Overview

Regional Transmission Plan

Economic Study Scope: Pumped Storage Hydro

Economic Study Scope: Offshore Wind
0.6% Average Annualized load Growth 2026-2032

12 Regional transmission Projects

30,527 MW proposed Generation Addition

6,669 MW proposed Generation Retirement

NorthernGrid

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<tr>
<th>Company</th>
<th>MW Proposed</th>
<th>MW Retirement</th>
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<tbody>
<tr>
<td>AVA</td>
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<tr>
<td>BPA</td>
<td>524 MW</td>
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<tr>
<td>IPC</td>
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<td>PACW</td>
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Total MW Proposed: 30,527 MW
Total MW Retirement: 6,669 MW
Regional Projects
Regional Transmission Process

- Work together to create a Regional Plan that “exceeds” a simple rollup of all the Local Area Plans

**Study Scope**
- Gather Data
- Develop Study Plan
- Economic Study requests submittal*
- Cost Allocation submittal
- Interregional coordination

**Analysis**
- Perform Analysis
- Updated data in Q5
- Economic Study submittal/analysis*
- Cost Allocation analysis
- Interregional coordination

**Report**
- Finalize Report
- Finalize Cost Allocation

A Regional Transmission Plan is not a Construction Plan

*Economic Study Requests occur annually
Study Approach

- 4 “starting” base cases
- Toggle regional projects in and out
- Run reliability analysis on the combinations
- Evaluate output as basis for Regional Planning
SUM, Heavy Summer 2032
- Southbound Northwest to California
- Eastbound Northwest to Idaho
- Southbound MATL

WIN, Heavy Winter 2032
- Typical seasonal dispatch
- Northbound MATL

CAL-X, Light Spring 2031
- Northbound California to Northwest
- 2032 loading

WY: High Wyoming wind export case
- Export hour from Production Cost Modeling
Economic Study Request: Pumped Storage Hydro

±900 MW
500 kV Aeolus Substation
Pumped Storage Analysis Approach

- Production Cost Modeling
- 2032 Anchor Data Set
- NorthernGrid Transmission additions
Offshore Wind: Power Flow

2032 Heavy Summer base case “Stock”
Account for NorthernGrid Data submittals
Model in Offshore Wind at maximum output
Perform reliability analysis

“Transmission Solution”
Existing Infrastructure Improvements

- New high-capacity 230 kV line from the Coos Bay area to Lane
- New high-capacity 230 kV line from the Coos Bay area to Dixonville
- Substation work at Lane, Dixonville, new telecom
- Dynamic reactive devices throughout
- Upgrade the 230 kV system in the Eugene area
- Upgrade Dixonville transformation and line
Initial reliability findings, “N-0”
500 kV Upgrades Needed
- Fairview 500 kV substation
- Wendson 500 kV substation
- Dixonville 500 kV substation upgrades
- Lane 500 kV substation upgrades
- Alvey 500 kV substation upgrades
- 49 mile 500 kV line from Fairview to Dixonville
- 41 mile 500 kV line from Wendson to Lane
- 63 mile 500 kV line from Fairview to Wendson
- 14-mile 500 kV line from Lane to Alvey
- Series compensation in Fairview-Wendson 500 kV line
- Fairview 500/230 kV transformer
- Wendson 500/230 transformer
Reliability Findings

No Reliability violations, N-0 OR N-1
Offshore Wind: Production Cost

1. Anchor Data Set
   - Account for NorthernGrid Data Submittals
   - Run Production Cost, establish "baseline"
   - Add in offshore wind and “Transmission Solution”
   - Run Production Cost, establish changes
Fairview Cut Plane

- Total MW
- Time (hours)

- FV PF 230
- FV PF 500

Northern Grid
Thank you!

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https://www.Northerngrid.net