Presentation for R.21-10-002 (Resource Adequacy) Workstream 2 Workshop on Resource Counting: "Exceedance for Wind / Solar"

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ACP-California and Pattern Energy recommend further refinement of “worst-day” analysis to best approximate the reliability contributions of wind resources.

- D.22-06-050 - Rejection of ELCC and selection of exceedance methodology as ELCC
  - Very broad construction of “ELCC” and “exceedance” (p. 83)
  - Data requires further development to ensure that the appropriate exceedance levels are benchmarked against a robust dataset. (P. 81)
  - Commission direction for further workshopping on “exceedance”: “monthly hourly profiles should be based on technology and/or general geographic region.” (App. A, p.3)

- Wind parties have expressed concern with the uncertainty and volatile effect of exceedance on QC values compared to relative predictability of the ELCC.
  - Robust data sets neededwhen considering geographic value
  - Accounting for new resources – historic data is not representative
  - Accounting for geographic diversity
  - Selecting a particular exceedance value is an arbitrary exercise that does not reflect the value of resources at a system level.

Proposal 1: For Wind Resource Counting: Calculate NQC based on PG&E QC Methodology Steps 1 – 3 (see PG&E July 27 workshop presentation)

1. Identify the top 5* peak load days in each month during the historical period.

2. Review solar and wind performance during those days and convert to capacity factors using installed capacity at the time.

3. Average data across all years to arrive at a peak load day profile.

The CPUC should not: set up exceedance profiles, compare the peak load day performance, or select exceedance levels.

Proposal 2: For new wind resources without comparable, historic data – use synthetic generation profile from IRP tested against historic worst load days. Benchmark with the ELCC.

- Translate IRP data set for new/developing resource areas into hourly 24 x 12, synthetic generation profiles
- Evaluate synthetic profile based on how resource would have performed during historic, worst-day period.
- Benchmark against marginal ELCC

*Issues - TBD - for Wind Resource Counting: Refinement of worst days - further evaluation of worst-day data sets with benchmarking against

CPUC Proposed ELCC

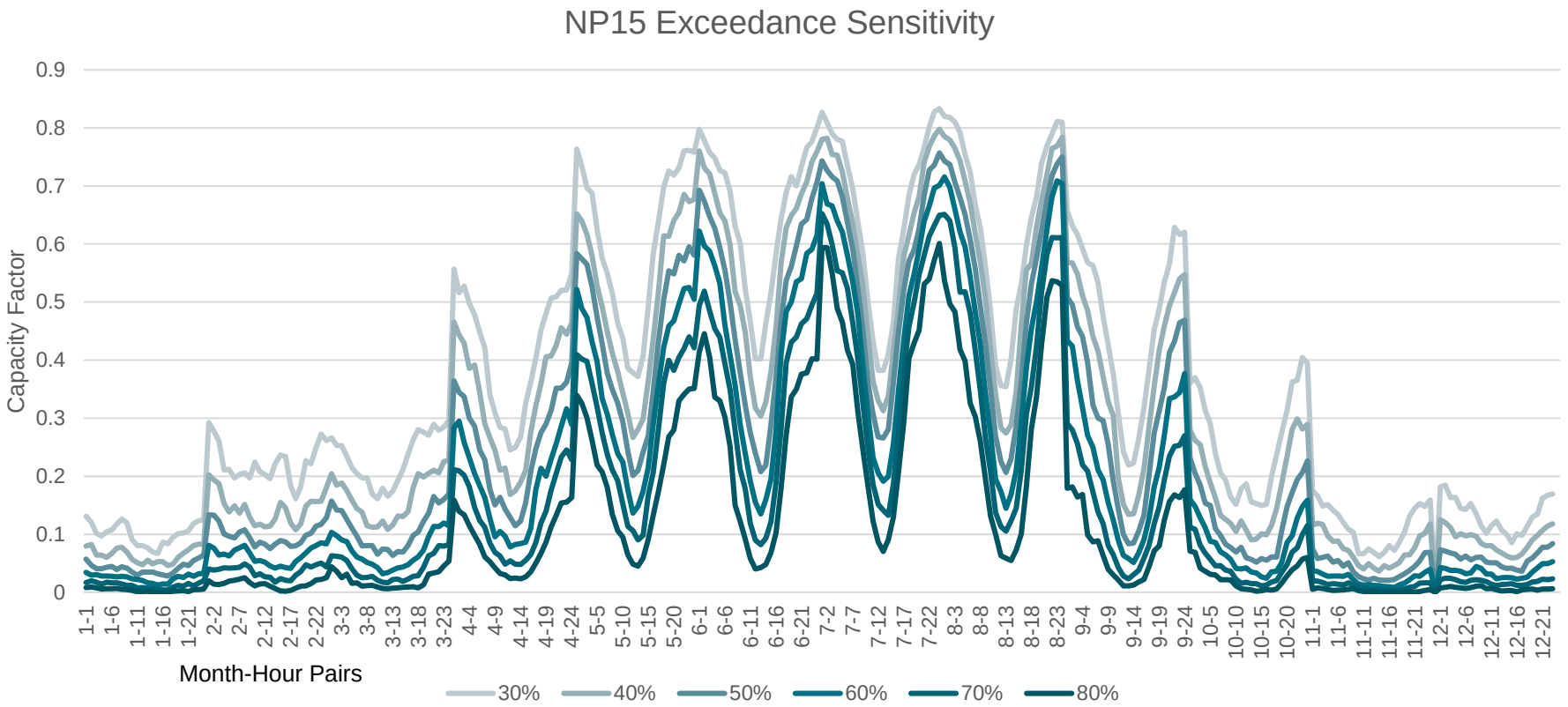
ELCC captures resource diversification benefit of regional wind sites

Table 1: Average Monthly Wind ELCC Values

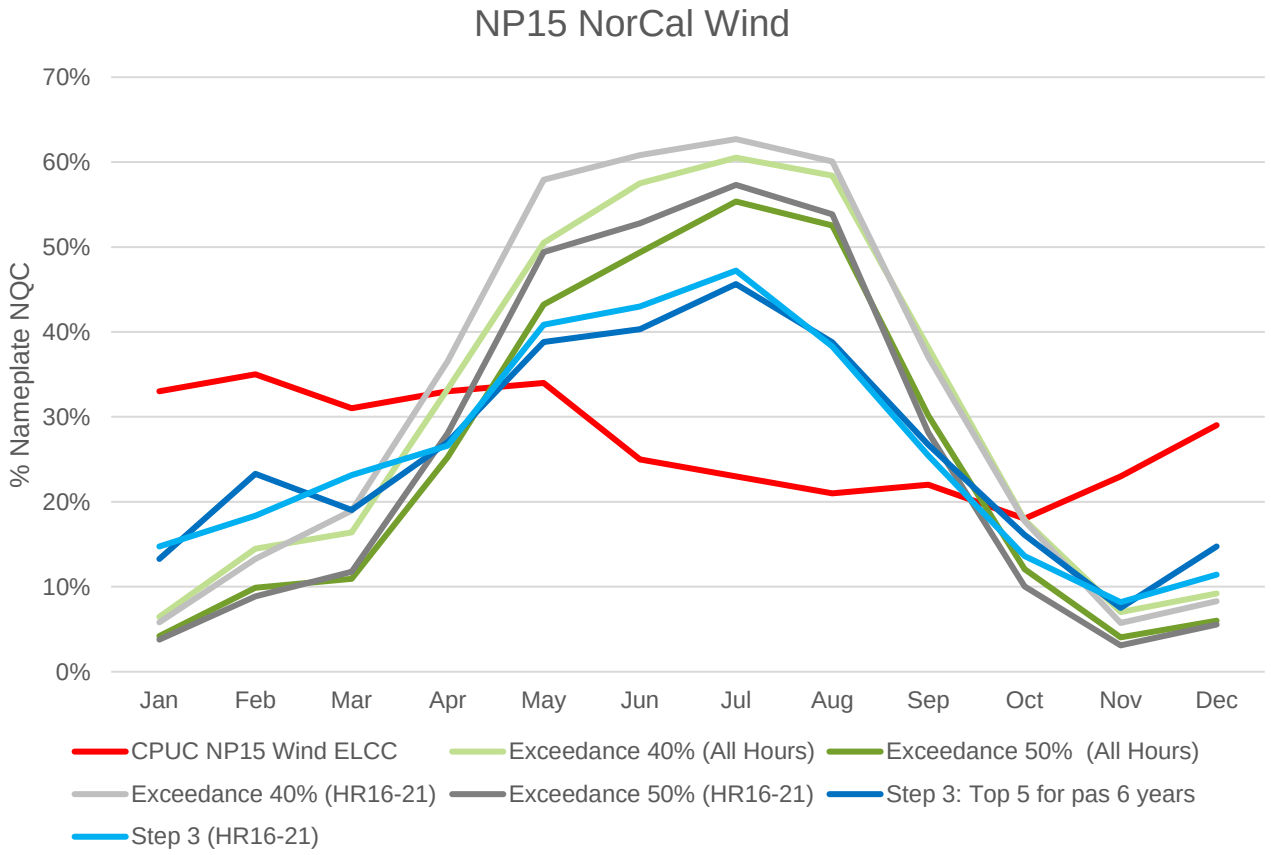
Month	WY/ID	WA/OR	AZ/NM	Offshore	NorCal	SoCal
Jan	38%	21%	34%	35%	33%	18%
Feb	38%	25%	36%	39%	35%	19%
Mar	42%	30%	40%	36%	31%	17%
Apr	38%	25%	35%	29%	33%	16%
May	28%	19%	26%	31%	34%	17%
Jun	23%	20%	22%	44%	25%	15%
Jul	24%	22%	21%	56%	23%	14%
Aug	26%	19%	23%	53%	21%	11%
Sep	31%	19%	28%	43%	22%	11%
Oct	40%	23%	33%	37%	18%	10%
Nov	44%	25%	34%	39%	23%	14%
Dec	41%	22%	34%	38%	29%	17%

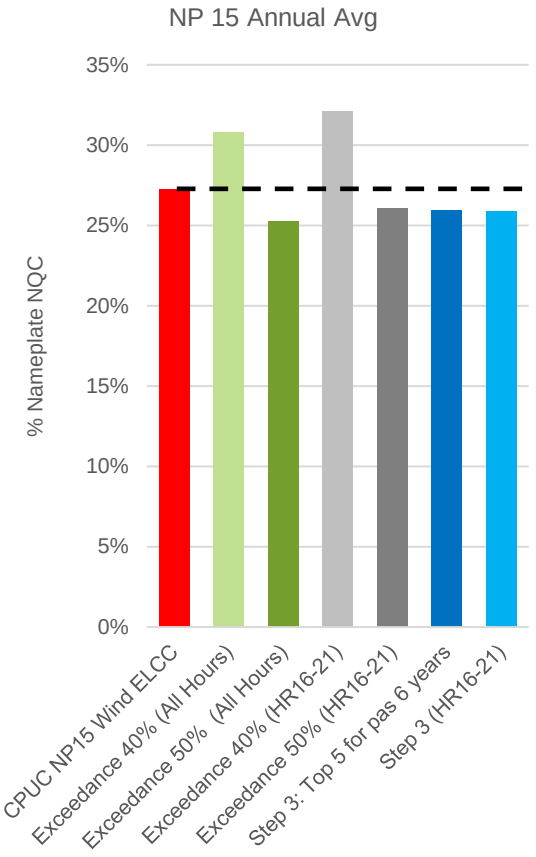
Rulemaking 21-10-002: DECISION ADDRESSING REGIONAL WIND EFFECTIVE LOAD CARRYING CAPABILITY VALUES AND DEMAND RESPONSE QUALIFYING CAPACITY METHODOLOGY

NP15 Wind Exceedance Sensitivity: 2015-2021

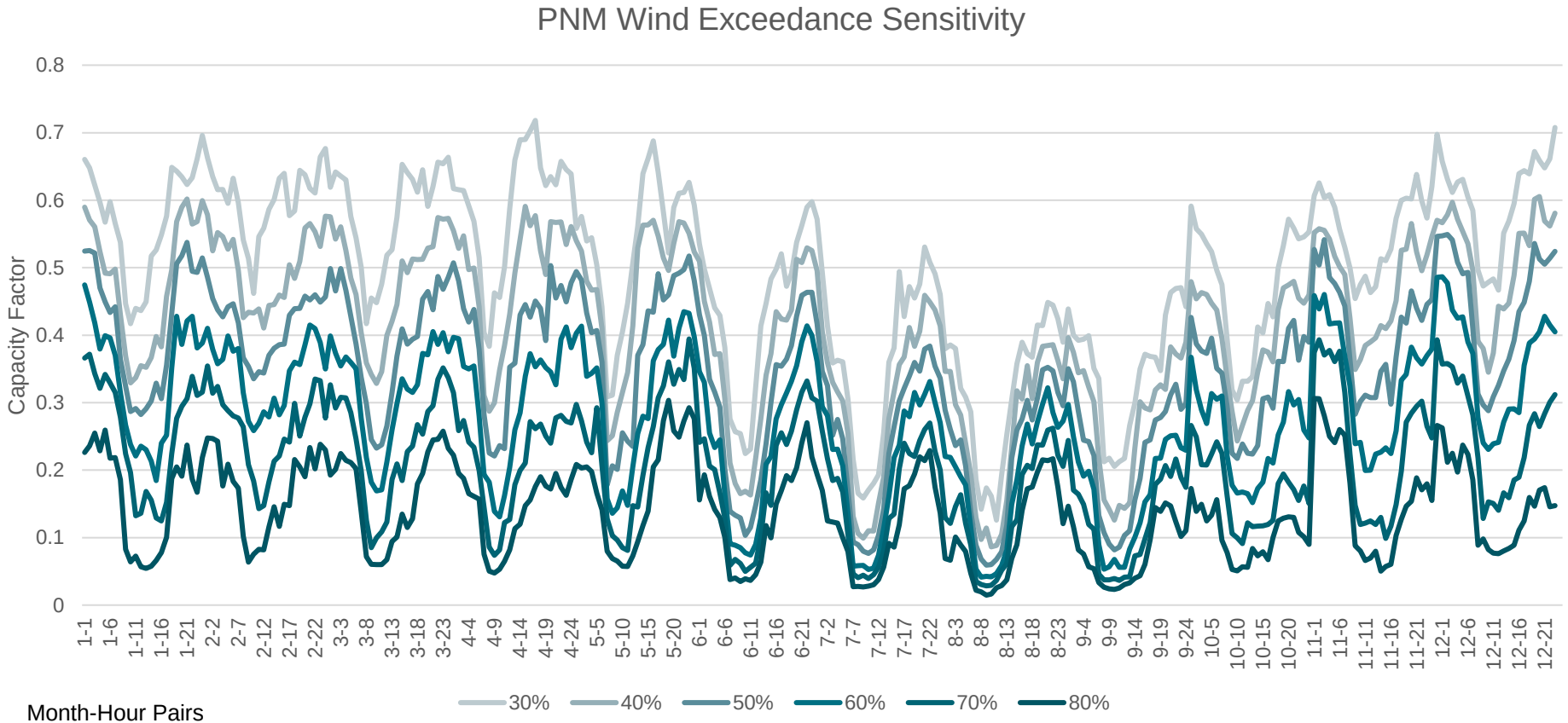


Selecting Exceedance with similar NQC to ELCC





PNM Wind 2015-2021



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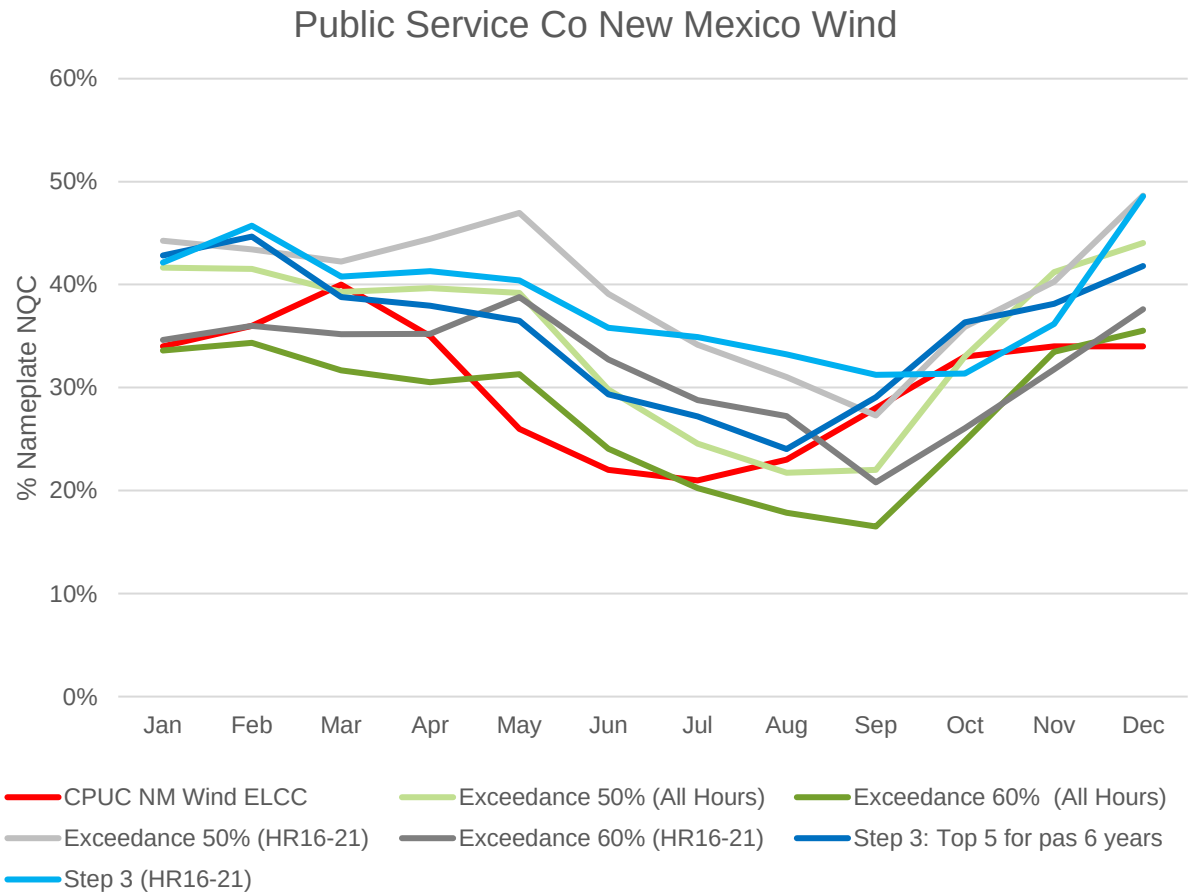
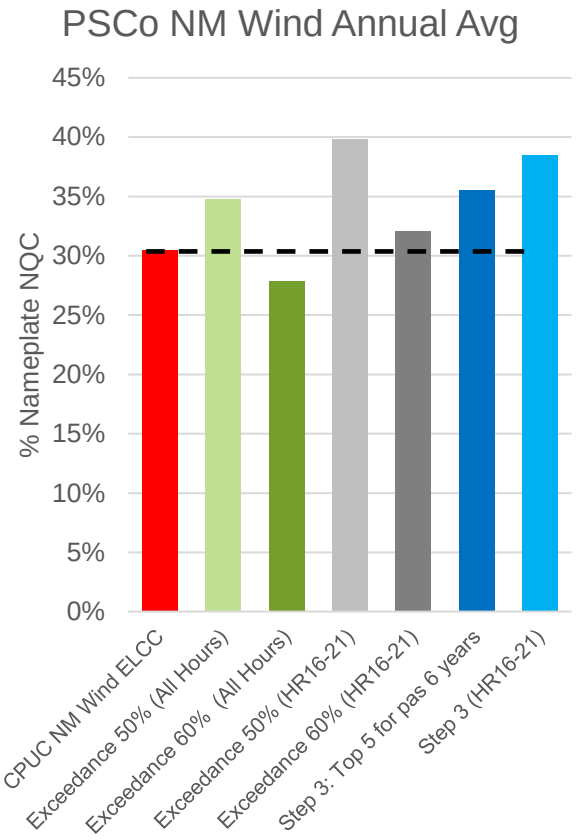
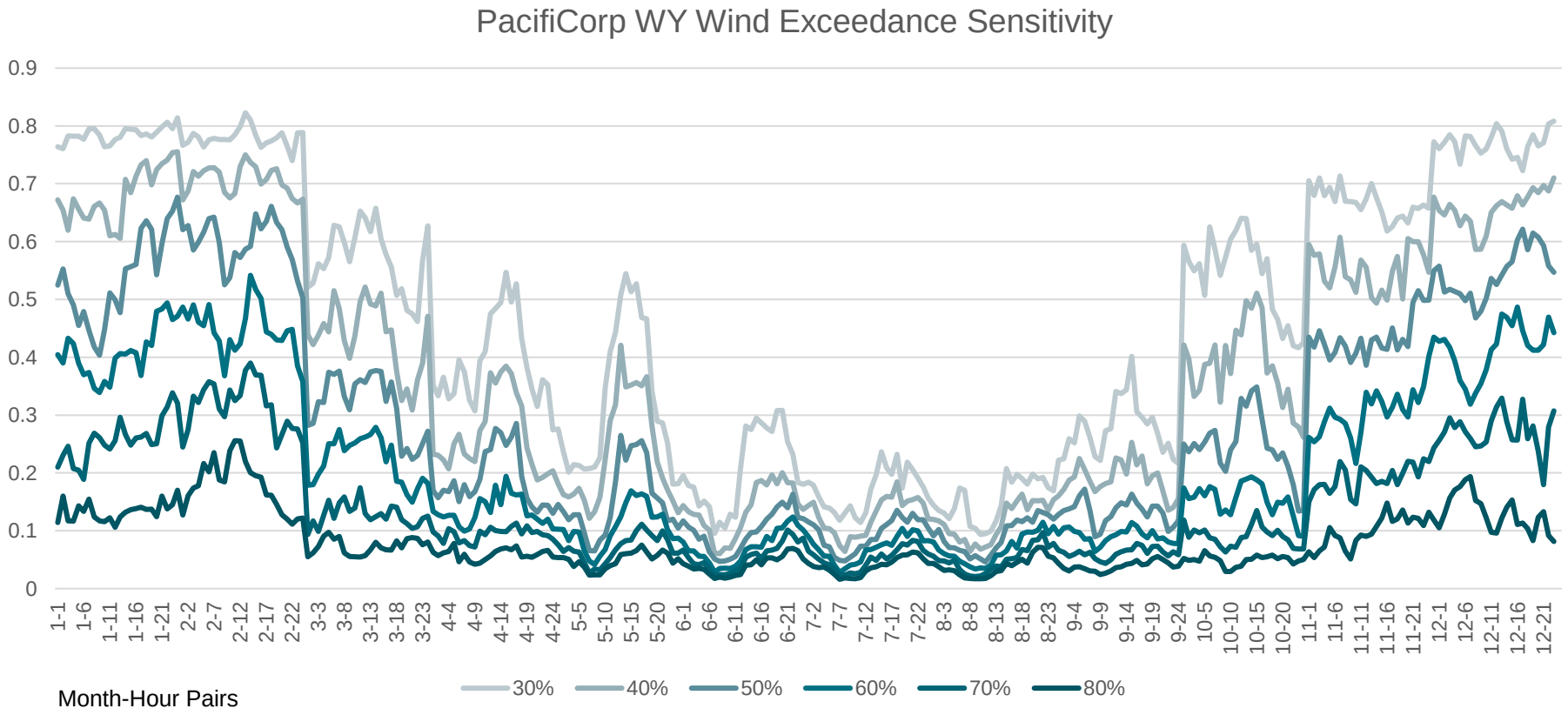




PacifiCorp Wyoming Wind 2015-2021



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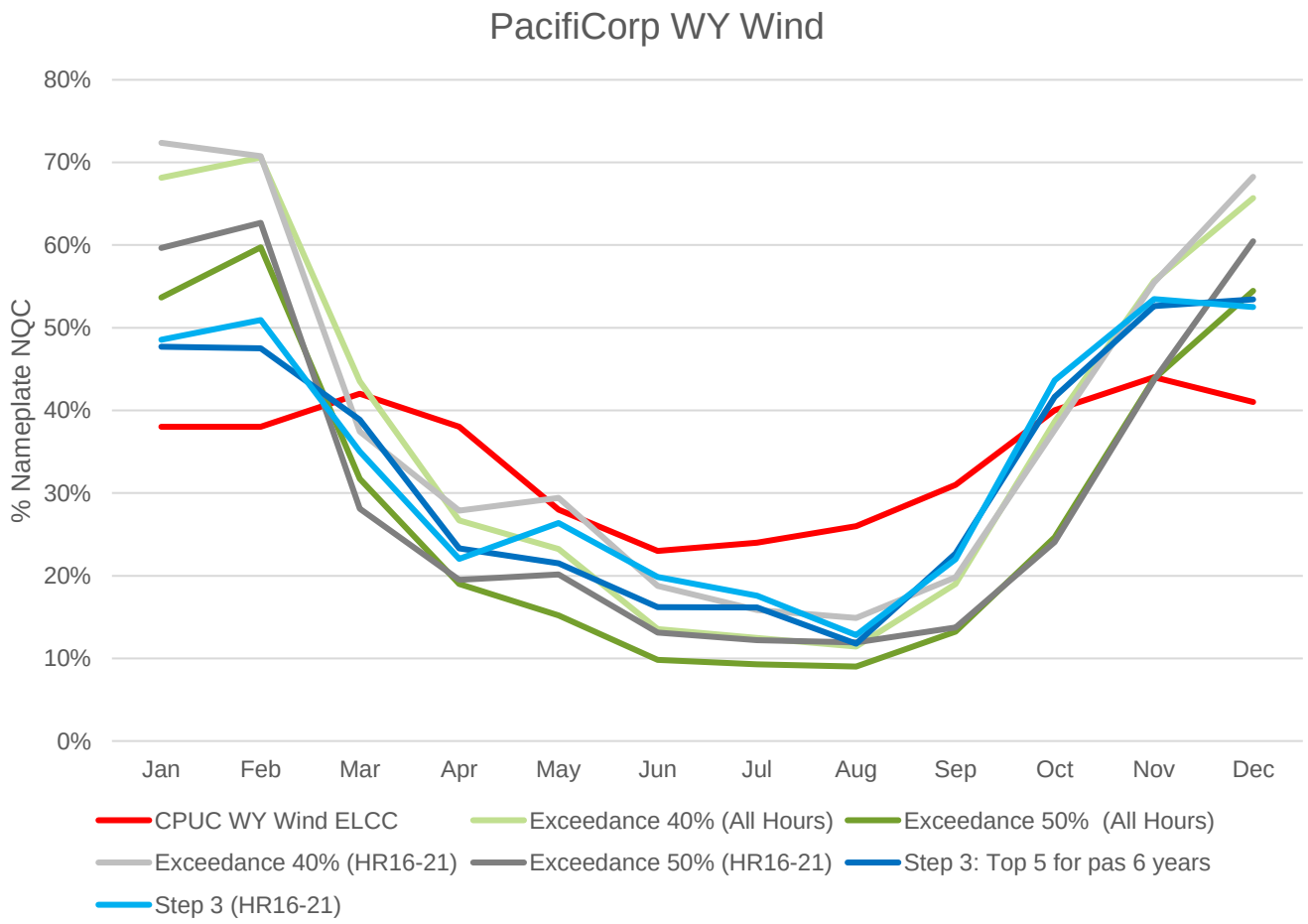
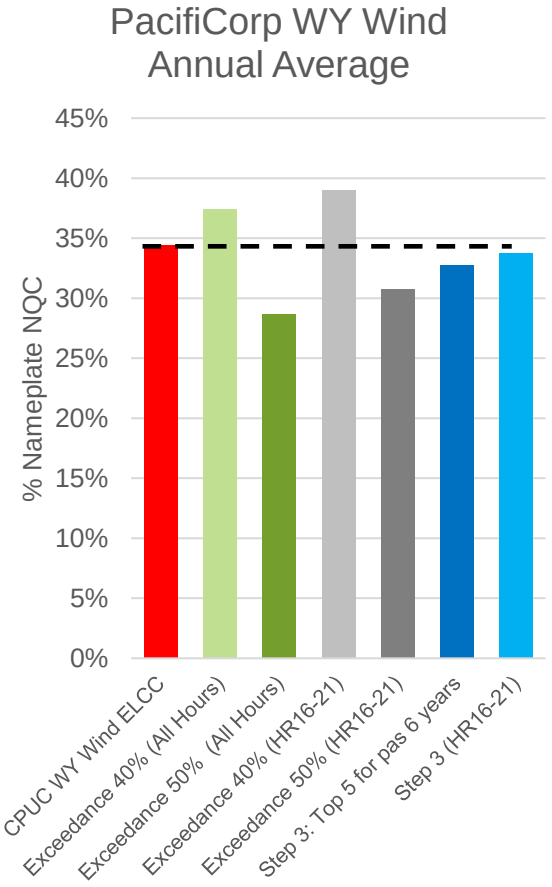
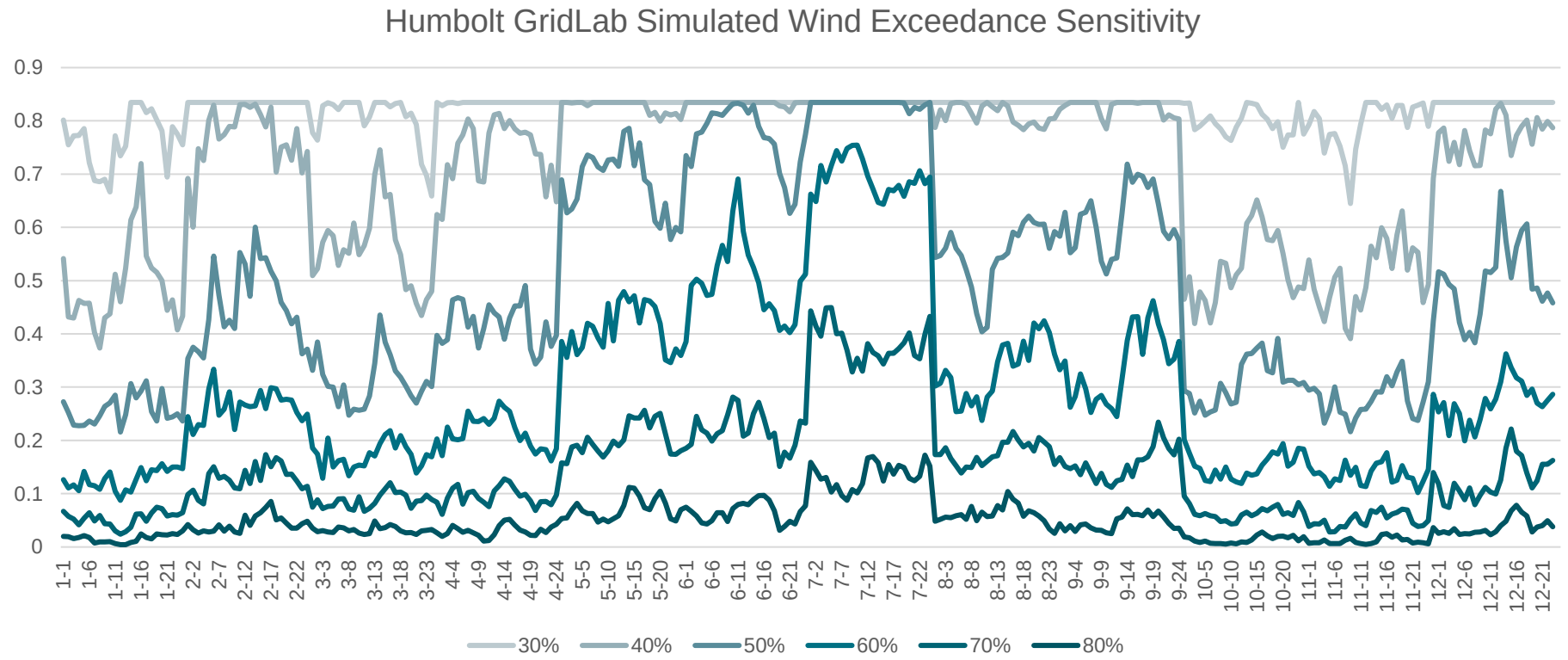


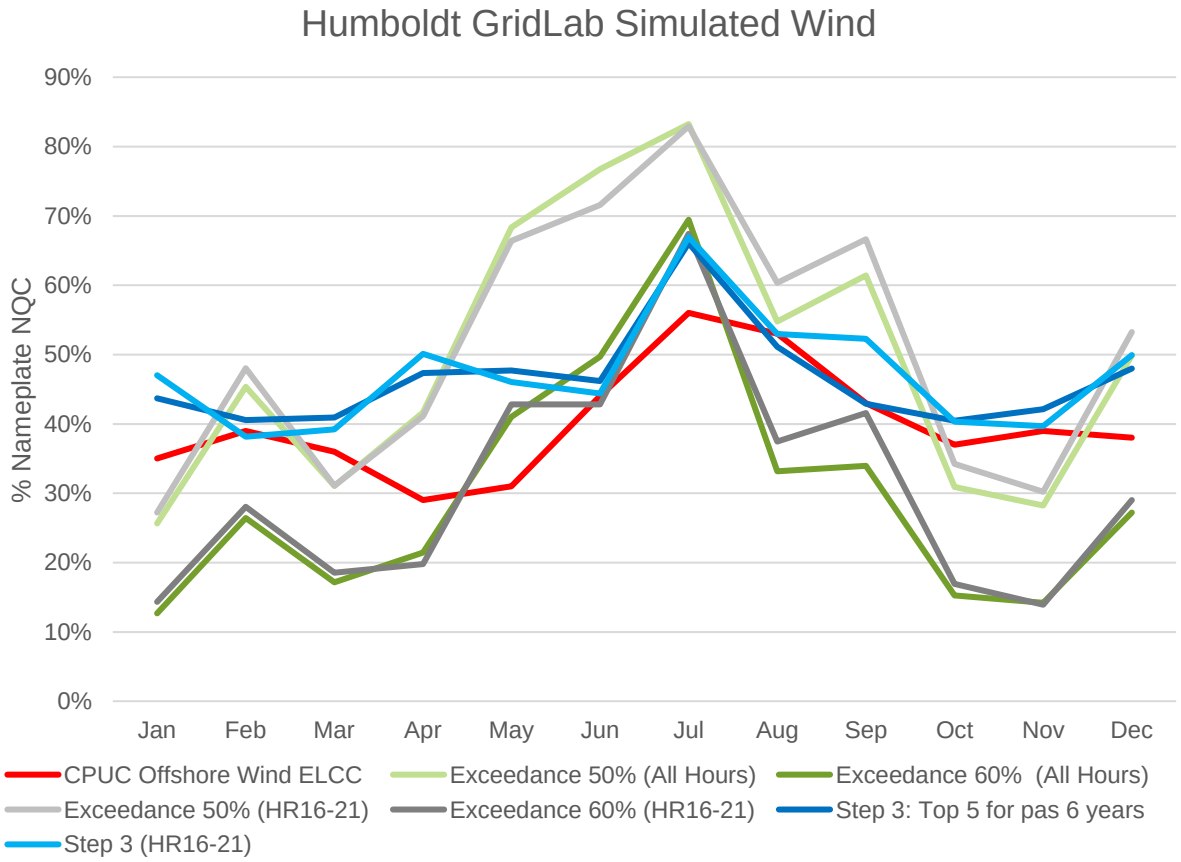


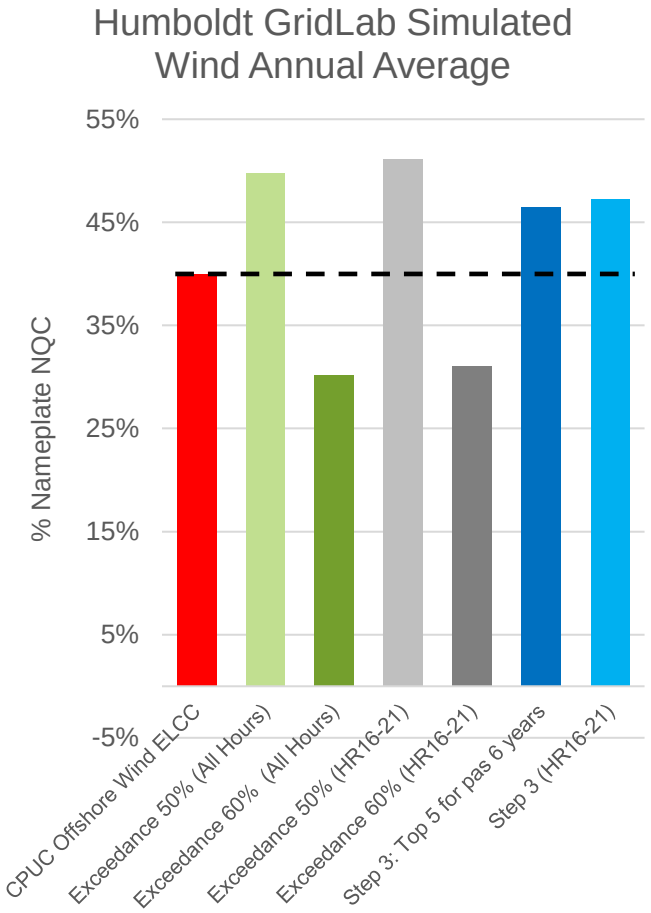
Humboldt Offshore Wind 2014-2020



Month-Hour Pairs

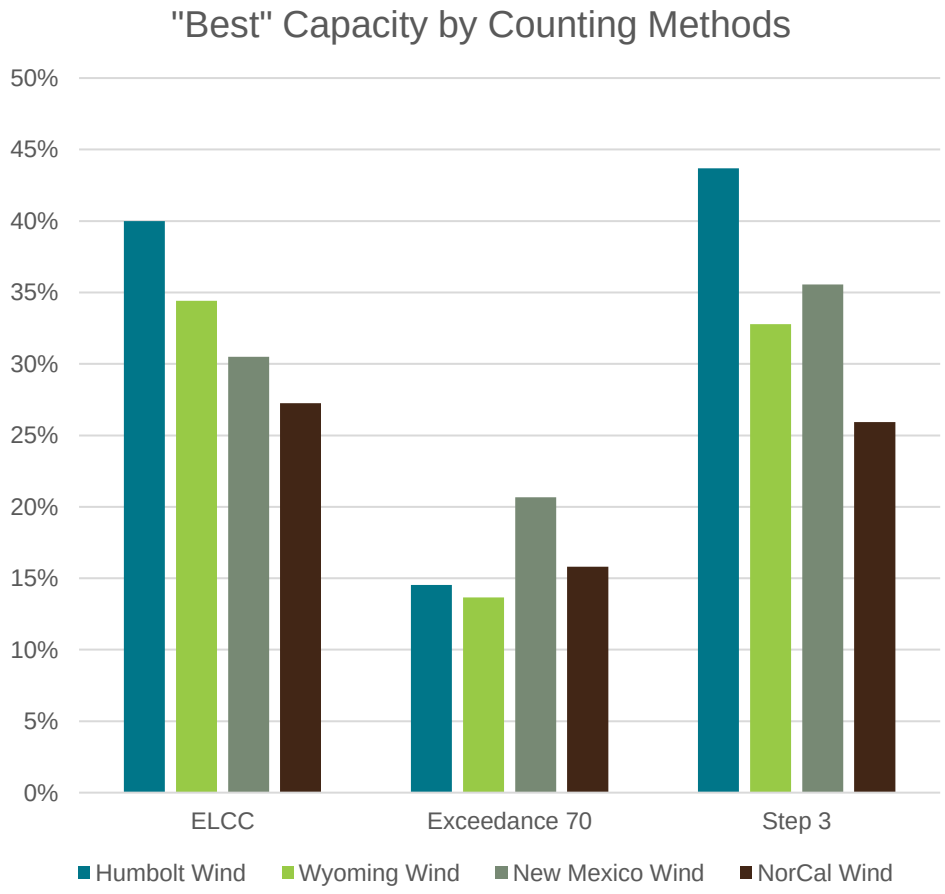
Selecting Exceedance with similar NQC to ELCC





Exceedance vs. ELCC

- Exceedance is a measure of a single farm's expected generation; it does not consider generation mix or load
  - **No incentive for resource diversification**
- Exceedance level is arbitrary, it's not tied to reserve margin or LOLE in any way
- One-time matching Exceedance with implied ELCC now is no guarantee of future relevance as both expected load & generation mix change



A systematic evaluation of wind's capacity credit in the Western United States - NREL

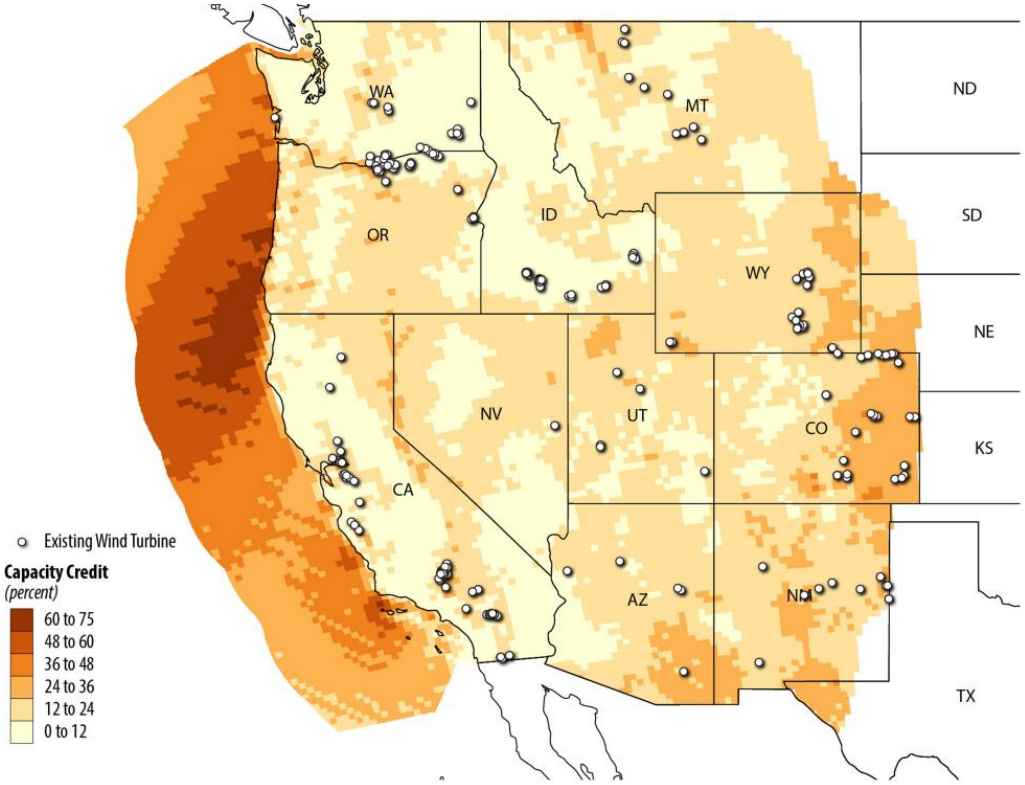


FIGURE 7 Marginal capacity credit (CC) by region for *current* land-based technology and offshore wind