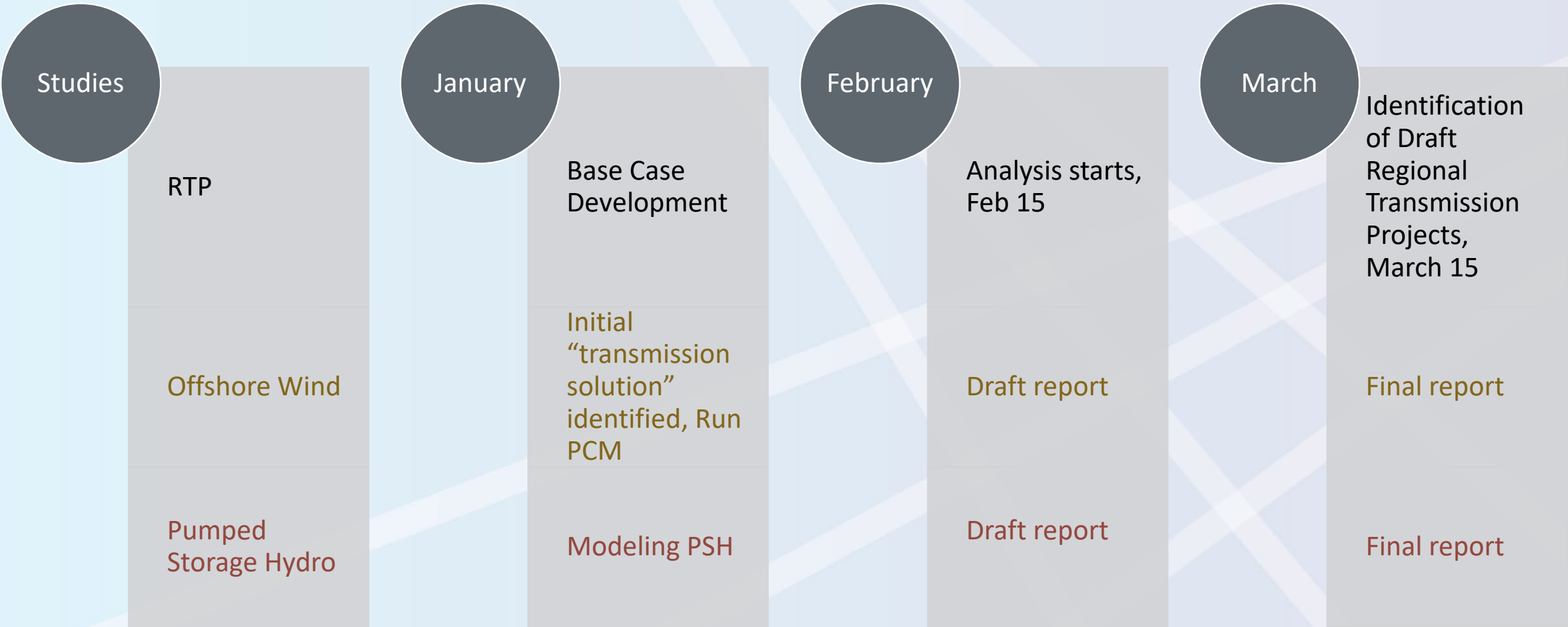


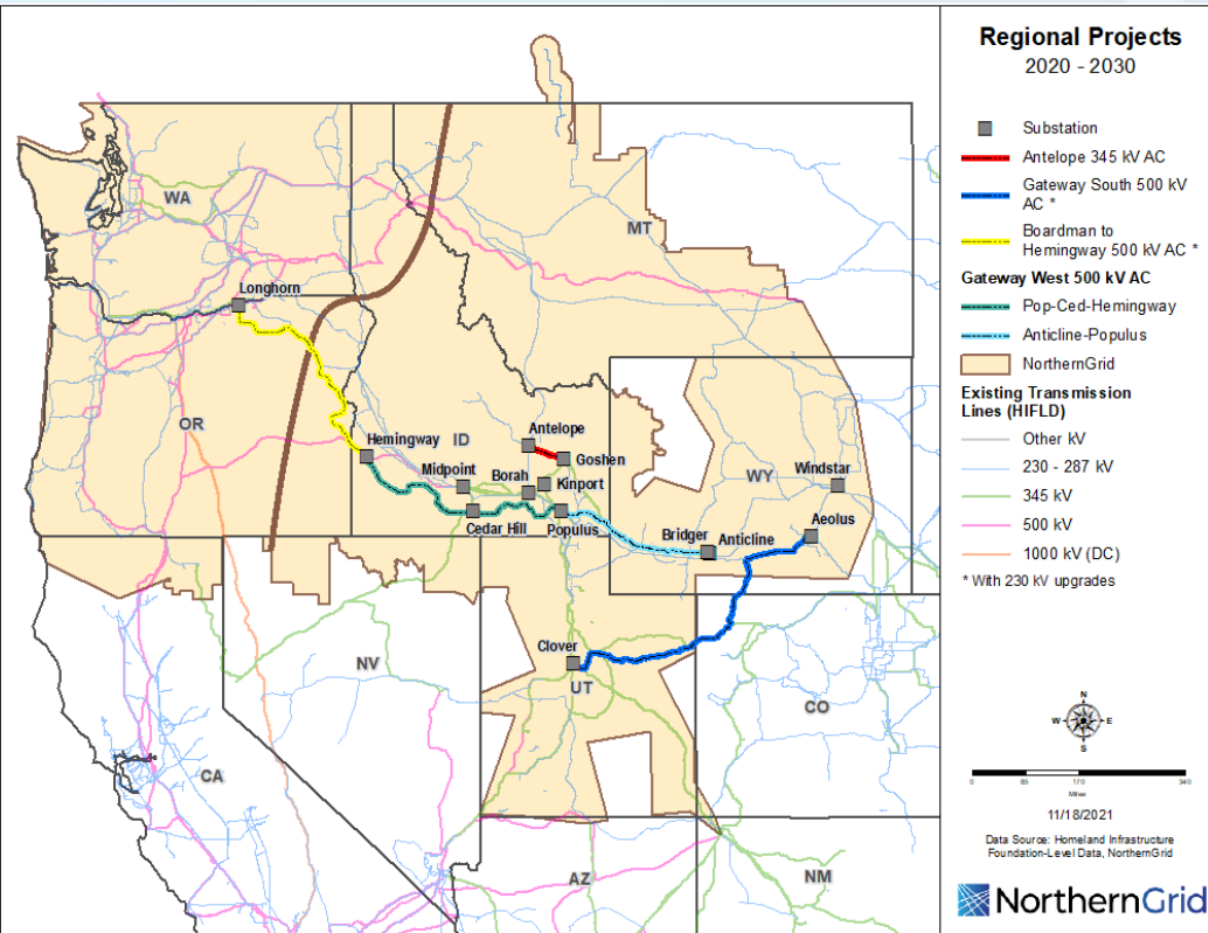
The image features a blue gradient background with a white grid pattern of intersecting diagonal lines. The text 'NorthernGrid' is prominently displayed in a large, white, sans-serif font on the left side. Below it, 'EPSC Update, Jan 2023' is written in a smaller, white, sans-serif font.

NorthernGrid

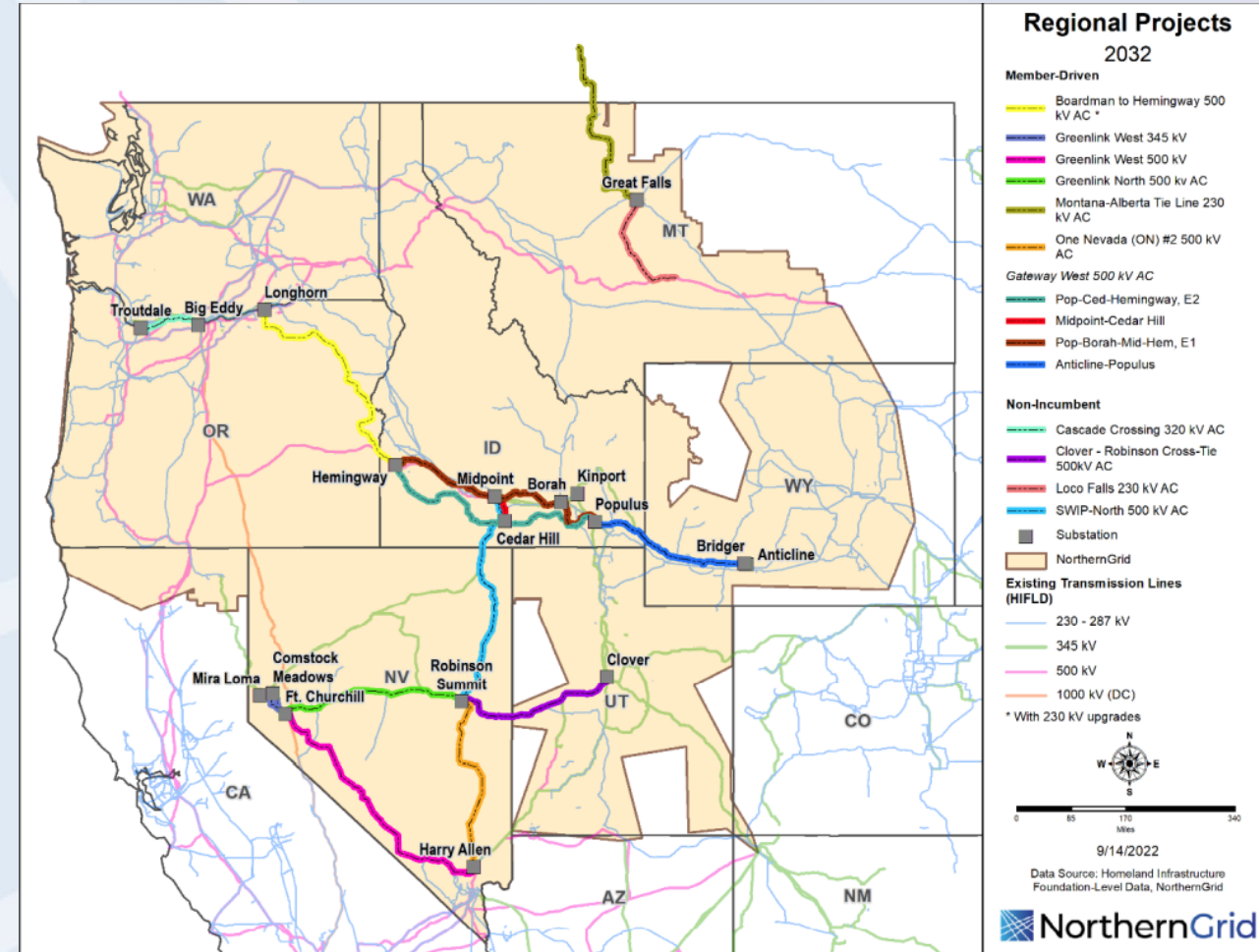
EPSC Update, Jan 2023



What has changed from the last cycle?

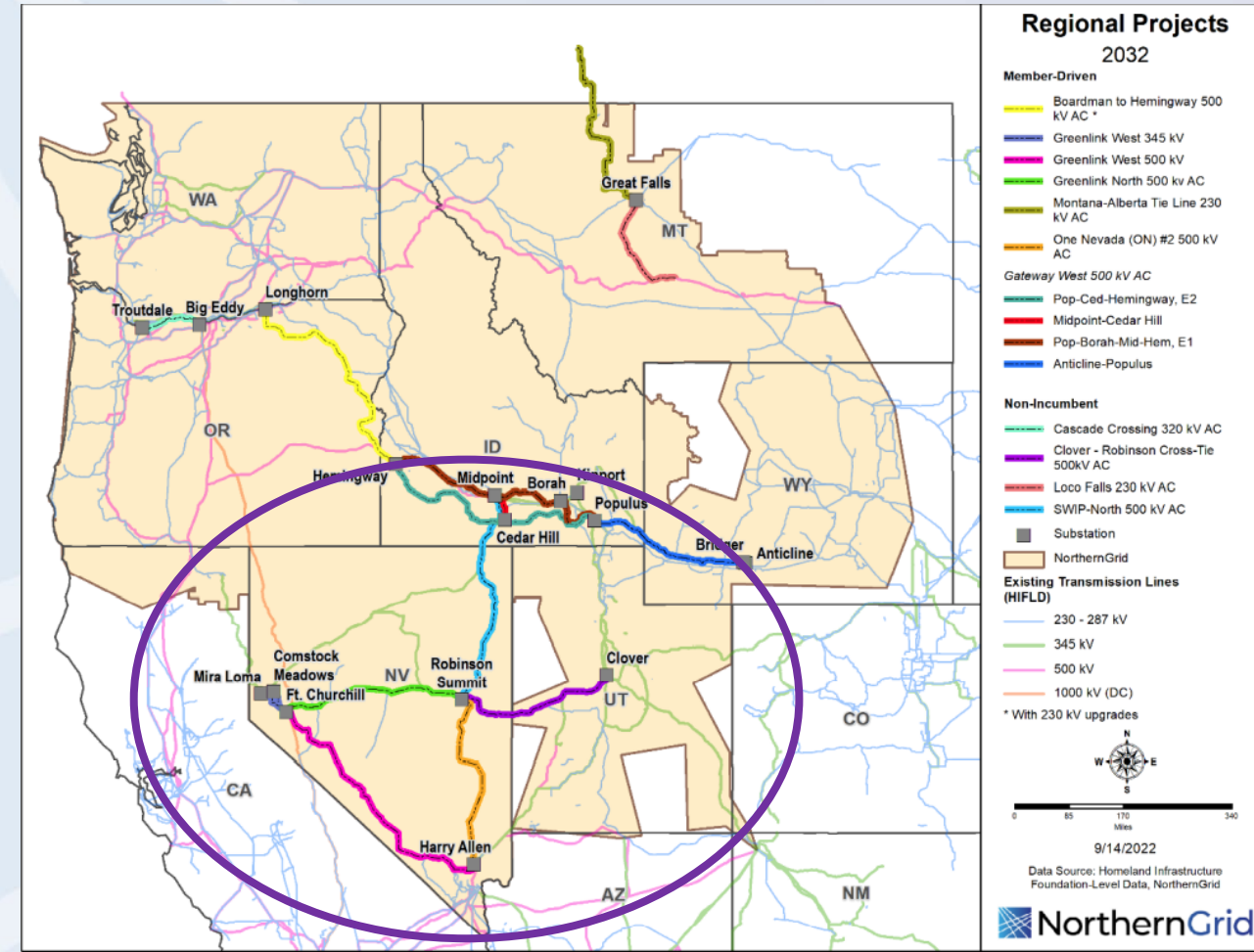
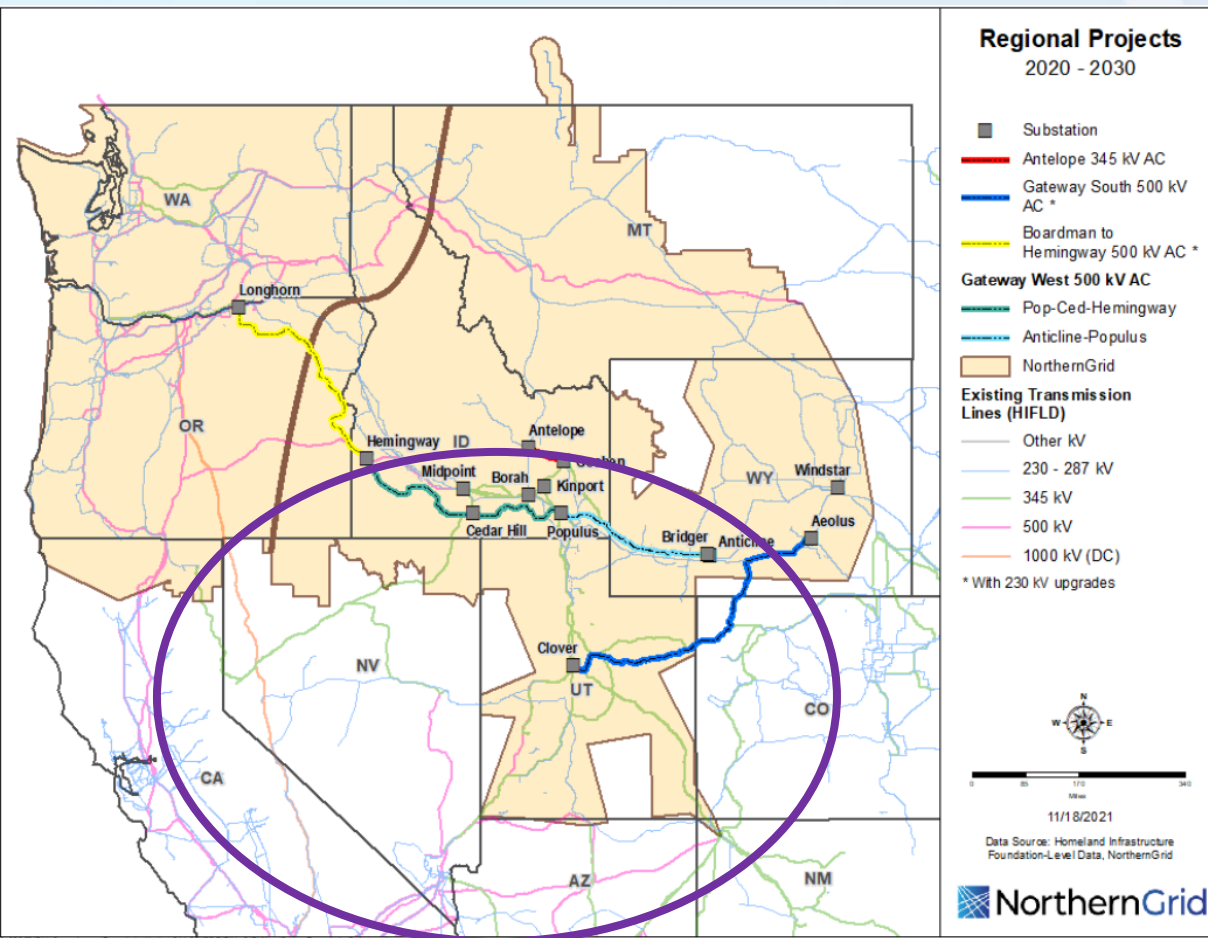


Final 2030 Regional Transmission Plan



Projects under consideration for 2032 Regional Transmission Plan

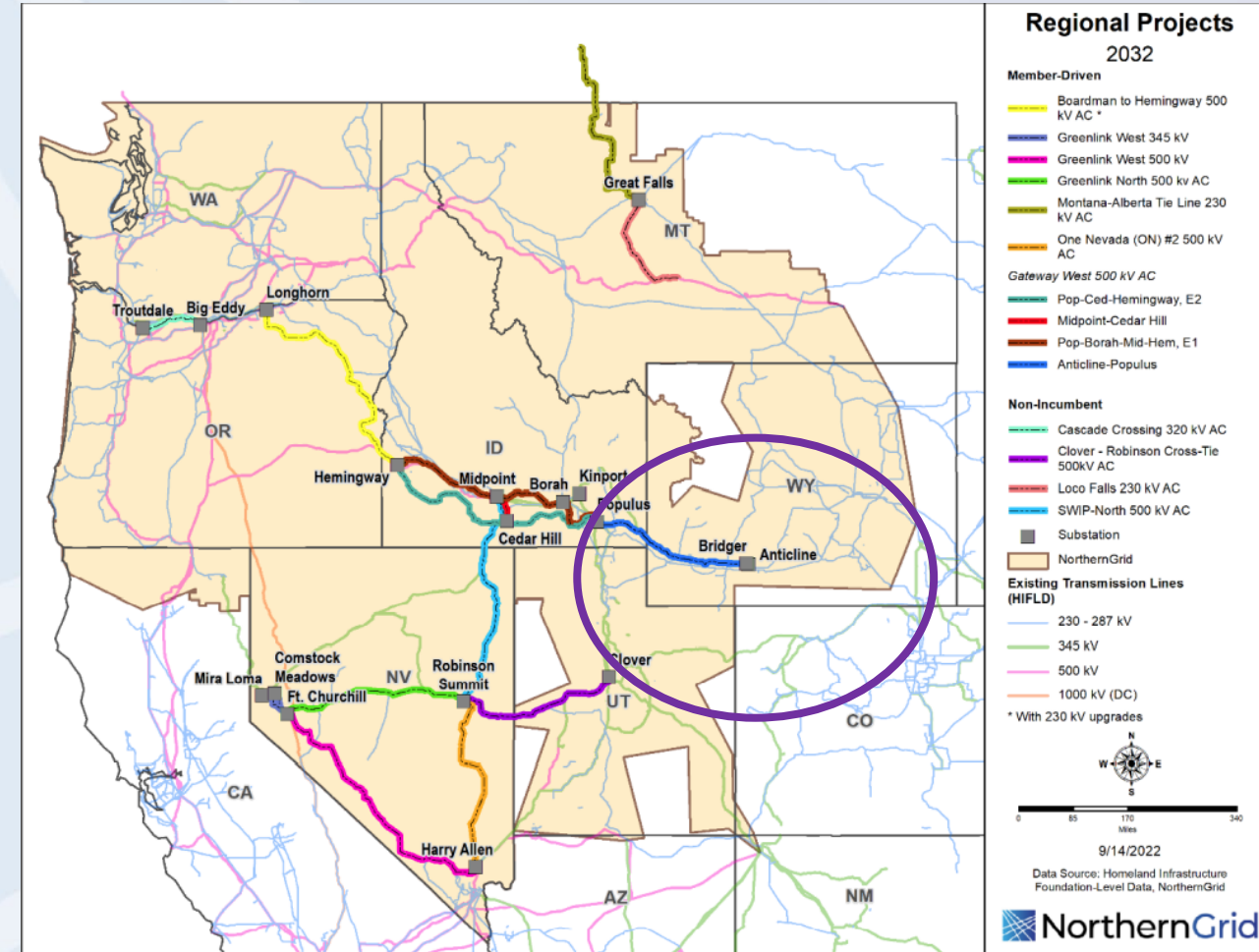
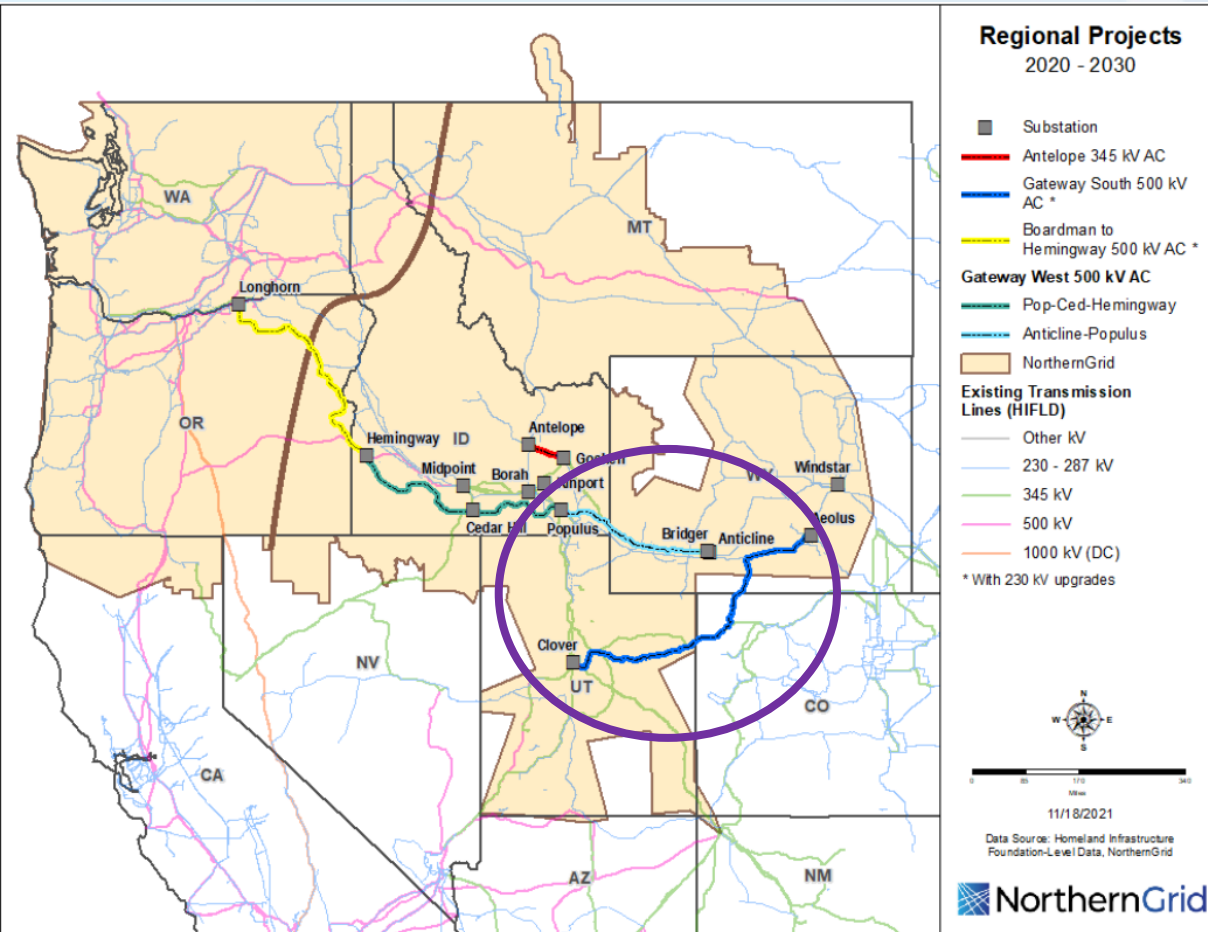
Inter-Cycle Change: Addition of NV Energy



Final 2030 Regional Transmission Plan

Projects under consideration for 2032 Regional Transmission Plan

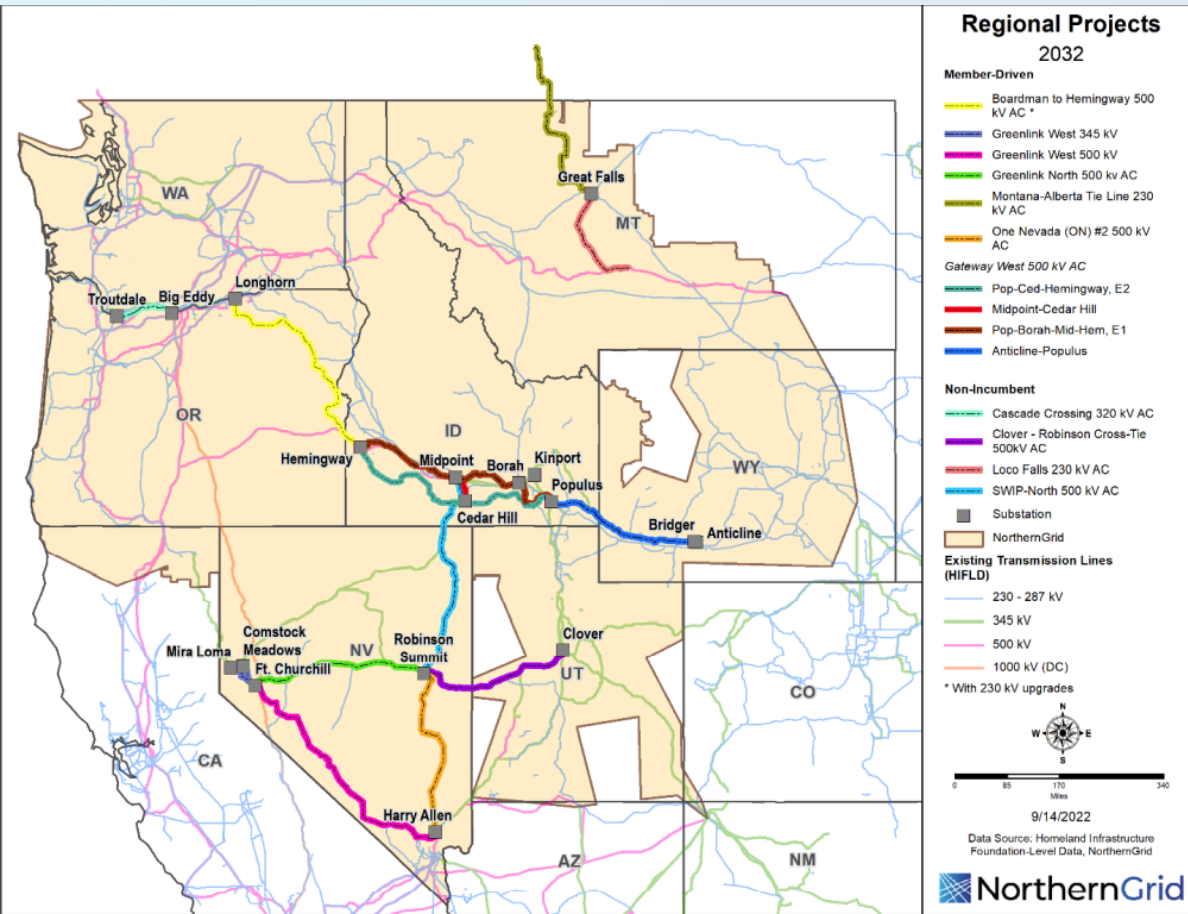
Inter-Cycle Change: Clover-Aeolus under construction



Final 2030 Regional Transmission Plan

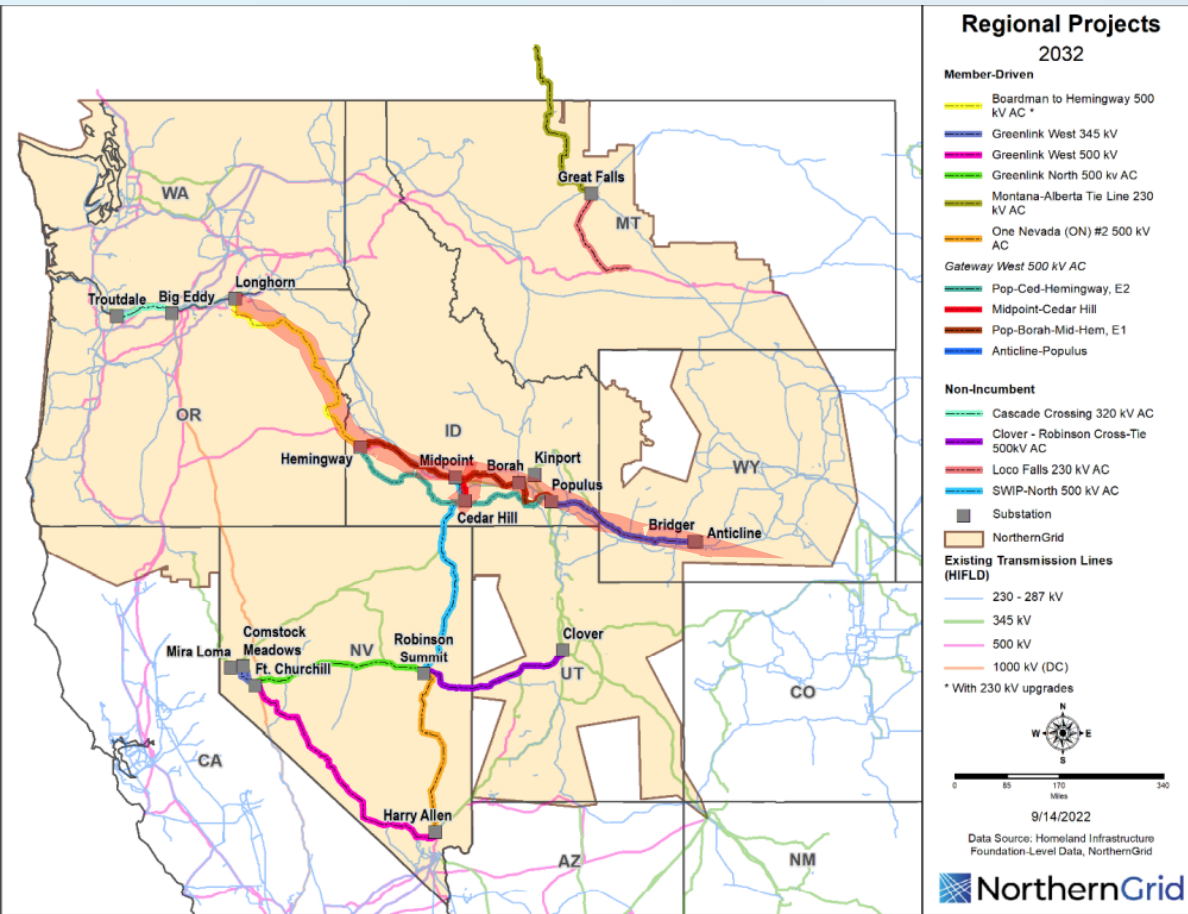
Projects under consideration for 2032 Regional Transmission Plan

Regional Transmission Plan



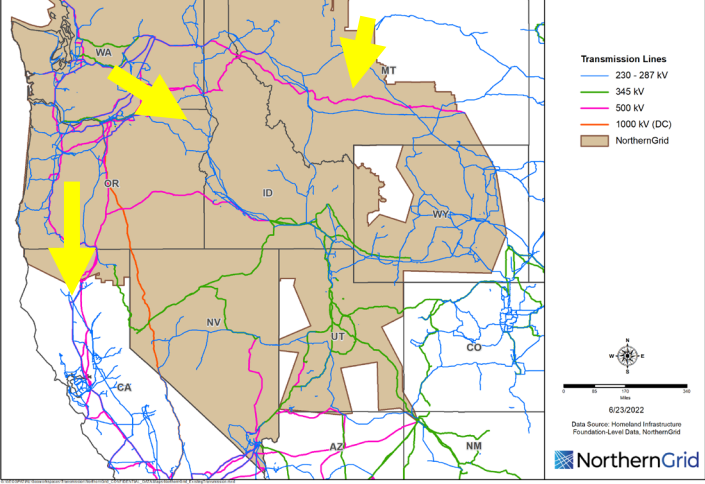
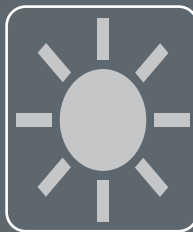
RC Name	Cascade	Boardman-Hem	GW: Windstar -Shirley	GW E1: Pop-Bor	GW E2: Pop-Ced	ON#2	Greenlink N,W	Cross-tie	SWIP-North	Loco Falls	MATL
BLMP – Baseline Member Projects		X	X	X	X	X	X				X
BLNP – Baseline No Projects											
RC1	X										
RC2		X									
RC3			X								
RC4					X						
RC5						X					
RC6							X				
RC7								X			
RC8									X		
RC9											X
RC10 ("Bugatti")	X	X	X	X	X	X	X	X	X	X	X
RC11		X	X		X						
RC12	X	X	X		X						
RC13		X	X		X				X		
RC14	X	X	X		X				X		
RC15		X	X	X							
RC16		X	X		X						X
RC17						X	X	X	X		
RC18							X	X	X		
RC19						X		X	X		
RC20						X	X		X		
RC21						X	X	X			
RC22							X	X			
RC23							X		X		
RC24						X	X				
RC25	X	X									
RC26										X	X

Regional Transmission Plan



RC Name	Cascade	Boardman-Hem	GW: Windstar -Shirley	GW E1: Pop-Bor	GW E2: Pop-Ced	ON#2	Greenlink N,W	Cross-tie	SWIP-North	Loco Falls	MATL
BLMP – Baseline Member Projects		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 ("Bugatti")	X	X	X	X	X	X	X	X	X	X	X
RC11		X	X		X						
RC12	X	X	X		X						
RC13		X	X		X				X		
RC14	X	X	X		X				X		
RC15		X	X	X							
RC16		X	X		X						X
RC17						X	X	X	X		
RC18							X	X	X		
RC19						X		X	X		
RC20						X	X		X		
RC21						X	X	X			
RC22							X	X			
RC23							X		X		
RC24						X	X				
RC25	X	X									
RC26										X	X

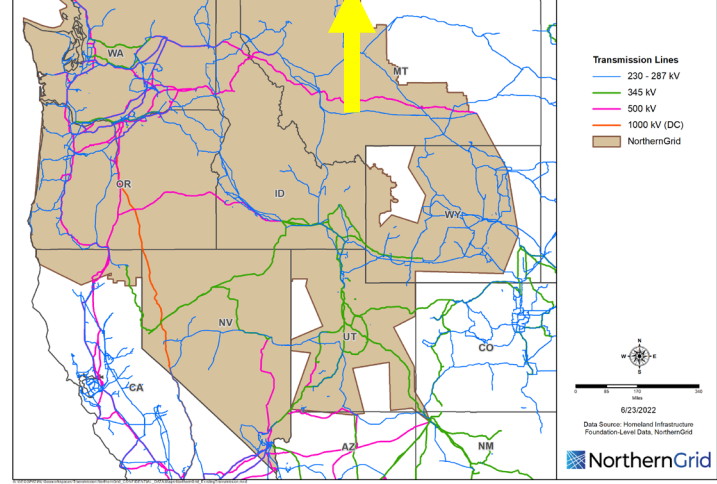
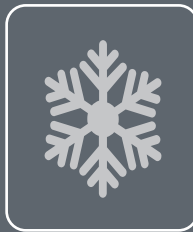
SUM, Heavy Summer 2032

SUM, Heavy Summer 2032

- Southbound Northwest to California
- Eastbound Northwest to Idaho
- Southbound MATL

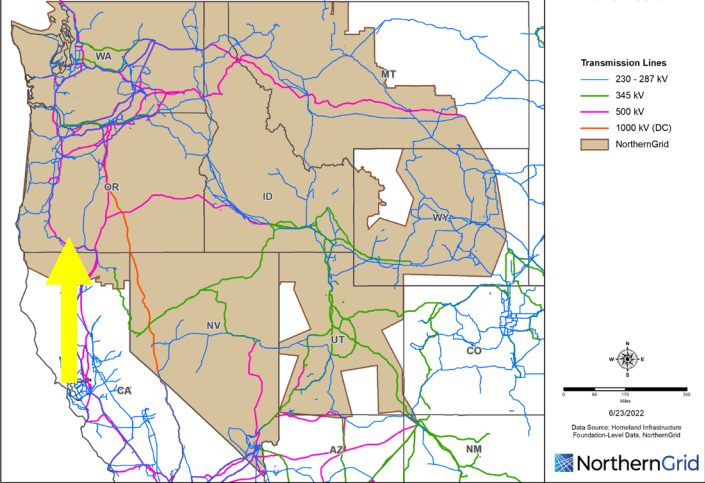

WIN, Heavy Winter 2032

WIN, Heavy Winter 2032

- Typical seasonal dispatch
- Northbound MATL

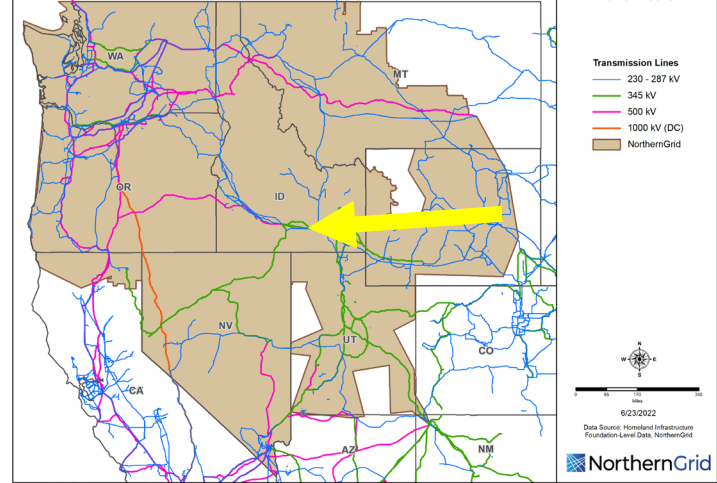

CAL-X, Light Spring 2031

CAL-X, Light Spring 2031

- Northbound California to Northwest
- 2032 loading

WY: High Wyoming wind

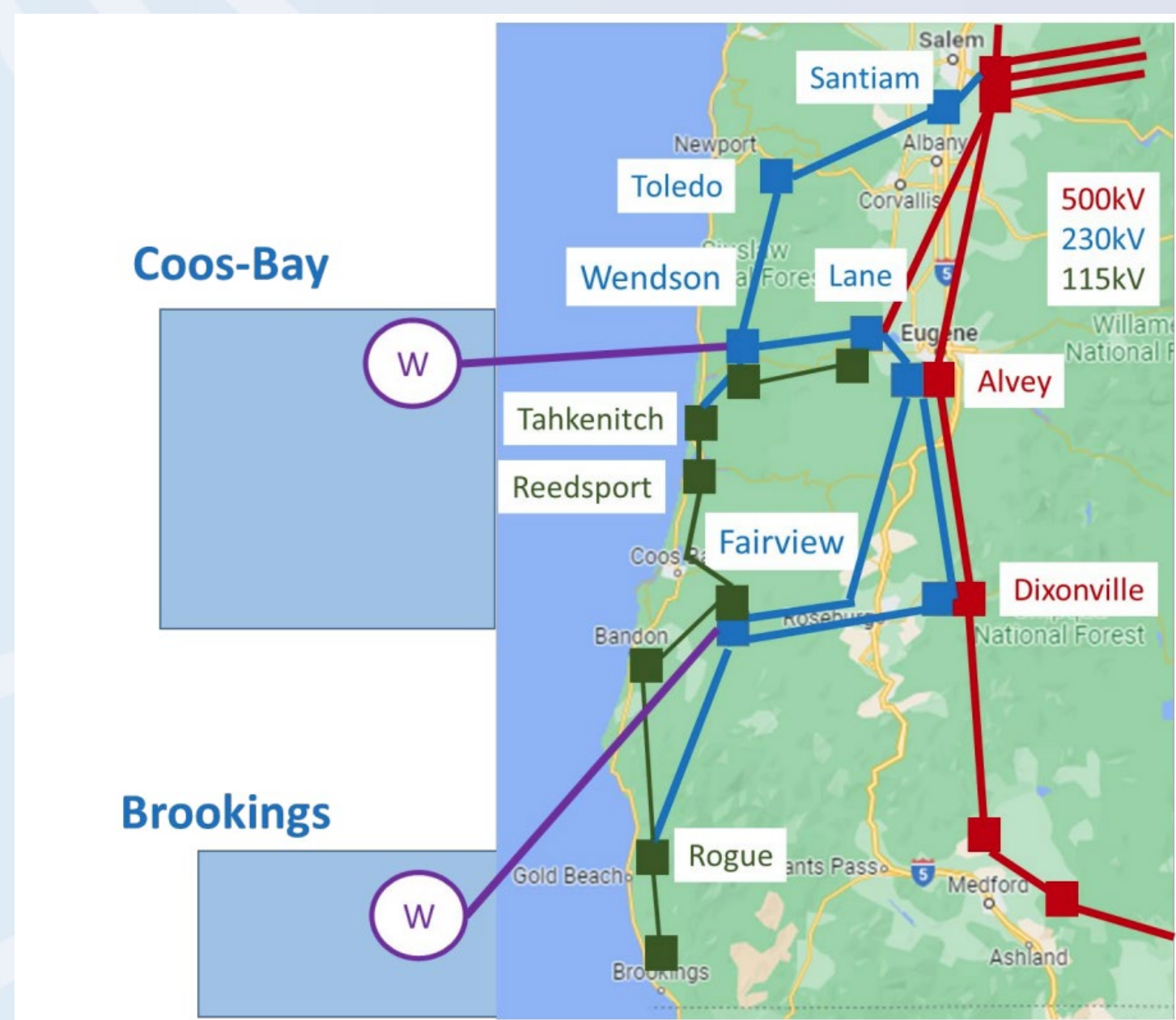



WY: High Wyoming wind export case

- Export hour from Production Cost Modeling

ESR: Offshore Wind

1.2 GW, Wendson 230 kV
1.8 GW, Fairview 230 kV



Offshore Wind: Power Flow

2032 Heavy
Summer base
case "Stock"

Account for
NorthernGrid
Data
submittals

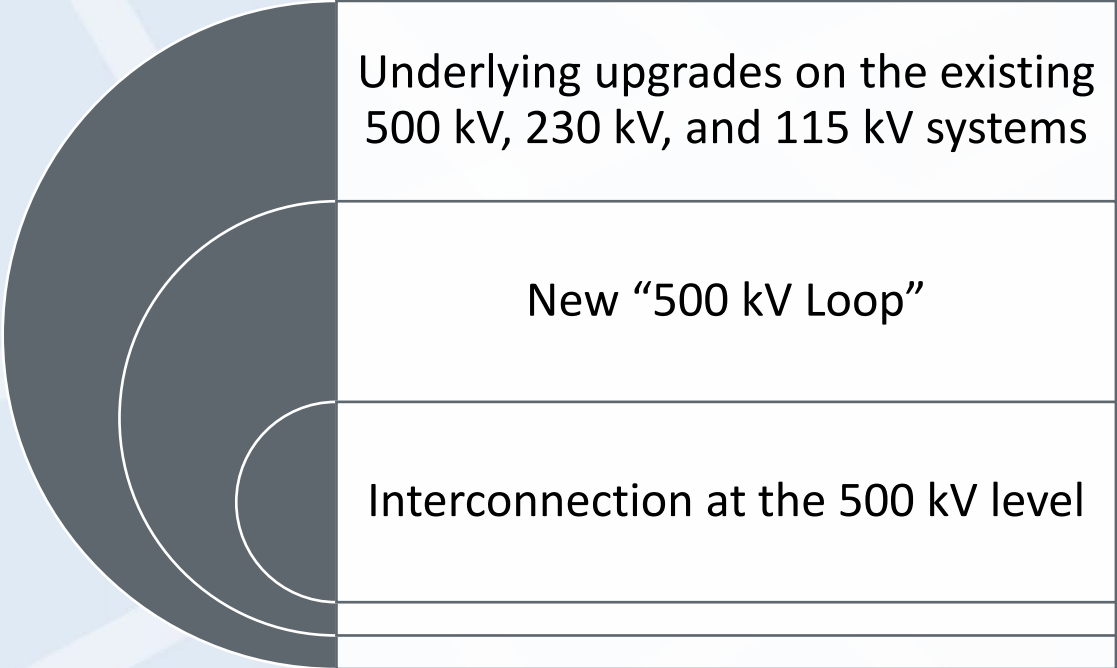
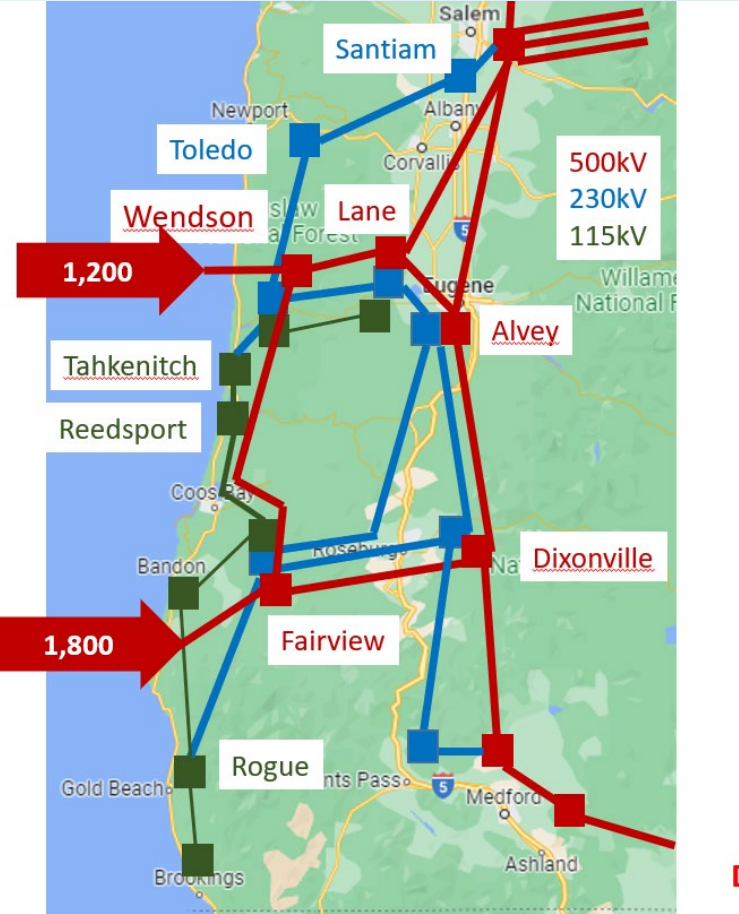
Model in
Offshore Wind
at maximum
output

Perform
reliability
analysis



"Transmission
Solution"

ESR: Offshore Wind, Initial Findings



Offshore Wind: Production Cost

1. Anchor Data Set

Account for NorthernGrid Data Submittals

Run Production Cost, establish "baseline"

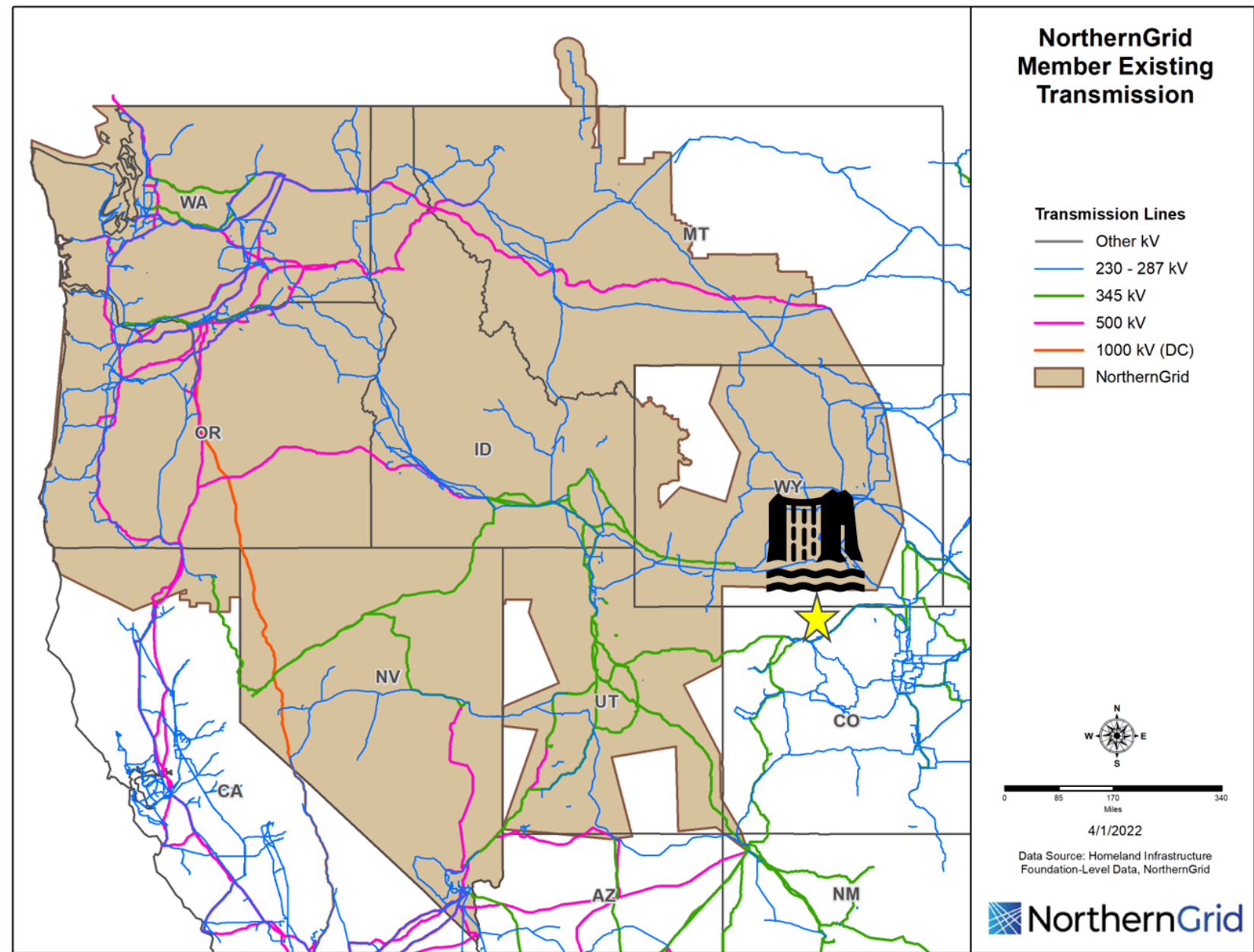
Add in offshore wind and "Transmission Solution"

Run Production Cost, establish changes



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



Improved NorthernGrid.net: Subscription Feature



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NorthernGrid

Quarter 5: Data Submittal Window Open



Updated Loads and
Resources



New Request window for
2023 Economic Study
Request

