



# Year 10—Extreme Cold Weather Event Assessment Update

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# Proposed Timeline

Task	Timing	Status
Scope study	January	Complete
Perform research and gather data	February–April	Complete
Create adjusted load profiles and other inputs	April–May	Complete
Run and review PCM for each case	May–July	80%
Export hour(s) from PCM and run power flow	June–July	To be determined
Identify major findings and conclusions	June–July	20%
Draft report and review	July–October	
Final review	October–November	
Publish report	January 2024	

# Scope

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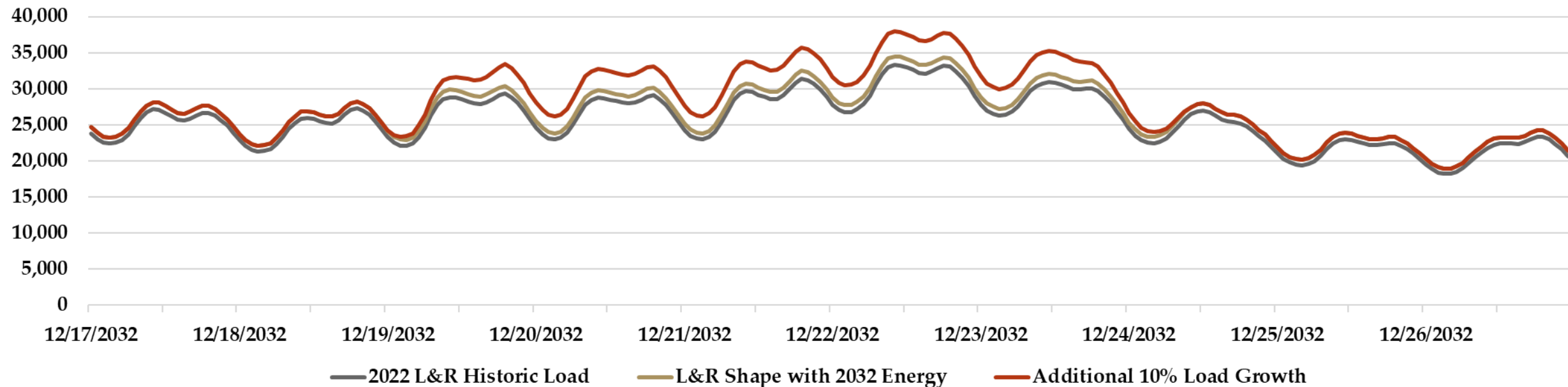
- Identify vulnerabilities during an extreme cold weather event and recommend mitigation techniques
- Key reliability questions
  - At what levels of extreme cold temperature, duration, and load level, does the model show reliability concerns such as unserved energy?
  - Which Western Interconnection regions are most sensitive or susceptible to an extreme cold event?
  - How does cold weather affect generator availability?

# Assumptions

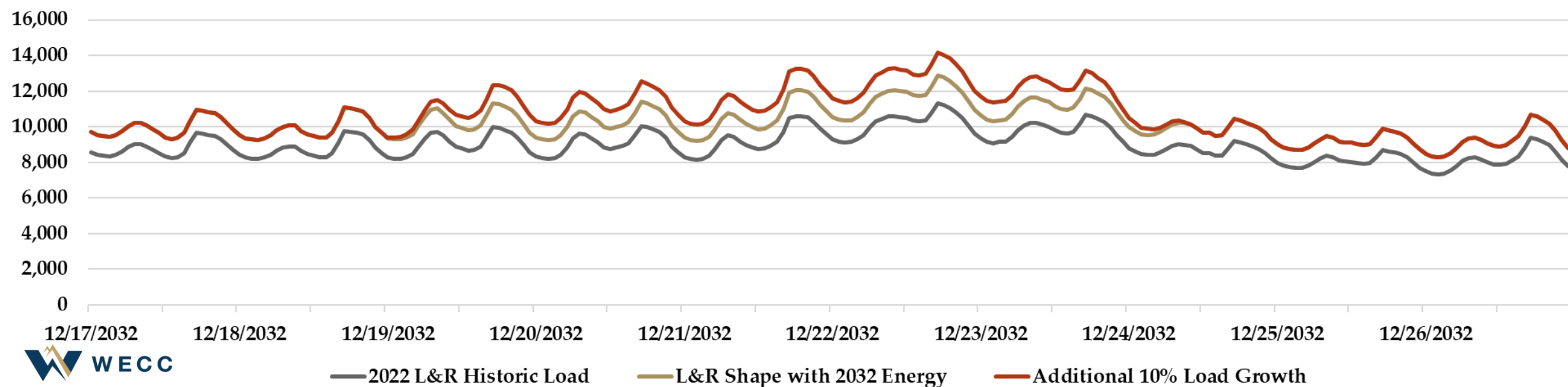
- December 2022 load shape grown to 2032 load levels for entire interconnection
  - 10% load increase for event duration, December 19–23
- December 2018 actual wind and solar shapes to replicate a low wind and solar period
  - Behind-the-meter was unmodified
- Forced outage rate for thermal generation was doubled in NW, RM, BS areas
- Reduced NG generation capacity in three steps—15%, 25%, and 35%

NW Load (MWh)

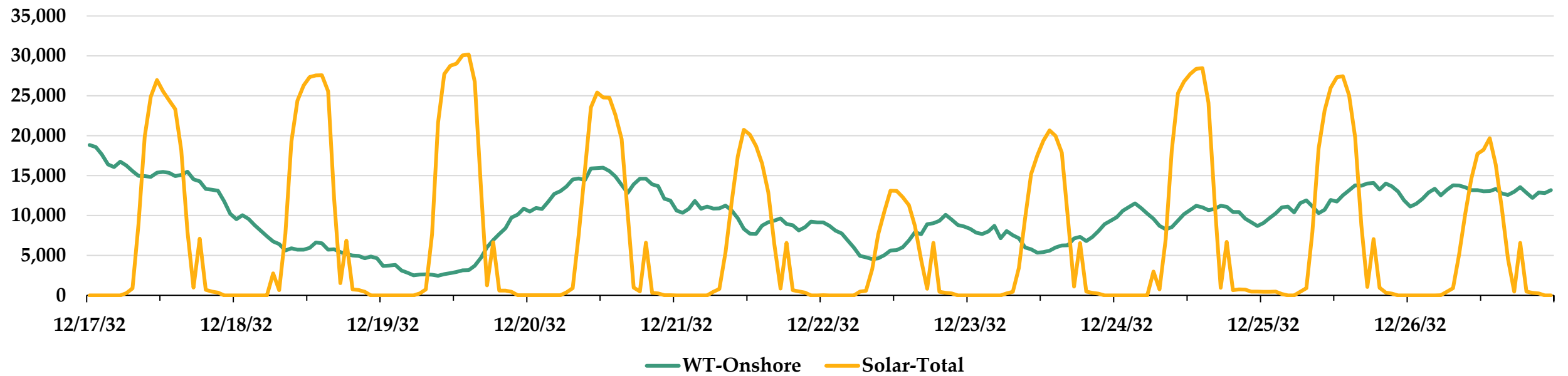
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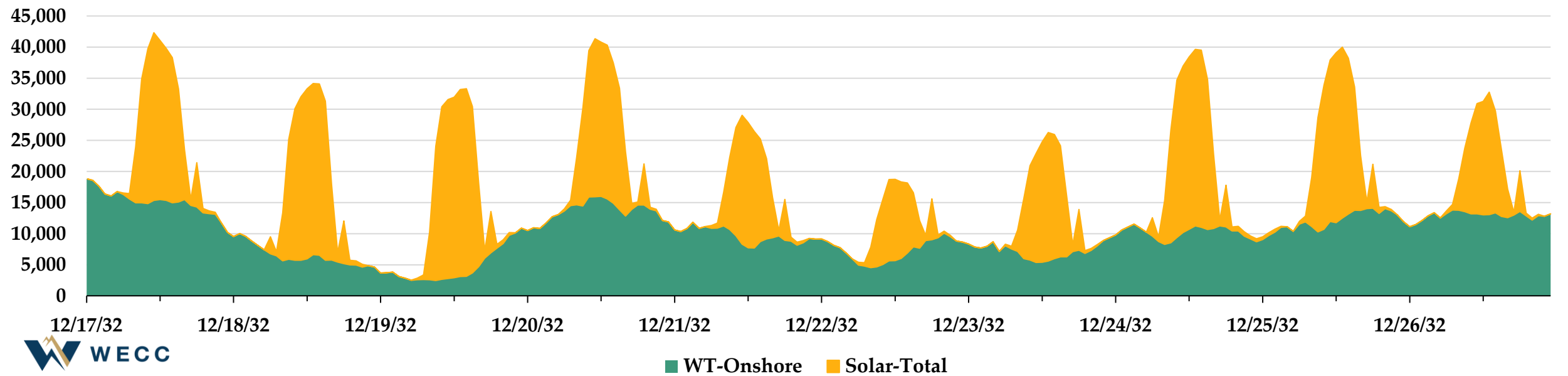
RM Load (MWh)



<sup><Public></sup>  
Y10-Extreme Cold Hourly (2018) Wind and Solar (MWh)



Y10-Extreme Cold Hourly (2018) Wind and Solar (MWh)



# Natural Gas Generation Derate

Derates start on Dec 19, hour 5 and end on Dec 23, hour 10

NG Derate Level Case	Canada, Northwest, Rocky Mountain, and Basin Regions	Northern California Region
15% Derate Case	15% Derate	7.5% Derate
25% Derate Case	25% Derate	10% Derate
35% Derate Case	35% Derate	17.5% Derate

# Results

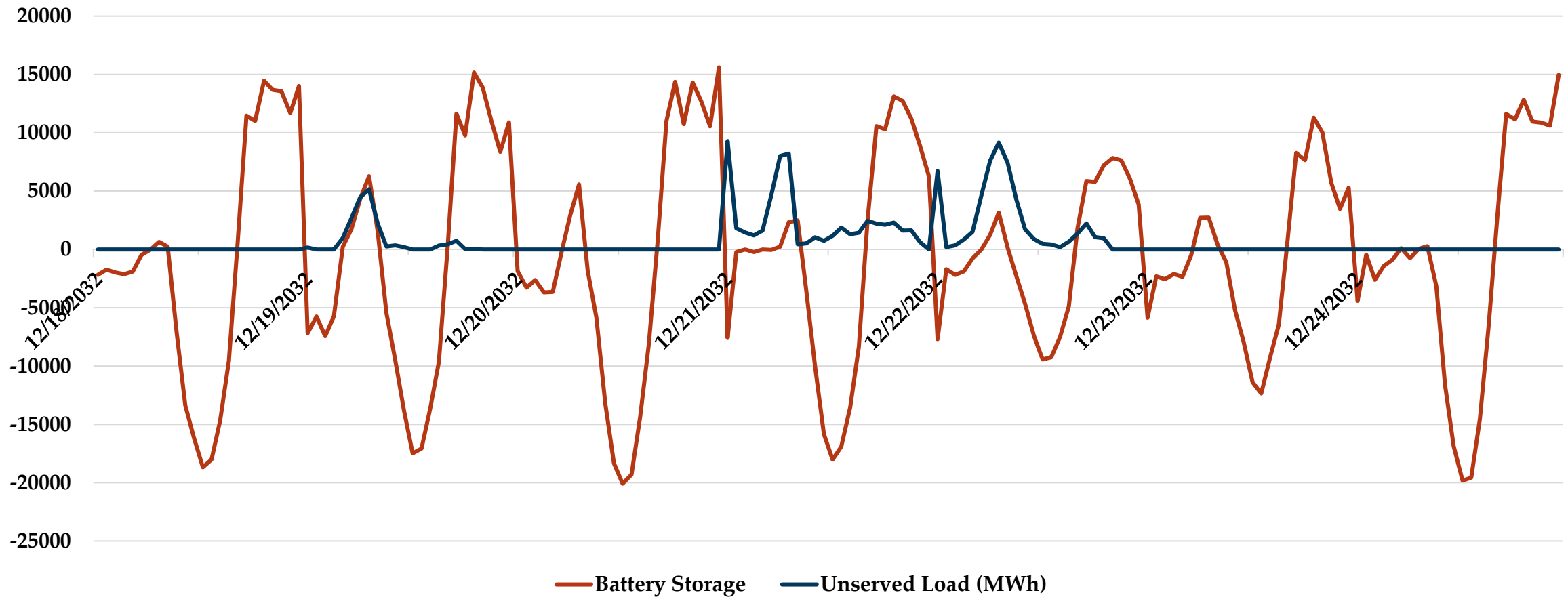


# Unserved Load (MWh)

Region	15% NG Derate	25% NG Derate	35% NG Derate
Alberta	1,511	8,309	39,414
British Columbia	0	0	11,433
Basin	0	0	2,148
California	0	1,476	17,794
Northwest	0	2,464	40,228
Rocky Mountain	0	1,375	16,619
Southwest	0	22	754
Total	1,511	13,647	128,390

# 35% NG Derate Case

35% Derate Case Unserved Load and Battery Storage (MWh)



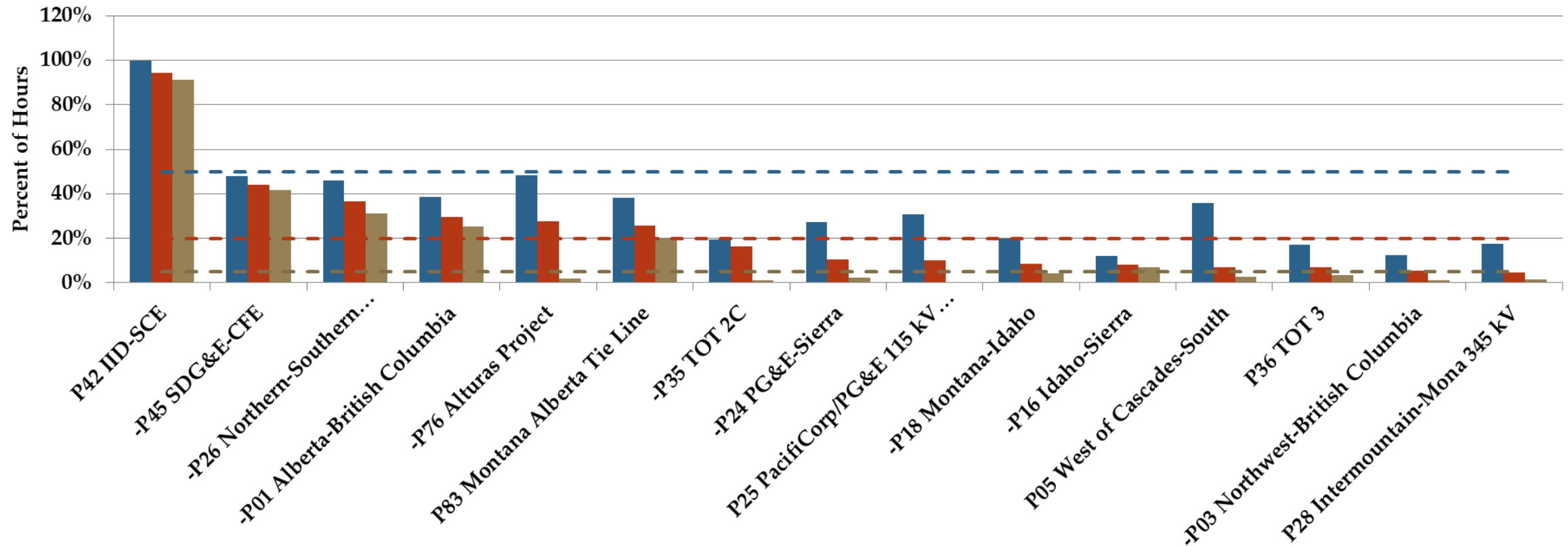
# Peak Unserved Load

Region	Max (MW)	Date	Hour
Alberta	2,440	Dec 21	17
British Columbia	1,450	Dec 19	8
Basin	512	Dec 22	10
California	3,606	Dec 21	1
Northwest	4,446	Dec 22	8
Rocky Mountain	1,522	Dec 22	8
Southwest	509	Dec 21	1
Interconnection	9,286	Dec 21	1

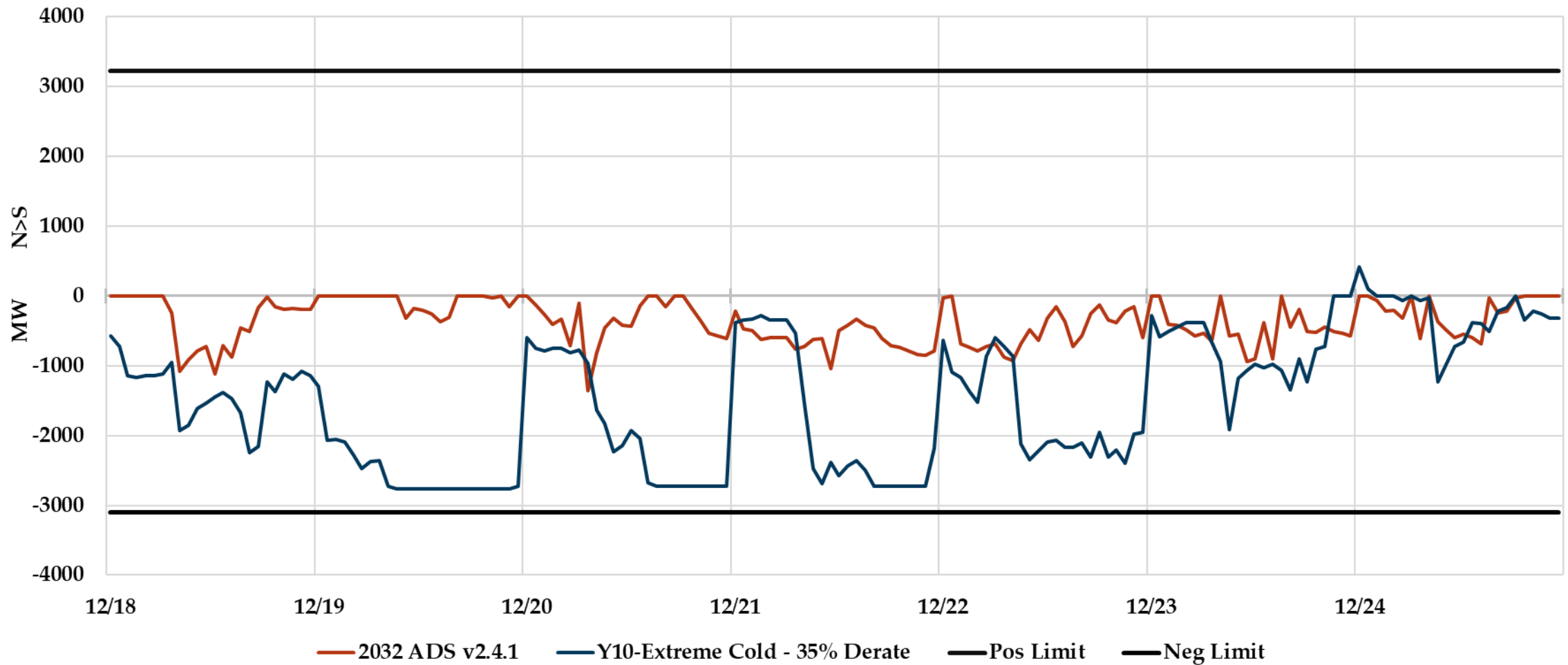
# December Path Utilization

Most Heavily Utilized Paths - Y10-Extreme Cold

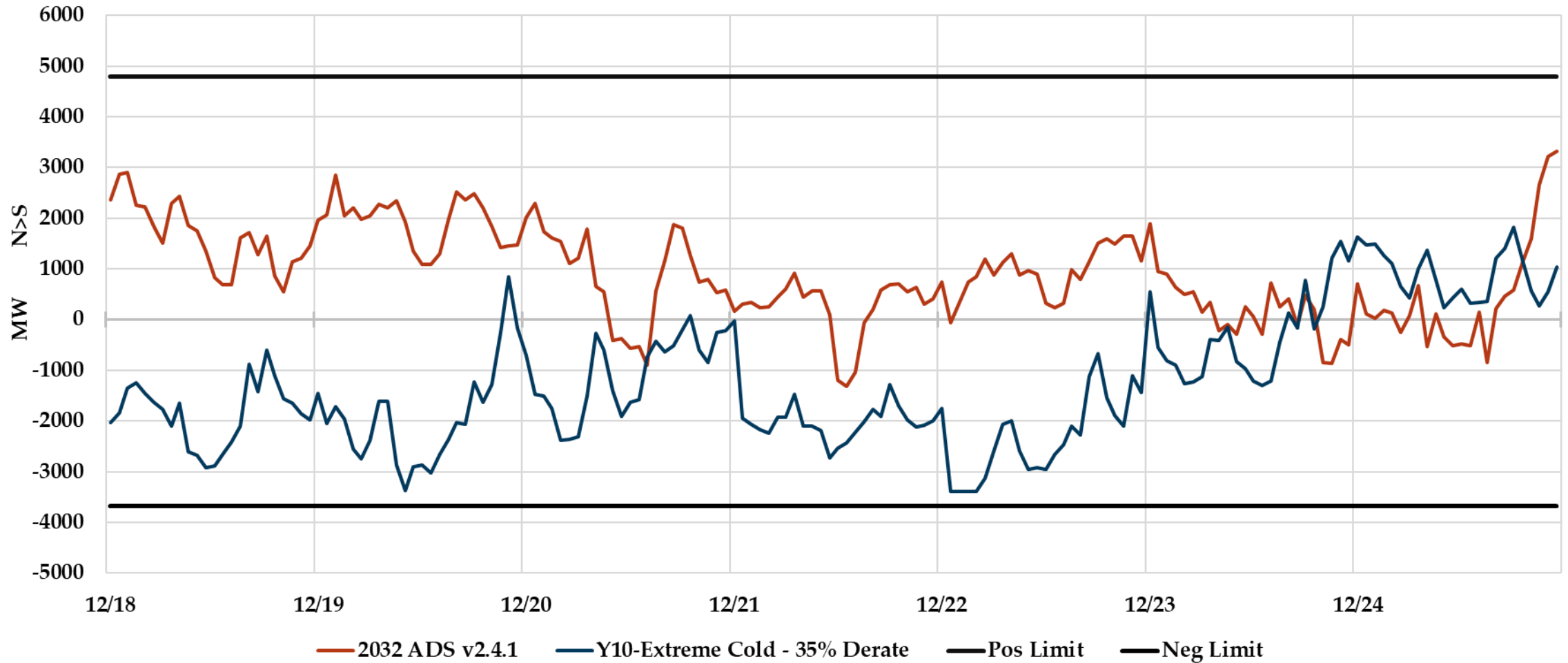
■ U75 ■ U90 ■ U99



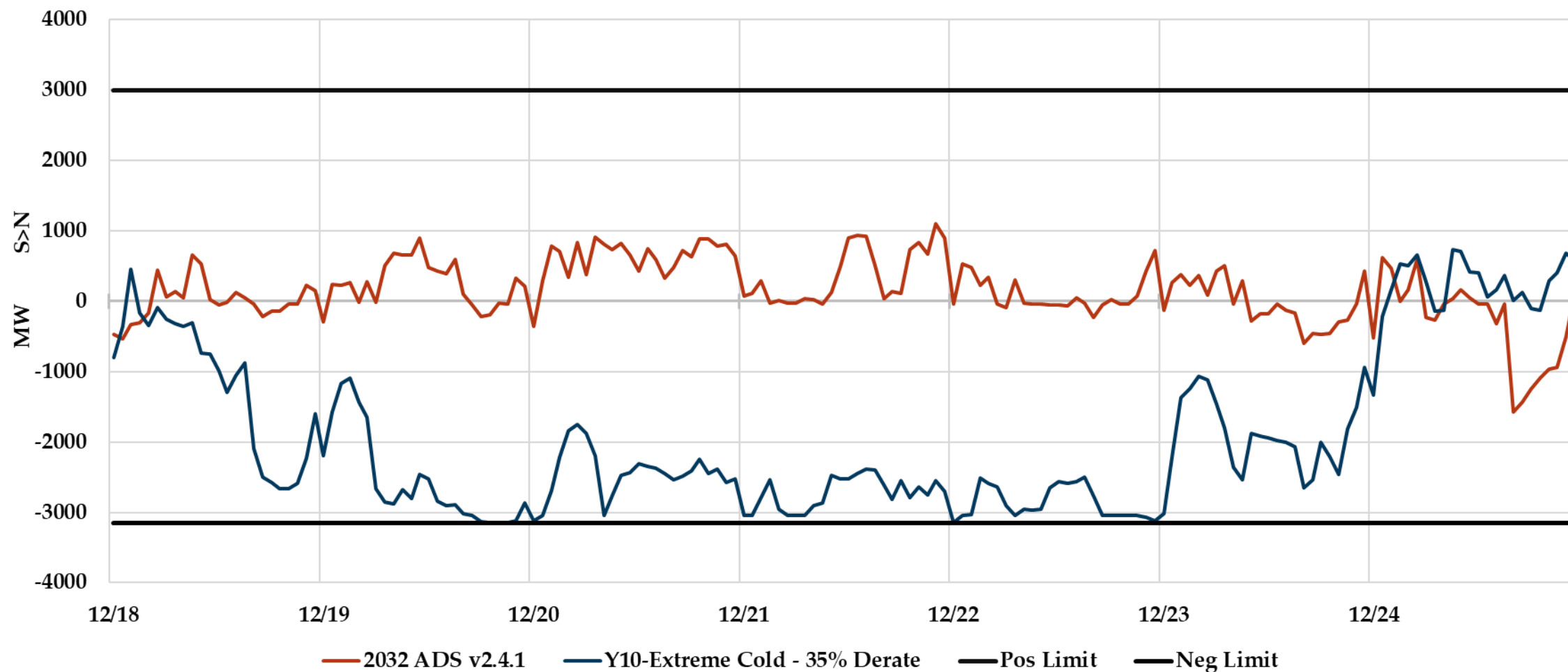
# Path 65 PDCI



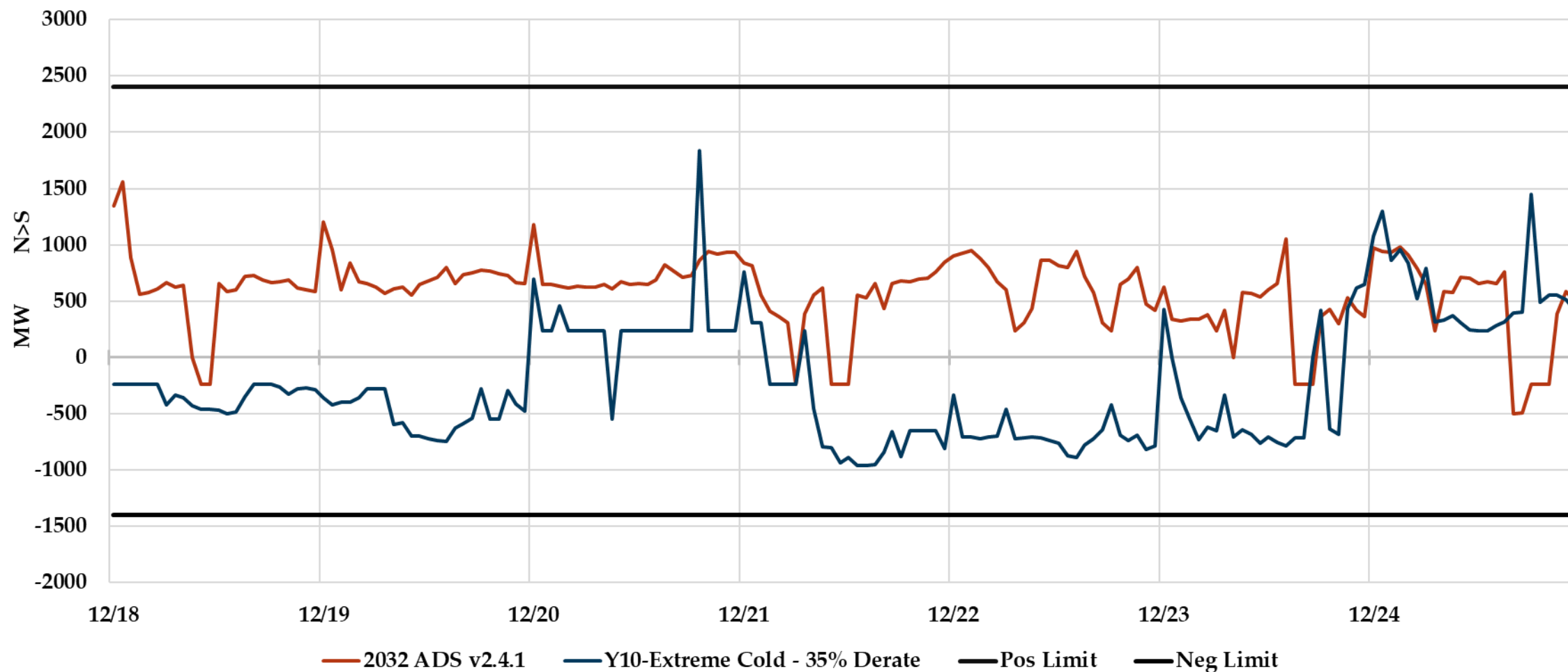
# Path 66 COI



# Path 3 Northwest-British Columbia



# Path 27 IPP DC Line





# Next Steps

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- Complete analysis of PCM and identify key findings
- As resources allow, export peak hour for power flow analysis
- Write report



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