

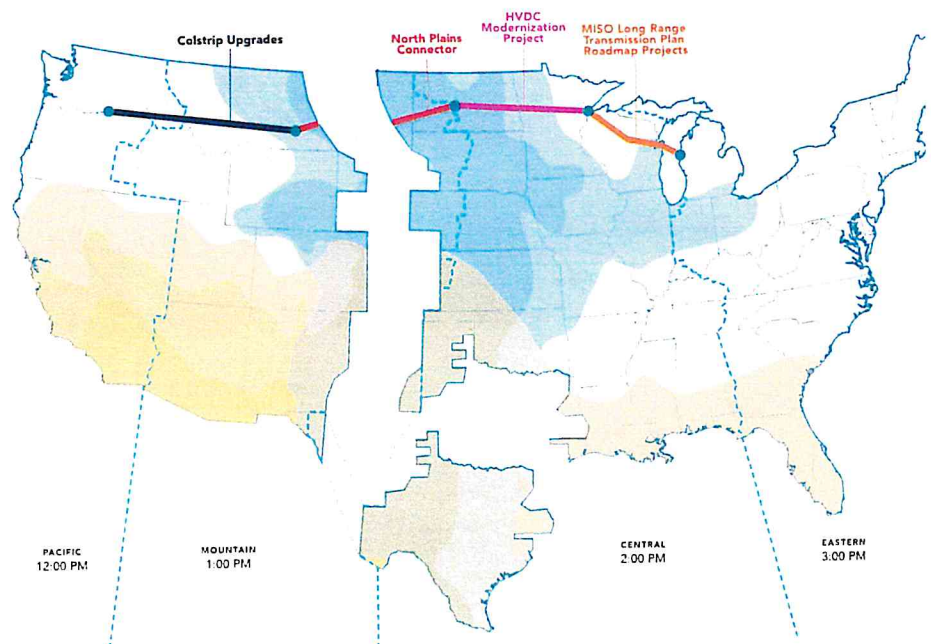
# GREAT LAKES – PACIFIC POWER INITIATIVE



THE GREAT LAKES – PACIFIC POWER INITIATIVE IS AN AMBITIOUS, MULTI-PARTY TRANSMISSION PROJECT THAT WILL CONNECT THE UPPER MIDWEST/GREAT LAKES REGION WITH THE PACIFIC NORTHWEST.

## The Great Lakes – Pacific Power Initiative

- 1 Span all four time zones in the US, from Michigan to Oregon
- 2 Bridge the Eastern and Western Interconnections with key energy drop off locations to optimize system flexibility
- 3 Connect the robust wind regimes and other energy resources of the Upper Midwest to the hydro, solar and wind of the Pacific Northwest
- 4 Combine high voltage alternating current (HVAC) lines and fully controllable voltage source converter high voltage direct current (HVDC) segments



## Strategic Transmission for Efficiency and Reliability

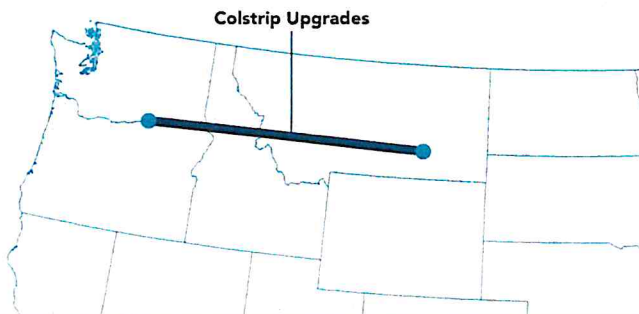
The best way to take full advantage of diverse generation types and distinct regional generation profiles is a robust grid. Sharing baseload and intermittent generation resources across thousands of miles via HVAC and HVDC transmission lines will allow full optimization of these diverse resources.

Connecting geographies also enhances grid resiliency. Severe weather will be a key driver of energy supply volatility in the future. Extreme weather events impact areas that span hundreds – but not thousands – of miles. Connecting large electric systems will dramatically enhance the ability of each system to reliably serve load in the face of these weather events and will help grid operators to manage day-to-day wind and solar variability. New carbon capture and storage (CCS) resources will have the ability to reach markets east and west.

## Transmission Planning Underway

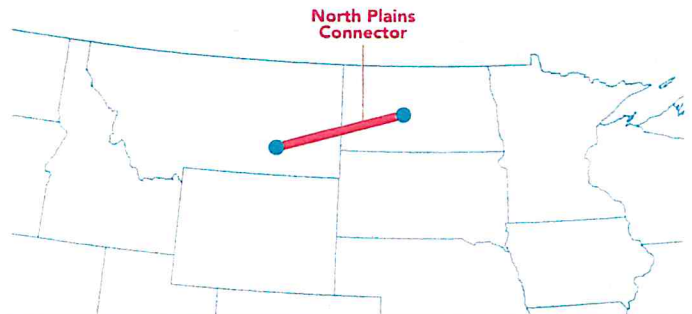
While ambitious, the Great Lakes-Pacific Power Initiative is within reach and can be completed in the next decade. Significant portions of the rights-of-way are either in place or currently being acquired. All of the segments make sense on a stand-alone basis such that sequencing the segments is not critical to realizing benefits but the combined benefit of the link is even more valuable from energy diversity, reliability, and value optimization perspectives. Additionally, the Great Lakes - Pacific Power Initiative provides optionality in terms of generation sources likely to grow over the next 50 years, including CCS, solar and wind generation.

## Project Descriptions



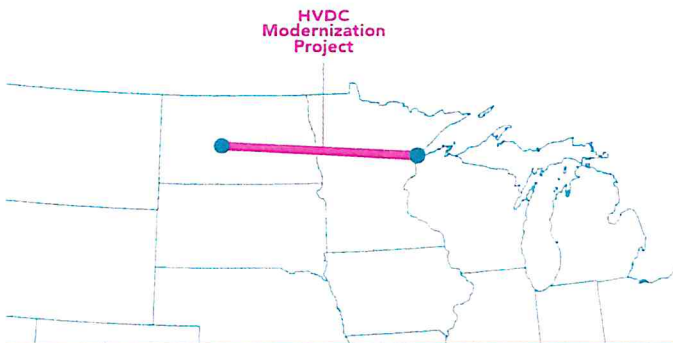
### Colstrip Upgrades

Colstrip transmission assets in Montana and Washington will be utilized along with upgrades currently under study to improve capacity from Montana to points west.



### North Plains Connector

A 3000 MW HVDC project, under development by Grid United and ALLETE, will bridge the gap between the eastern and western interconnections, linking Colstrip in Montana to central North Dakota.



### HVDC Modernization Project

Minnesota Power is upgrading its existing 465 mile HVDC system from ND to MN to expand capability from 550 MW to 900 MW. Future opportunity to expand further is being investigated.



### MISO Long Range Transmission Plan Roadmap Projects

MISO has identified a combination of transmission upgrades and new projects that may provide value.