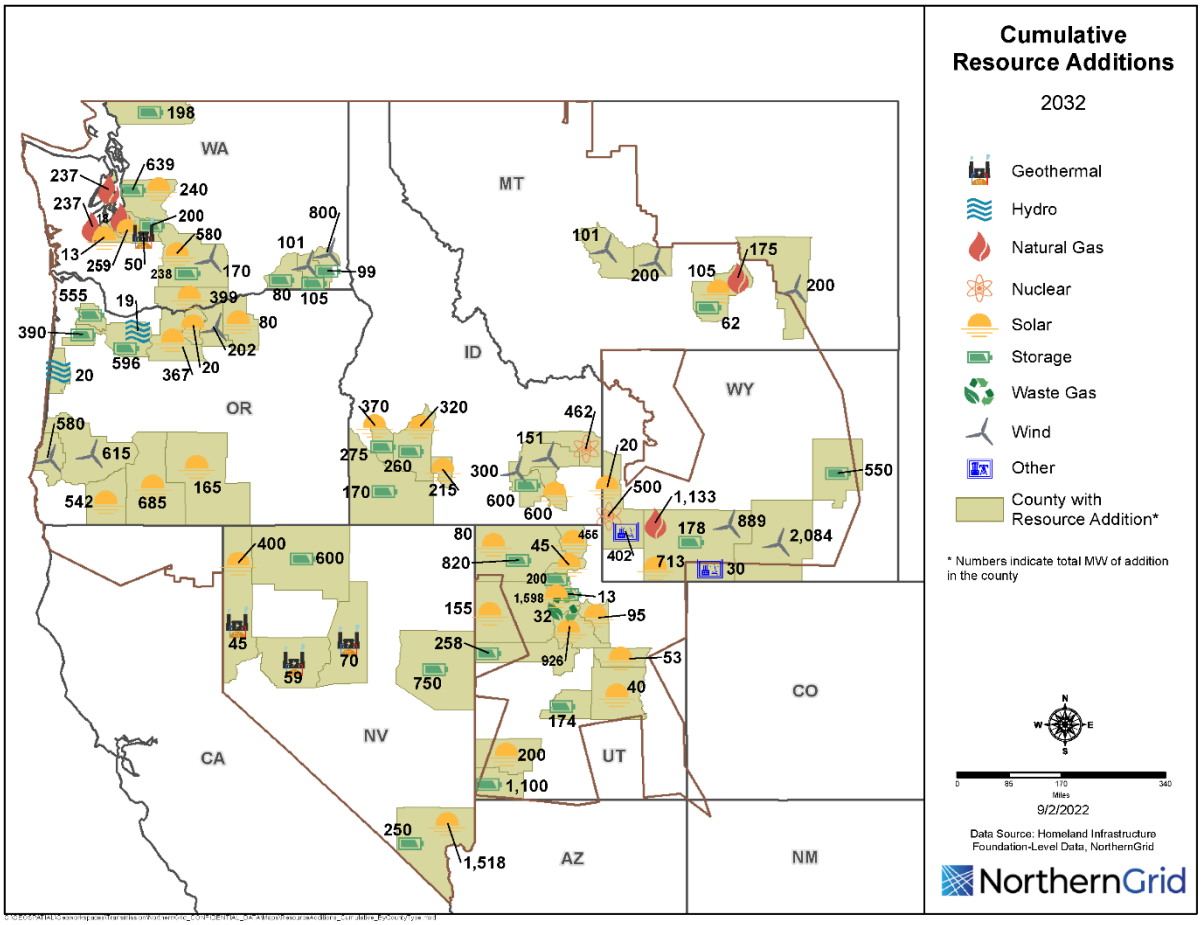

Figure 7: Proposed Generation Additions

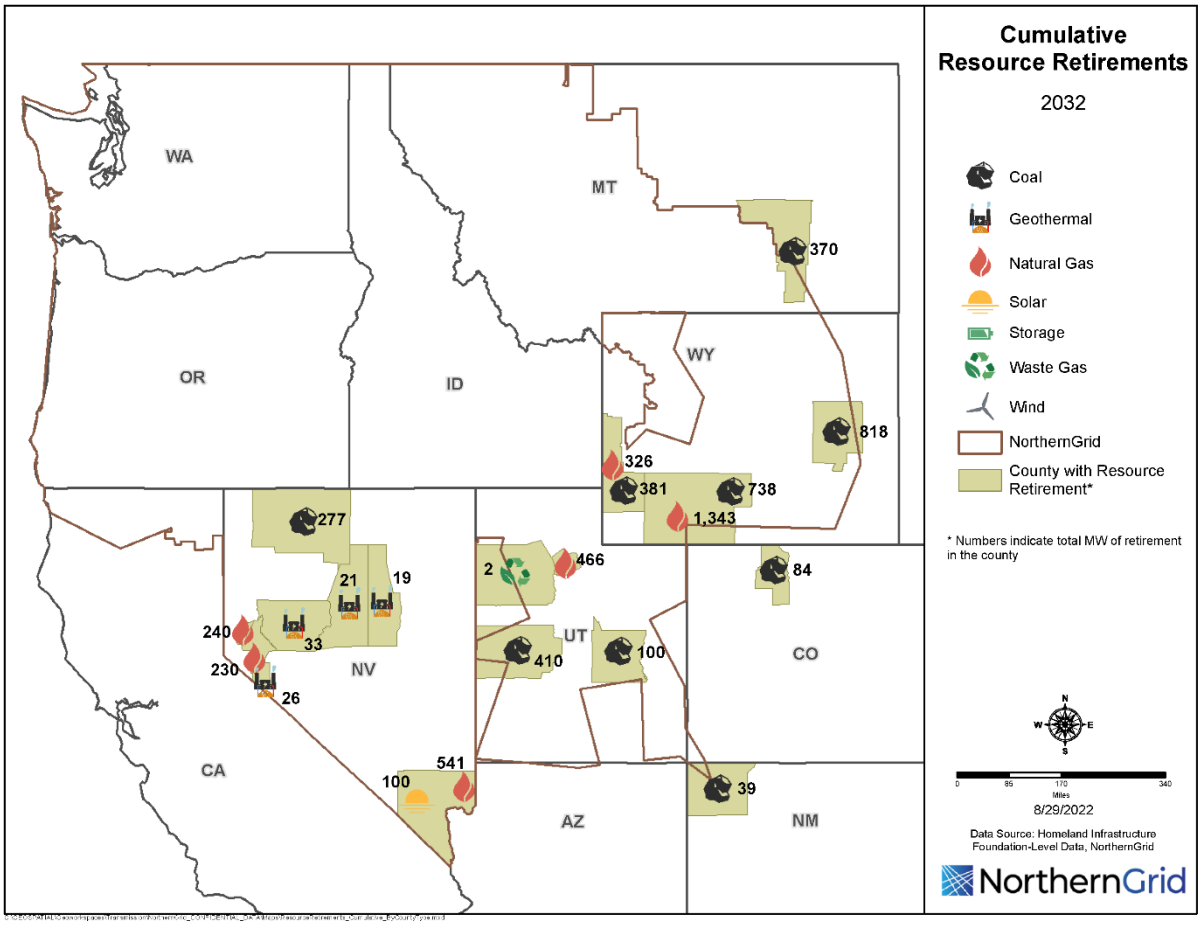

Figure 8: Proposed Resource Retirements

Transmission Service Obligations

Like loads, resources, and public policy, transmission service obligations may drive transmission development. The NorthernGrid members are encouraged to submit all transmission service data that is used in the development of their local transmission plan so that it may be considered during the development of the regional transmission plan. A complete summary of the firm transmission service agreements is provided in Appendix B: Transmission Service.

Regional Transmission Projects

Enrolled Parties as well as Developers submitted the regional projects depicted in Figure 9: Proposed Projects, Enrolled and Non-Incumbent.

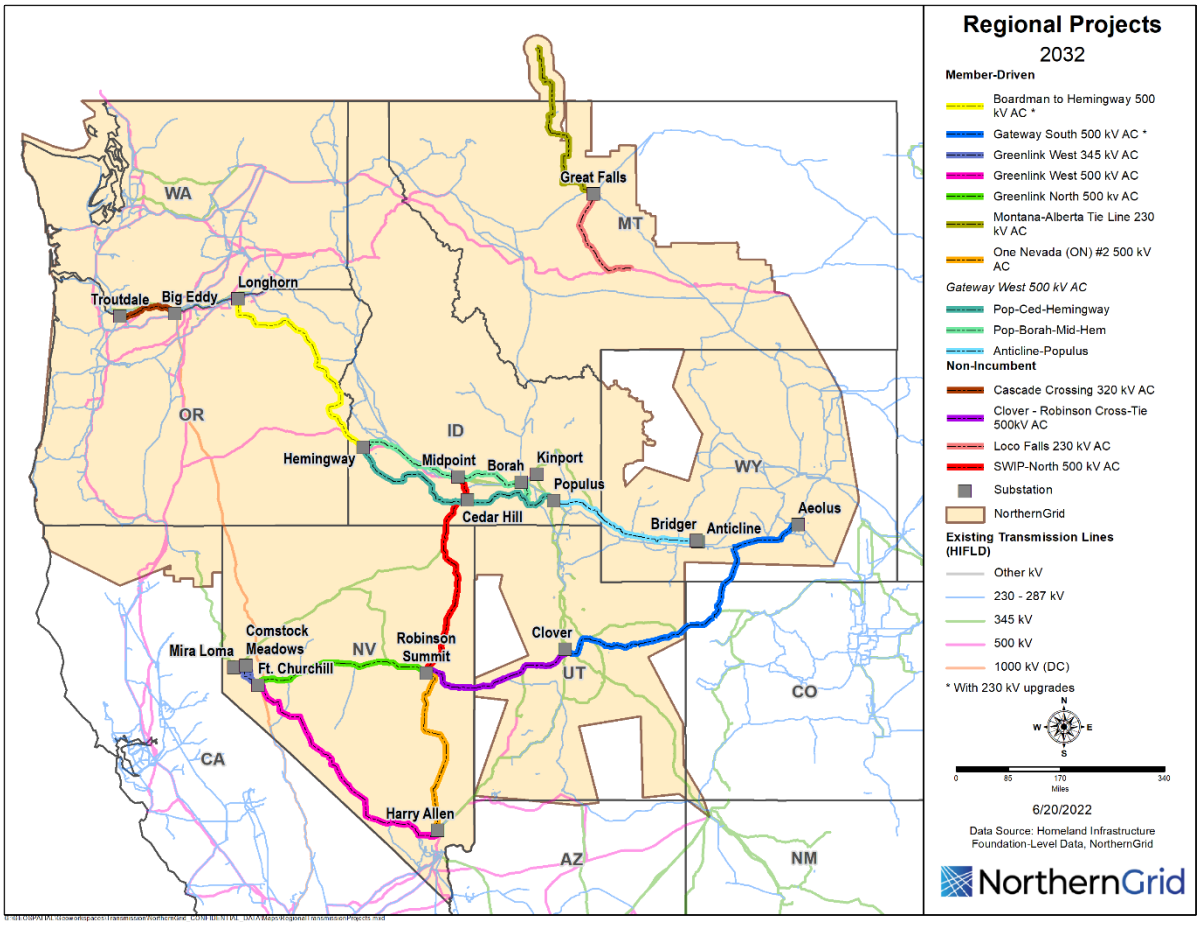

Figure 9: Proposed Projects, Enrolled and Non-Incumbent

Enrolled Party Transmission Projects

The thirteen projects submitted by the Enrolled parties are as follows:

Boardman to Hemingway- Boardman to Hemingway 500 kV line, Hemingway to Bowmont and Bowmont to Hubbard 230 kV lines. This includes two sections of series compensation. The Oregon end of the line was terminated at the Longhorn station, which is near the town of Boardman, Oregon. While the figures do not visually display the 230 kV facilities associated with the B2H project, the 230 kV facilities are included in the model for B2H as they are needed to integrate B2H into Idaho Power's system. The B2H project was selected into the 2020-2021 NorthernGrid Regional Transmission Plan.

Gateway West- A suite of four project segments were evaluated for Gateway West. These are:

Populus-Cedar Hill-Hemingway 500 kV
Populus-Borah-Midpoint-Hemingway 500 kV
Midpoint-Cedar Hills 500 kV
Anticline-Populus 500 kV

Of the Gateway West projects, only the Populus-Cedar Hill-Hemingway and Anticline-Populus 500 kV lines were selected into the 2020-2021 NorthernGrid Regional Transmission Plan.

Gateway South- Aeolus to Clover 500 kV Line. Based on guidance from PacifiCorp, the Windstar-Shirley Basin 230 kV line (part of Gateway West) has the same in-service date as the Aeolus-Clover project for simplicity.
The Gateway South project was selected into the 2020-2021 NorthernGrid Regional Transmission Plan.

One Nevada #2- 500 kV #2 from Harry Allen to Robinson Summit. Also includes upgrades to the 345 kV system.

MATL- MATL proposed a conversion of the MATL to direct current. The rating will increase to a maximum of 500 MW. MATL was not selected into the 2020-2021 Regional Transmission Plan.

Non-Incumbent Transmission Projects

The NorthernGrid regional planning process allows non-incumbent and merchant transmission developers to submit projects for analysis. Several non-incumbent or merchant transmission projects were received during the submission period. They are further classified into regional and interregional transmission projects based on whether the project terminals are within the region or interconnect between regions, i.e. interregional. For the 2022-2023 planning cycle, none of the submitted non-incumbent projects were deemed interregional.

Cascade Renewable Transmission System- PowerBridge is proposing to construct the Cascade Renewable Transmission System Project. This Project is an 80-mile, 1,100 MW transfer capacity +/- 400 kV HVDC underground cable (95 percent installed underwater) interconnecting with the grid through two +/- 1100 MW AC/DC converter stations interconnecting with the AC grid at Big Eddy and Harborton substations. There are no proposed generation resources associated with the transmission line.

Loco Falls Greenline- Absaroka is proposing a merchant transmission project connecting Great Falls 230 kV substation to the Colstrip 500 kV Transmission System. The project consists of two 230 kV transmission circuits and a new Loco Mountain Substation with 230 to 500 kV transformation. There are no proposed generation resources associated with the transmission line.

Cross-Tie Transmission Project- TransCanyon LLC is proposing the Cross-Tie Project, a 1,500 MW, 500 kV single circuit HVAC transmission project that will be constructed between central Utah and east-central Nevada. The project connects PacifiCorp's planned 500-kV Clover substation with NV Energy's existing 500 kV Robinson Summit substation; both substations reside in the NorthernGrid footprint.

Southwest Intertie Project North (SWIP)- Great Basin Transmission, LLC ("GBT"), an affiliate of LS Power, submitted the 275-mile northern portion of the Southwest Intertie Project (SWIP) to the California ISO and NorthernGrid. The SWIP-North Project connects the Midpoint 500 kV substation to the Robinson Summit 500 kV substation with a 500-kV single circuit AC transmission line. With the addition of NV Energy into the NorthernGrid footprint, the SWIP project is now fully within the NorthernGrid footprint. The SWIP is expected to have a bi-directional WECC-approved path rating of approximately 2000 MW.

SWIP North has proposed 1,850 MW of new wind generation resources located in Idaho as a result of the transmission line. Appendix XXX provides a table of proposed generation associated with the SWIP North project. The interregional evaluation plan is located at https://www.northerngrid.net/resources/swip-north-itp-evaluation-plan.

Alternative Projects

The Enrolled Parties Planning Committee did not identify any Alternative Projects: no Alternative Projects were carried over from the 2020-2021 cycle and no new Alternative Projects were submitted at the beginning off the 2022-2023 planning cycle.

Public Policy Requirements Summary

Approach

NorthernGrid evaluated regional transmission needs driven by Public Policy Requirements by first identifying a list of enacted public policies that impact resource and local transmission plans in the NorthernGrid planning region. This data was procured through the NorthernGrid data submission process and polling of members to inquire about enacted policies that are driving their regional transmission needs. NorthernGrid identified enacted public policies in the states within the NorthernGrid region.

Key Assumptions

- Enacted policies include local, state, and federal policies for the NorthernGrid member service area.
- Analysis focuses on enacted policies that address the type of energy portfolio to be delivered. Focus is on staged policies through 2032.
- Non-enacted policies are not included in the analysis.
- Policies pertaining to energy purchases or corporate goals are not included.
- WECC will provide an initial production cost model, but it is the responsibility of the NorthernGrid members to verify.
- Each member's Integrated Resource Planning process incorporates public policy and the NorthernGrid members evaluate their IRP to determine the data that is submitted.

Key Observations

- There are enacted policies in six of the eight states, including the Renewable Portfolio Standards (RPS) that exist in Washington, California, Oregon, Montana, Nevada, and Utah.
- There are no identified public policy requirements that are driving regional transmission needs in Wyoming and Idaho.

Case Analysis

Methodology and Assumptions Overview

This methodology defines the analysis objectives, conditions (NorthernGrid transmission system path stressing, power flow direction, imports/exports) necessary to assess the ability of the

transmission system to support the 2032 loads and resource, types of analysis, performance criteria, paths to monitor, case checking and tuning (reactive devices, phase shifting transformers) and contingencies. This process is designed to meet Order 890 and 1000 planning requirements and is not intended to evaluate market efficiencies.

Analysis Objectives

Develop the NorthernGrid Regional Transmission Plan by assessing the existing system and committed projects along with combinations of planned and proposed transmission and resource changes for their ability to reliably serve the variations in 2032 loads and resource generation dispatch conditions.

Performance Criteria

The power flow simulations will be monitored for compliance with the North American Electric Reliability Corporation (NERC) Reliability Standard TPL-001-4 and WECC Criterion TPL-001-WECC-CRT-3.2 and TOP specific standards. The reliability standard requires transmission facilities to operate within normal and emergency limits. Then the criterion further defines the default base planning criteria for steady-state, post-contingency, dip, and recovery voltage along with oscillation dampening. The WECC criteria also allow for transmission planners to apply a more or less stringent criterion for their own system provided they gain agreement or allowance, respectively as described in the criterion. Additional NorthernGrid Member voltage criterion are listed in Appendix XXXX.

Base Case Conditions

SUM: Summer Peak loading conditions. The 2032 Heavy Summer WECC base case will be modified to have high southbound flows on the COI and PDCI, high eastbound Northwest to Idaho flows, and southbound MATL flows.

WIN: Winter Peak loading conditions. The 2032 Heavy Winter WECC base case will be modified to have typical seasonal dispatch for the generation resources, and northbound MATL flows.

CAL-X: California export case. The 2031 Light Spring case will be tuned to have high northbound flows on the COI and PDCI as well as 2032 loading for the NorthernGrid footprint.

WY: High Wyoming wind export case. This case is intended to be an output hour from the Anchor Data Set that has been modified to include all Regional projects. The hour that has the heaviest westbound flows coming out of Wyoming will be selected and transformed into a power flow base case.

Evaluation of Regional Transmission Project Combinations

To determine whether transmission needs within the NorthernGrid may be satisfied by regional transmission projects, NorthernGrid evaluates the proposed regional and interregional (if any) transmission projects independently and in regional combinations. The regional combinations are determined by the MPC based on their knowledge of the NorthernGrid Region. The regional

combinations are shown in Appendix C: Full list of the Regional Combinations.

Impacts on Neighboring Regions

As stated above, the power flow cases represent the entire western interconnection. Therefore, during the power flow analysis NorthernGrid will monitor for NERC standard and WECC criterion violations occurring in the neighboring regions. Upon identification of a violation in a neighboring region, NorthernGrid will coordinate with the region to confirm validity and whether the violation is due to an existing condition. Mitigation plans for a violation will be determined in accordance with the NorthernGrid Member tariffs and planning agreement.

Cost Allocation

Introduction

Regional project cost allocation is one of the FERC Order 1000 transmission planning reforms. The NorthernGrid FERC jurisdictional entities, the Enrolled Parties, describe the requirements for a project in their OATT Attachment K. The process begins with the sponsor/developer becoming qualified. The following developers submitted information and were determined to be qualified.

Qualified Developers

PowerBridge submitted developer qualification information which was reviewed by the Cost Allocation Task Force resulting in the approval of PowerBridge as a Qualified Developer for this planning cycle. PowerBridge submitted the Cascade Renewable project.

Great Basin Transmission submitted developer qualification information which was reviewed by the Cost Allocation Task Force resulting in the approval of Great Basin Transmission as a Qualified Developer for this planning cycle. Great Basin Transmission submitted the SWIP North project.

TransCanyon submitted developer qualification information which was reviewed by the Cost Allocation Task Force resulting in the approval of TransCanyon as a Qualified Developer for this planning cycle. TransCanyon submitted the Cross-Tie project.

Benefits and Beneficiary Analysis

If the Sponsored Project is selected into the plan as meeting Enrolled Party or Parties need, the project benefits and beneficiaries will be determined. The cost allocation metrics and analysis process is described in each Enrolled Party's OATT Attachment K – Regional Planning Process.

Appendix A: Generation Changes

Table 4: Generation Additions and Retirements by Utility

Utility	Generation Addition (MW)	Generation Retirement (MW)
AVA	0	0
BPA	524	0
CHPD	0	0
IPC	2667	708
NV E	3692	1486
NWMT	343	0
PACE	10529	3329
PACW	7682	776
PGE	1001	0
PSE	4090	370
SCL	0	0
SNOPUD	0	0
TPWR	0	0
Total	30527	6669

Table 5: Proposed Generation Additions by Type

Utility	BPA	IPC	NV E	NWMT	PACE	PACW	PGE	PSE	Total
AB - Ag Byproducts	0	0	0	0	0	0	0	0	0
BIT - Bituminous Coal	0	0	0	0	0	0	0	0	0
DFO - Distillate Fuel Oil	0	0	0	0	0	0	0	0	0
GEO - Geothermal	0	0	174	0	0	0	0	50	224
LFG - Landfill Gas	0	0	0	0	0	0	0	0	0
MSW - Muni Solid Waste	0	0	0	0	0	0	0	0	0
MWH - Energy Storage	0	705	1600	62	3115	2391	450	1037	9359
NG - Natural Gas	0	357	0	175	0	776	0	492	1800
NUC - Nuclear	0	0	0	0	962	0	0	0	962
OBG - Other Biomass Gas	0	0	0	0	0	0	0	0	0
OTH - Other	0	0	0	0	402	30	0	0	432
SUB - Subbituminous Coal	0	0	0	0	0	0	0	0	0
SUN - Solar	302	905	1918	105	3694	3120	330	911	11286
WAT - Water*	20	0	0	0	0	0	19	0	39
WC - Waste/Other Coal	0	0	0	0	0	0	0	0	0
WDS - Wood/Waste Solids	0	0	0	0	0	0	0	0	0
WH - Waste Heat	0	0	0	0	32	0	0	0	32
WND - Wind	202	700	0	0	2324	1365	202	1600	6393
Total	524	2667	3692	343	10529	7682	1001	4090	30527
	*Includes Conventional, Pumped, and Wave/Kinetic								

Table 6: Proposed Generation Retirements by Type

Utility	Fuel	IPC	NV E	PACE	PACW	PSE	Total
AB	AB - Ag Byproducts	0	0	0	0	0	0
BIT	BIT - Bituminous Coal	0	277	633	0	0	910
DFO	DFO - Distillate Fuel Oil	0	0	0	0	0	0
GEO	GEO - Geothermal	0	98	0	0	0	98
LFG	LFG - Landfill Gas	0	0	3	0	0	3
MSW	MSW - Muni Solid Waste	0	0	0	0	0	0
MWH	MWH - Energy Storage	0	0	0	0	0	0
NG	NG - Natural Gas	0	1011	1467	776	0	3253
NUC	NUC - Nuclear	0	0	0	0	0	0
OBG	OBG - Other Biomass Gas	0	0	0	0	0	0
OTH	OTH - Other	0	0	0	0	0	0
SOL	*SOL - See SUN*	0	0	0	0	0	0
SUB	SUB - Subbituminous Coal	708	0	1228	0	370	2305
SUN	SUN - Solar	0	100	0	0	0	100
WAT	WAT - Water*	0	0	0	0	0	0
WAVE	*WAVE - See WAT*	0	0	0	0	0	0
WC	WC - Waste/Other Coal	0	0	0	0	0	0
WDS	WDS - Wood/Waste Solids	0	0	0	0	0	0
WH	WH - Waste Heat	0	0	0	0	0	0
WND	WND - Wind	0	0	0	0	0	0
Total	Total	708	1486	3329	776	370	6669

Appendix B: Transmission Service Reservations

Org	MW	Start Date	End Date	Point of Receipt	Point of Delivery	Does new service require upgrades?
IPC	500	01/01/26	-	Northwest	IPCO	Yes
IPC	200	01/01/26	-	Northwest	IPCO	Yes
IPC	250	01/01/26		Northwest	BPA SEID	Yes
IPC	550	01/01/26		Northwest	BPA SEID	Yes
NV E	14	01/01/22	06/01/26	MD230	Southsys	
NV E	10	01/01/22	01/01/27	Frontier Switching Station	McCullough 500kV	
NV E	10	01/01/22	01/01/27	Alpine Switching Station	Crystal 500kV	
NV E	98	02/01/22	02/01/62	MD230	Northsys	yes
NV E	45	02/01/22	02/01/62	REDB345	Northsys	yes
NV E	100	04/01/22	04/01/24	M345	Mead 230kV	
NV E	16	08/01/22	08/01/27	120 kV Brady Power Plant Substation	Crystal 500kV	
NV E	24	09/01/22	09/01/27	Alpine Switching Station	Crystal 500kV	
NV E	25	12/01/22	12/01/27	Bannock 120 kV Substation	Crystal 500kV	
NV E	2	12/01/22	12/01/27	Alpine Switching Station	Crystal 500kV	
NV E	24	12/01/22	12/01/27	120 kV Sierra Steamboat Substation	Crystal 500kV	
NV E	6	12/01/22	12/01/27	Oreana-Winnemucca 63kV Line	McCullough 500kV	
NV E	3	12/01/22	01/01/25	Line #214 24.9 kV	McCullough 500kV	
NV E	2	12/01/22	01/01/25	Oreana-Winnemucca 63 kV Line	McCullough 500kV	
NV E	13	01/01/23	01/01/28	Silverpeak	Gon.IPP	
NV E	14	02/01/23	02/01/28	120 kV Sierra Steamboat Substation	Crystal 500kV	
NV E	25	12/01/23	12/01/28	Nevada-Utah border 345 kV	Navajo 500kV	

NV E	15	01/01/24	01/01/29	120 kV Bannock Switching Station	Summit 120kV	
NV E	20	06/01/24	06/01/29	Winnemucca 120 kV Substation	Gonder.IPP	
NV E	91	10/01/24	06/01/47	MD230	Southsys	
NV E	25	01/01/25	01/01/30	120 kV Bannock Switching Station	Crystal 500kV	
NV E	15	06/01/25	06/01/30	Bannock Switching Station	Gonder.IPP	
NV E	2	10/01/25	10/01/30	M345	Summit 120kV	
NV E	2	10/01/25	10/01/30	M345	Summit	
NV E	24	01/01/26	01/01/31	Tap on the #643 line	Gonder.IPP	
NWE	150 import	01/01/24	01/01/32	MATL.NWMT	NWMT.SYSTEM	N
TAC	1	10/01/13	10/01/28	BPAT.TPU	TPWR.SYS	N
TAC	6	10/01/13	10/01/28	BPAT.TPU	TPWR.SYS	N
TAC	170	10/01/14	10/01/28	BPAT.TPU	PENLIGHT	N
TAC	64	10/01/14	10/01/28	BPAT.TPU	LAKEVIEW	N
TAC	14	10/01/18	10/01/28	BPAT.TPU	MILTON	N
TAC	11	10/01/18	10/01/28	BPAT.TPU	STEILACOOM	N
TAC	126	10/01/18	10/01/28	BPAT.TPU	ELMHURST	N
TAC	36	10/01/18	10/01/28	BPAT.TPU	OHOP	N
TAC	1363	11/01/14	03/01/25	BPAT.TPU	TPWR.SYS	N
TAC	560	12/01/15	12/01/55	COWLITZHYDRO	MOSSYROCK	N
TAC	70	12/16/93	12/16/33	COWLITZHYDRO	MOSSYROCK	N

Appendix C: Full list of the Regional Combinations (Long names in Table 7)

RC Name	CCX	B2H	GWW D.3	GWW E1	GWW E2	GWW D.1	GWS F	ON#2	GNLK N-W	Cross-tie (link to GWS)	SWIP-N	Loco Falls	MATL
BLMP – Baseline Member Projects		x	x	x	x	x		x	x				x
BLNP – Baseline No Projects													
RC1	x												
RC2		x											
RC3			x										
RC4					x								
RC5						x							
RC6								x					
RC7									x				
RC8										x			
RC9											x		
RC10													x
RC11 ("Bugatti")	x	x	x	x	x	x		x	x	x	x	x	x
RC12		x	x		x	x							
RC13	x	x	x		x	x							
RC14		x	x		x	x					x		
RC15	x	x	x		x	x					x		
RC16		x	x	x		x							
RC17		x	x		x	x							x
RC18								x	x	x	x		
RC19									x	x	x		
RC20								x		x	x		
RC21								x	x		x		
RC22								x	x	x			
RC23									x	x			
RC24									x		x		
RC25						x		x	x	x	x		
RC26								x	x				
RC27						x			x	x	x		
RC28						x		x		x	x		
RC29						x		x	x		x		
RC30						x		x	x	x			
RC31						x			x	x			
RC32						x			x		x		
RC33						x		x	x				
RC34	x	x											
RC35												x	x

Table 7: Long Names for Regional Projects

Table Label	Long Name
B2H	Boardman to Hemingway
GWS F	Gateway South
Greenlink West	Greenlink N-W
Greenlink North	Greenlink N-W
MATL	MATL
ON#2	One Nevada (ON) #2
GWW D.3	Gateway West, D3
GWW E.1	Gateway West, E1
GWW E.2	Gateway West, E2
GWW D.1	Gateway West, D1
Cross-tie	Cross-tie
SWIP-N	SWIP-North
Loco Falls	Local Falls
CCX	Cascade Renewable Transmission System