



# **WESTERN RESOURCE ADEQUACY PROGRAM**

**Review of preliminary, non-binding WRAP regional data for the current participating footprint for the Winter 2024-2025 season**

**January 31, 2024**

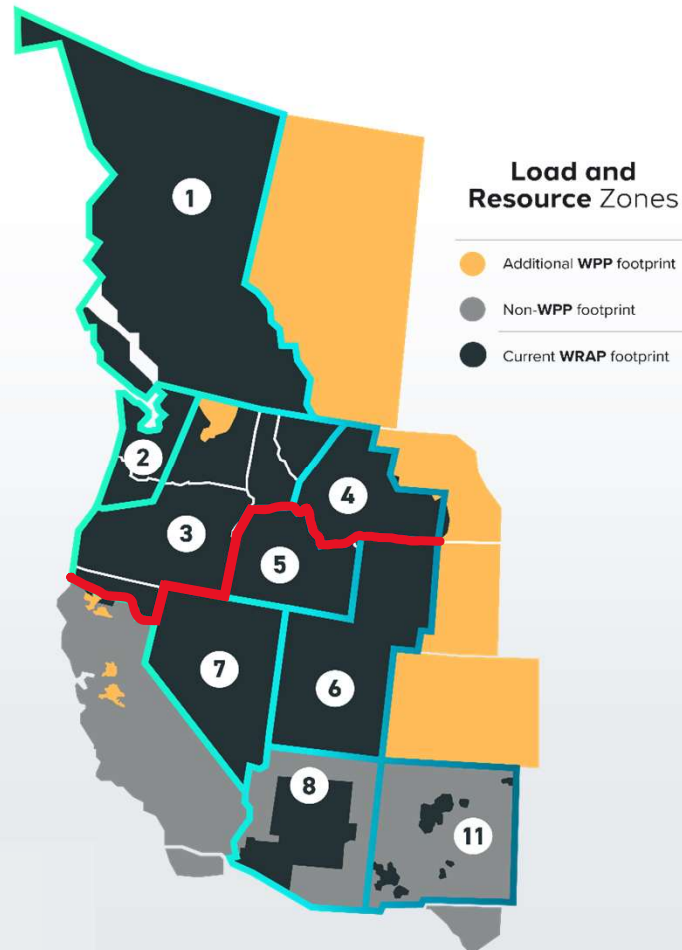
# TODAY'S OBJECTIVES

- » Provide an overview of the loads and resources in the WRAP footprint
- » Provide an overview of installations and nameplate for wind and solar
- » Provide an overview of the Qualifying Capacity Contributions (QCC) and Effective Load Carrying Capability (ELCC) values for each resource class
- » Provide an overview of Planning Reserve Margin values (PRM)

# BEFORE WE BEGIN

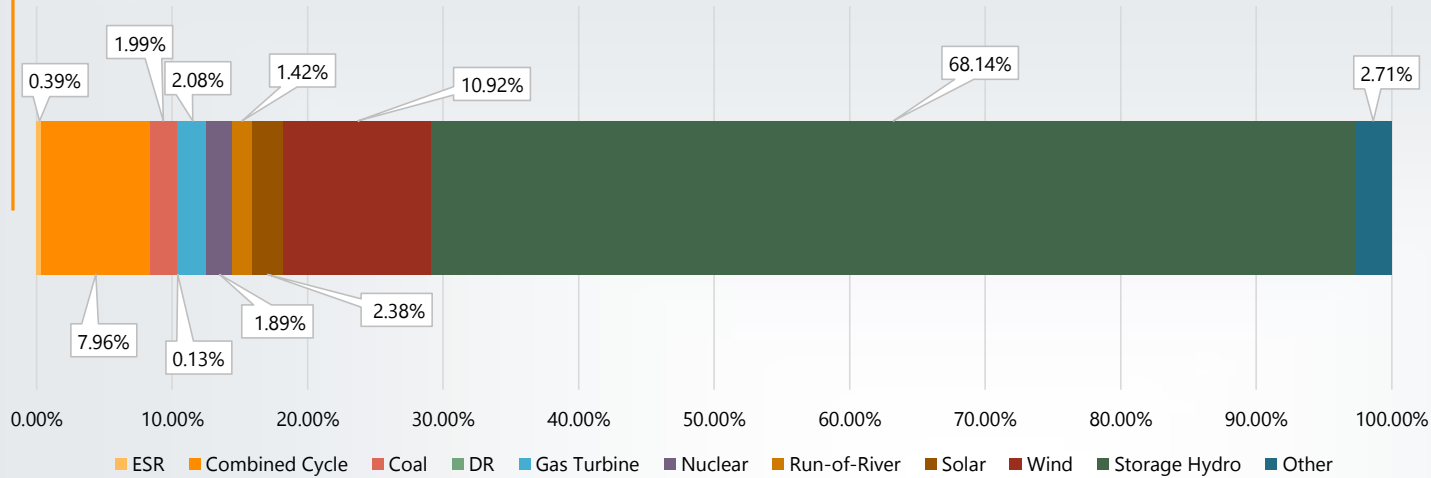
- » Modeling provided utilizes WRAP program design, assuming full binding implementation of the WRAP as designed
  - Metrics assume diversity benefit and a level of forward procurement on aggregate that is not presently expected without implementation of the WRAP
- » Modeling was performed based on the WRAP footprint in early 2023
  - Included all WRAP Participants except PNM due to late joining date
  - Changes to WRAP participation in future phases will impact these metrics
  - These assessments cannot account for adequacy needs or activities of non-participating load or resources
- » Be aware of the limits of drawing regional conclusions from aggregate information
  - Information is best applied at individual LREs; WRAP's scope does not include matching LREs in need of additional forward procurement with available resources
  - It cannot be assumed that all resources modeled in the loss of load expectation study will be available to the WRAP footprint
  - Planned outages are not considered; they will be managed by LREs from their surplus

# LOAD AND RESOURCE ZONES

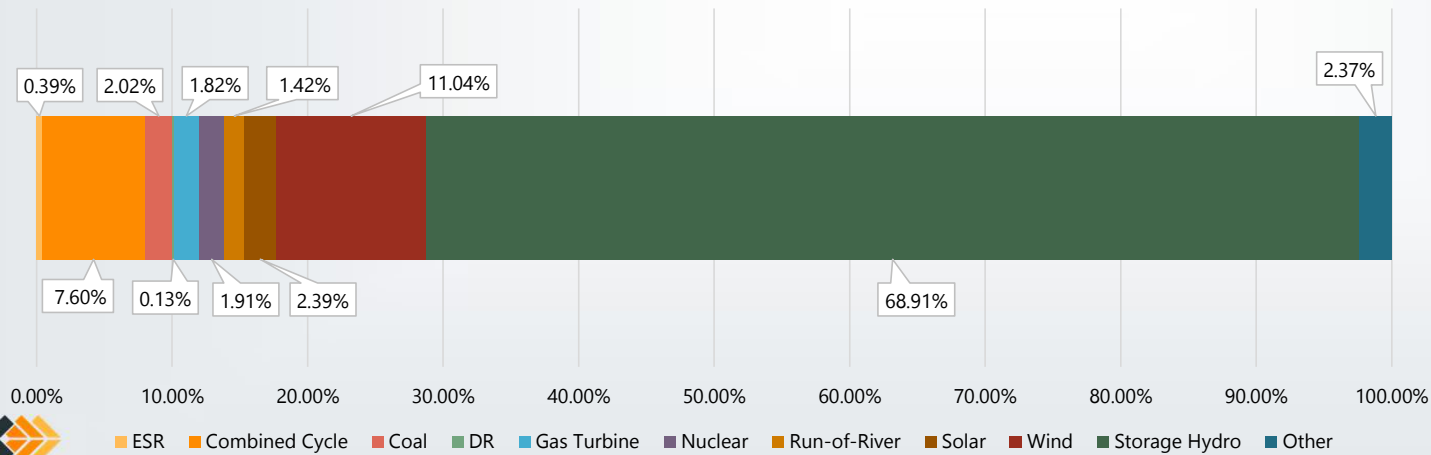


Subregion	Zone	Geographical Description
<b>MidC</b>	Zone 1	British Columbia
	Zone 2	West of Cascades
	Zone 3	East of Cascades
	Zone 4	NorthWestern
<b>SWEDE</b>	Zone 5	Idaho Power
	Zone 6	PacifiCorp East
	Zone 7	Nevada
	Zone 8	Arizona
	Zone 11	New Mexico <i>(not analyzed for Winter 24-25 assessment)</i>

Winter 2024-2025 MidC Subregion



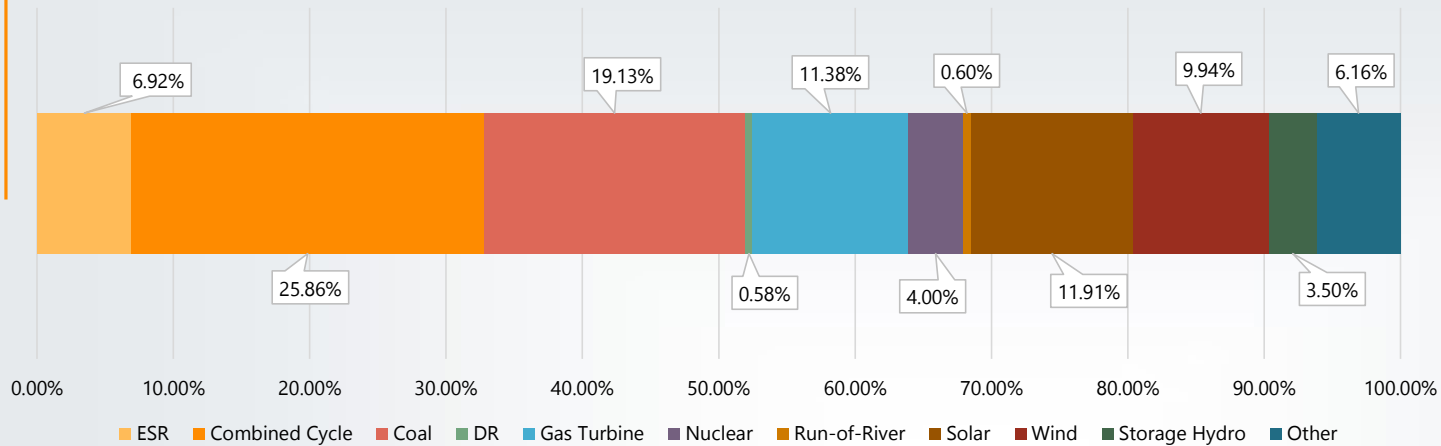
Winter 2027-2028 MidC Subregion



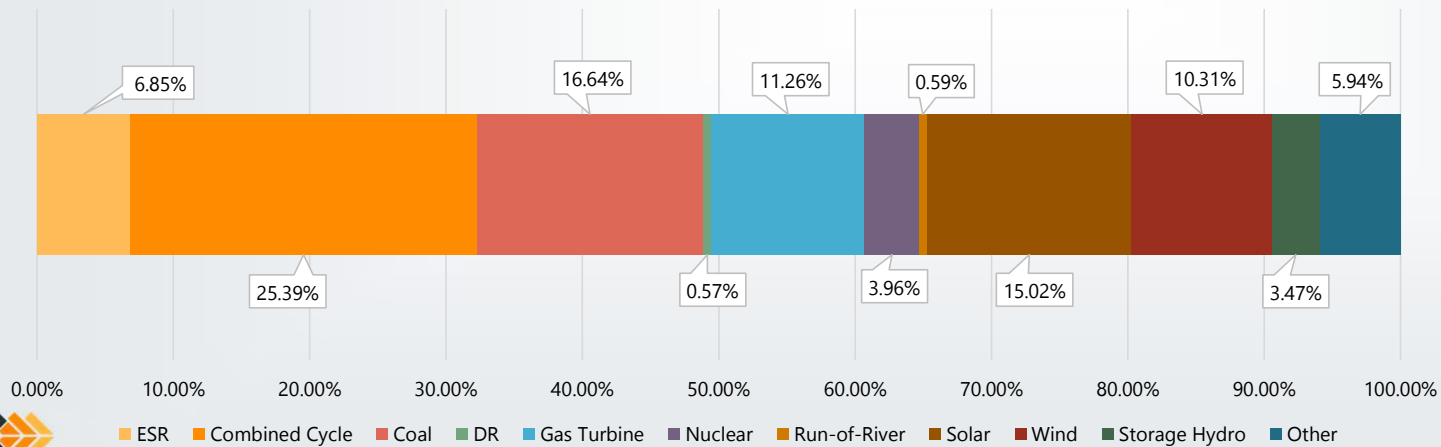
# MIDC SUBREGION WINTERS *Percentage*

# SWEDE SUBREGION WINTERS *Percentage*

Winter 2024-2025 SWEDE Subregion



Winter 2027-2028 SWEDE Subregion



# KEY REMINDERS

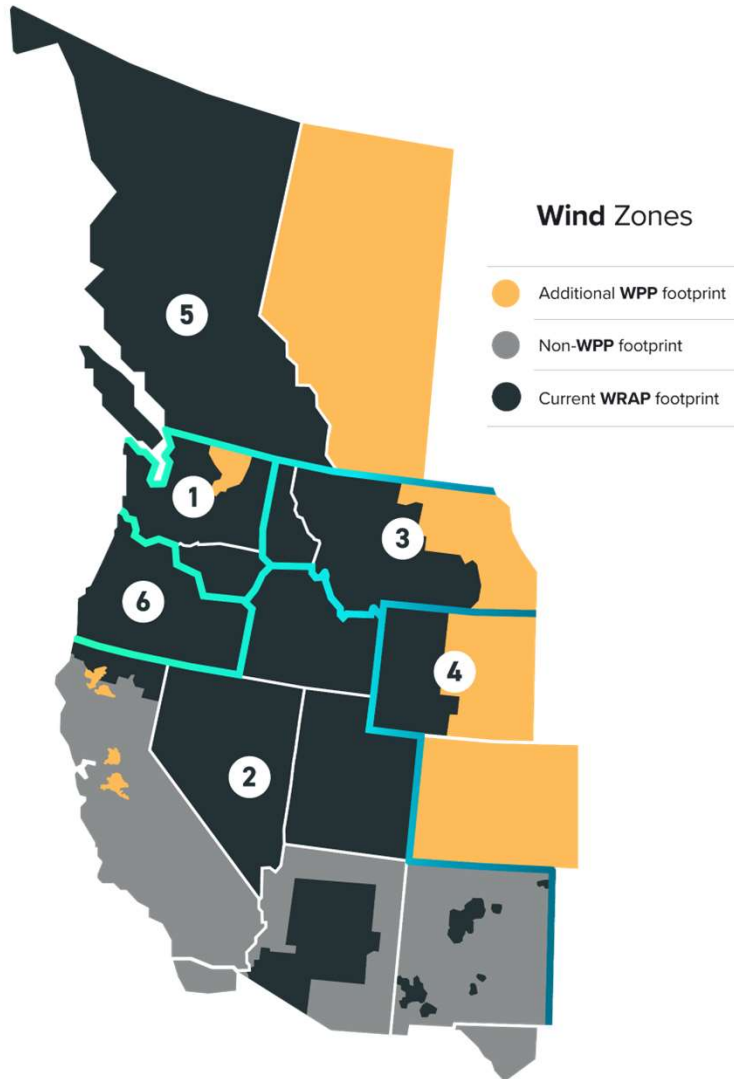
- » Not all resources shown in the preceding slides can be assumed to be available to the WRAP footprint for resource adequacy purposes
  - Planned outages are not considered; they will be managed by LREs from their surplus
  - Does not account for activities and needs of neighboring, non-participating regions or entities
  - Based on information and projections provided by participants
- » Aggregate information does not give insight into whether individual participants have enough supply
  - WRAP motivates participants to acquire the necessary capacity
  - Cannot assume this has yet happened or will happen without binding implementation of WRAP

# KEY TAKEAWAYS

- » Northwest has planned resource retirements which can impact capacity available to meet 1 event day-in-10 year LOLE
- » Southwest is seeing significant increase in resources, particularly VERs, very aggressive planned build targets to maintain 1 event day-in-10 year LOLE



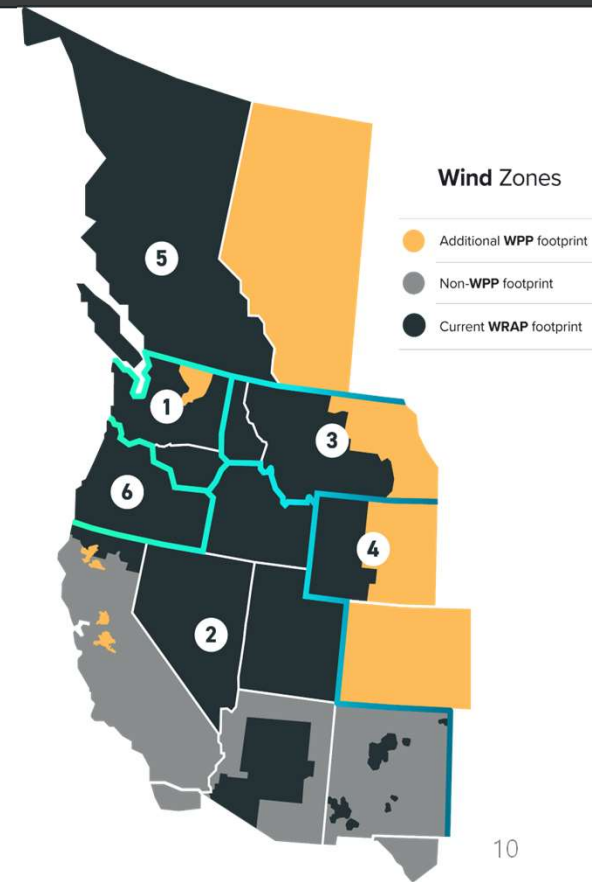
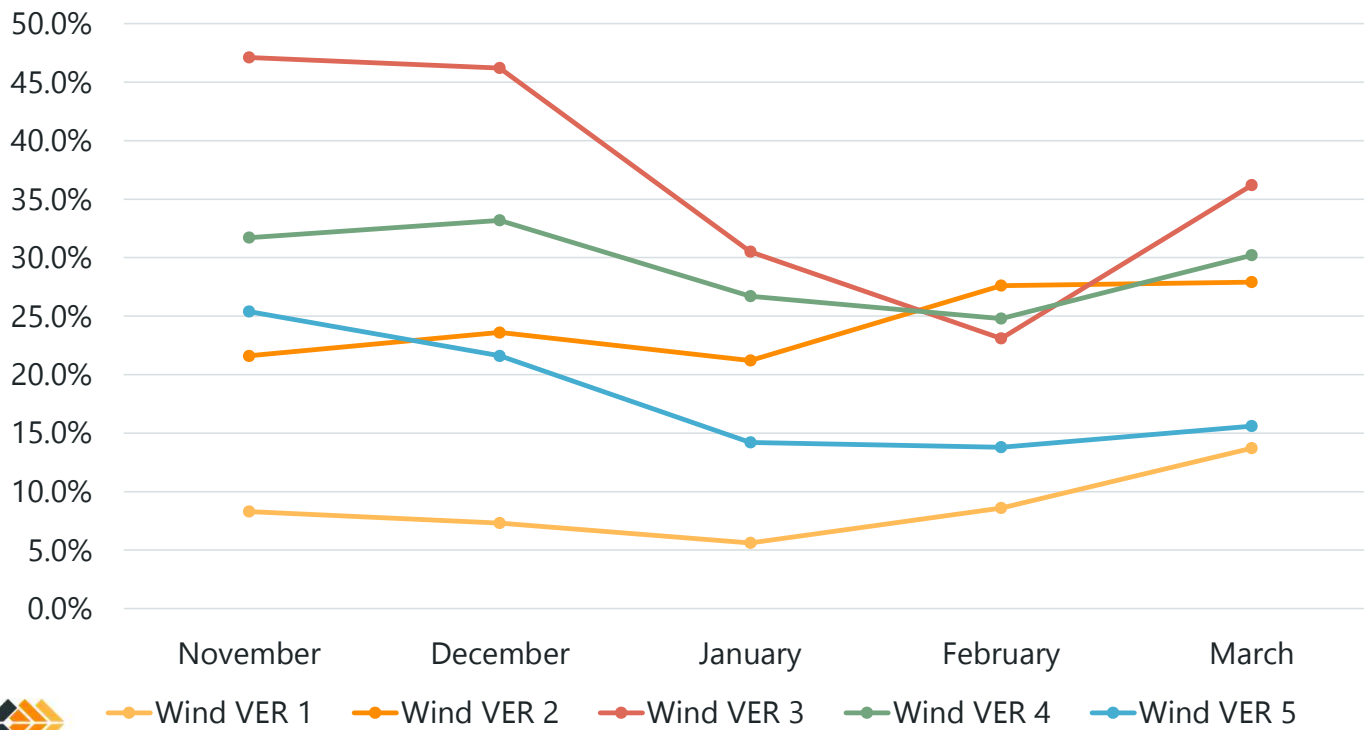
# WIND ZONES



Zone	Nameplate Capacity (MW)
Wind VER1	5,188
Wind VER2	2,347
Wind VER3	1,323
Wind VER4	2,546
Wind VER5	747
Wind VER6	No wind
<b>Total</b>	<b>12,081</b>

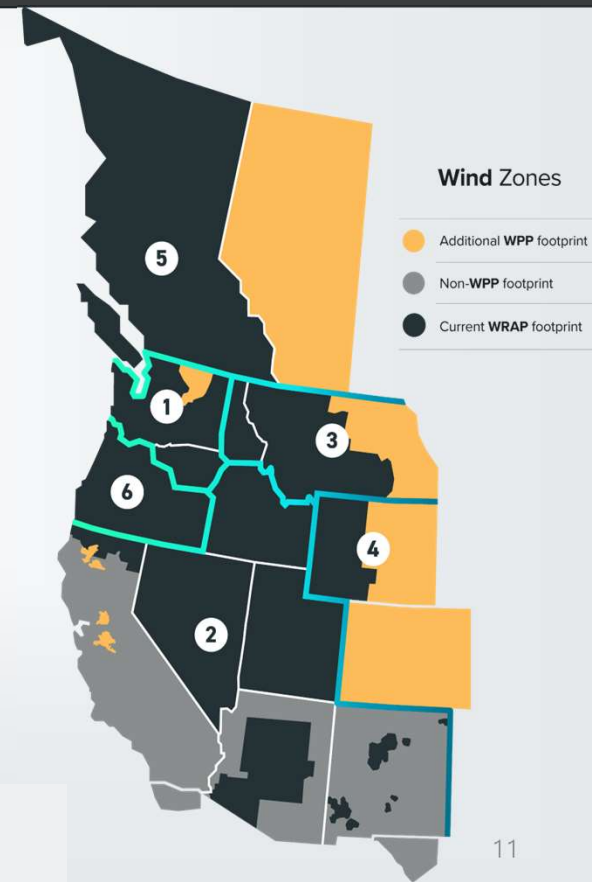
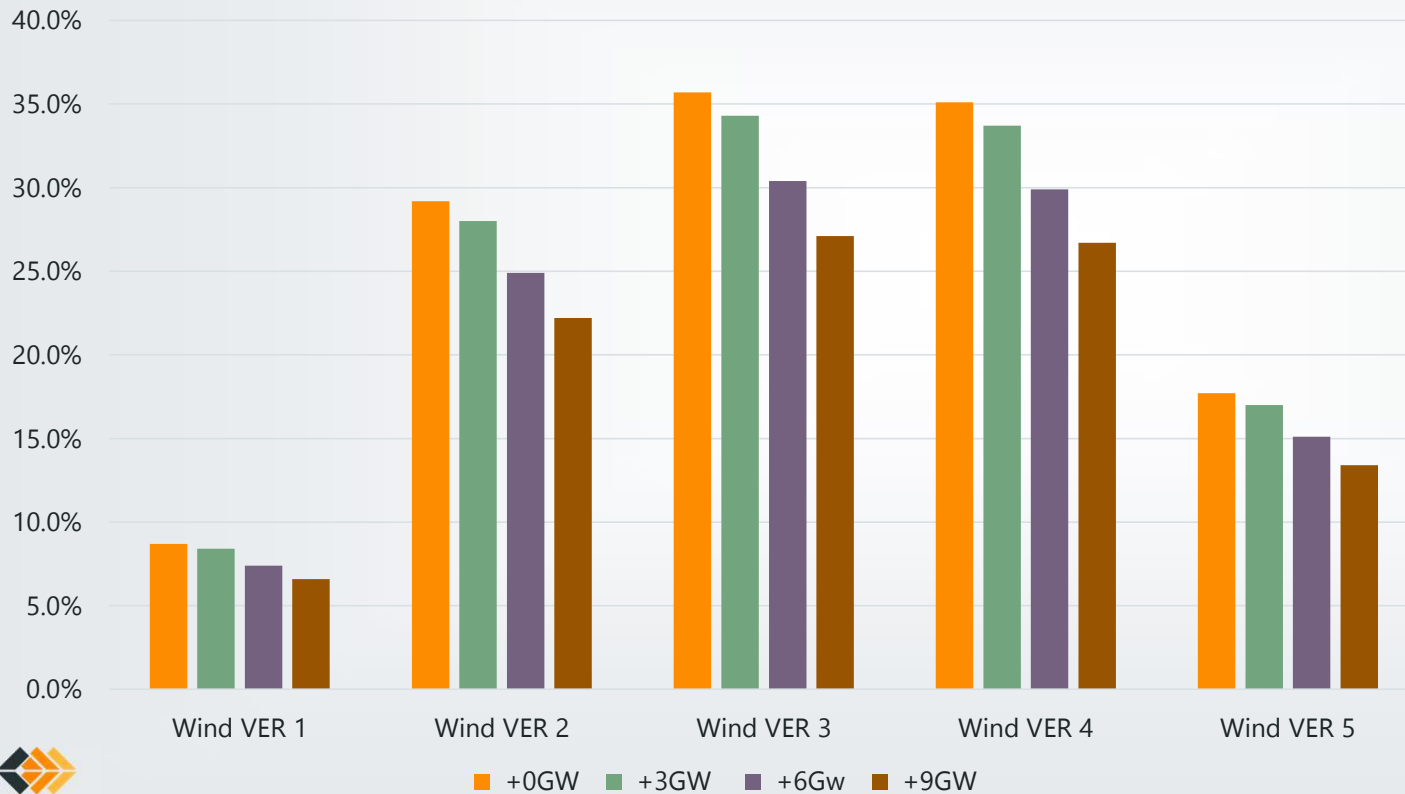
# WIND ELCC - WINTER

ELCC by VER Zone

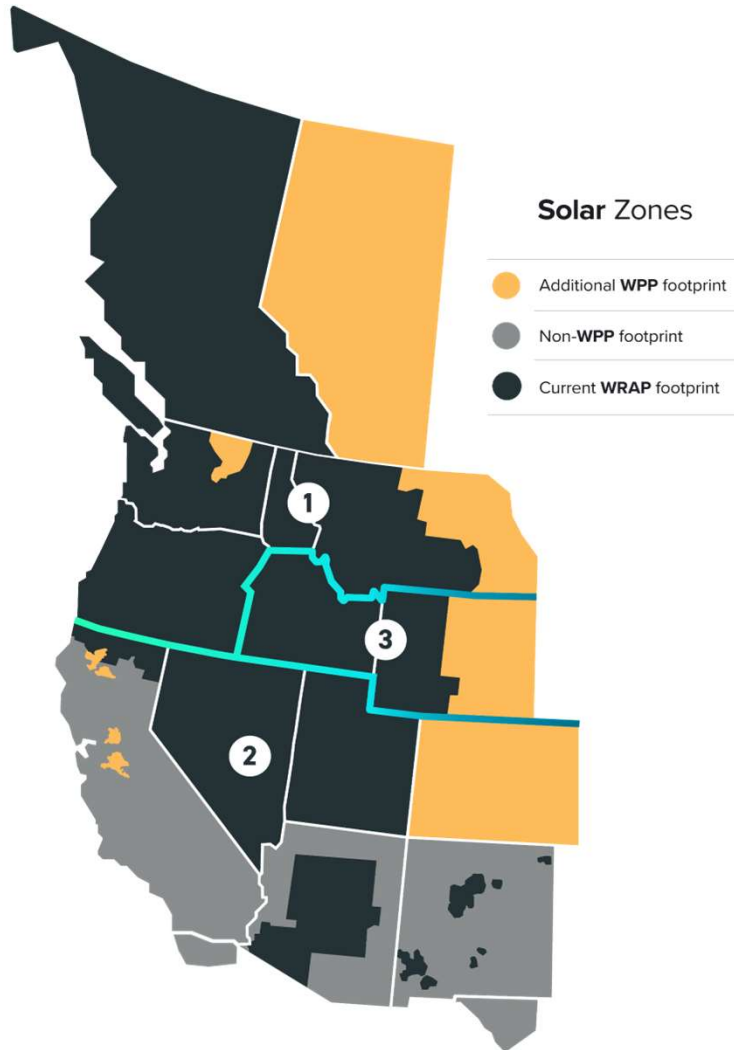


# WIND ELCC

## WIND AT INCREMENTAL GW INSTALLATIONS



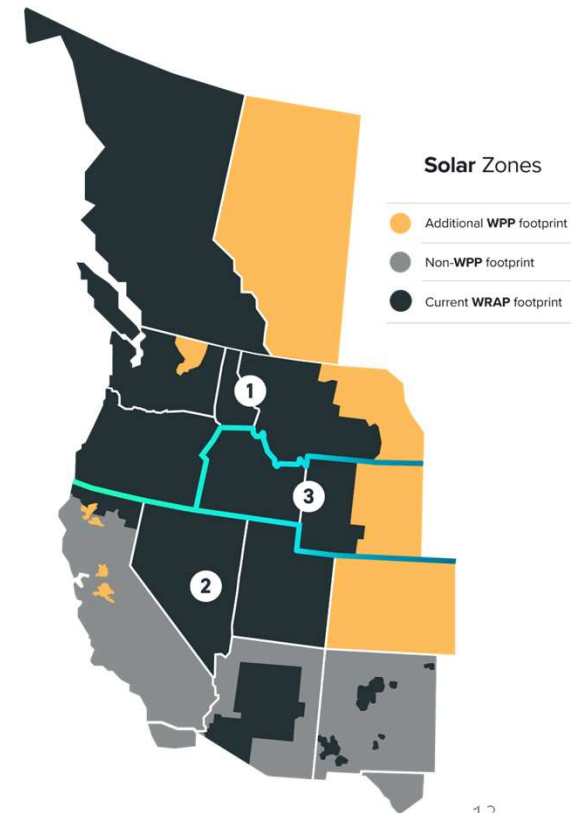
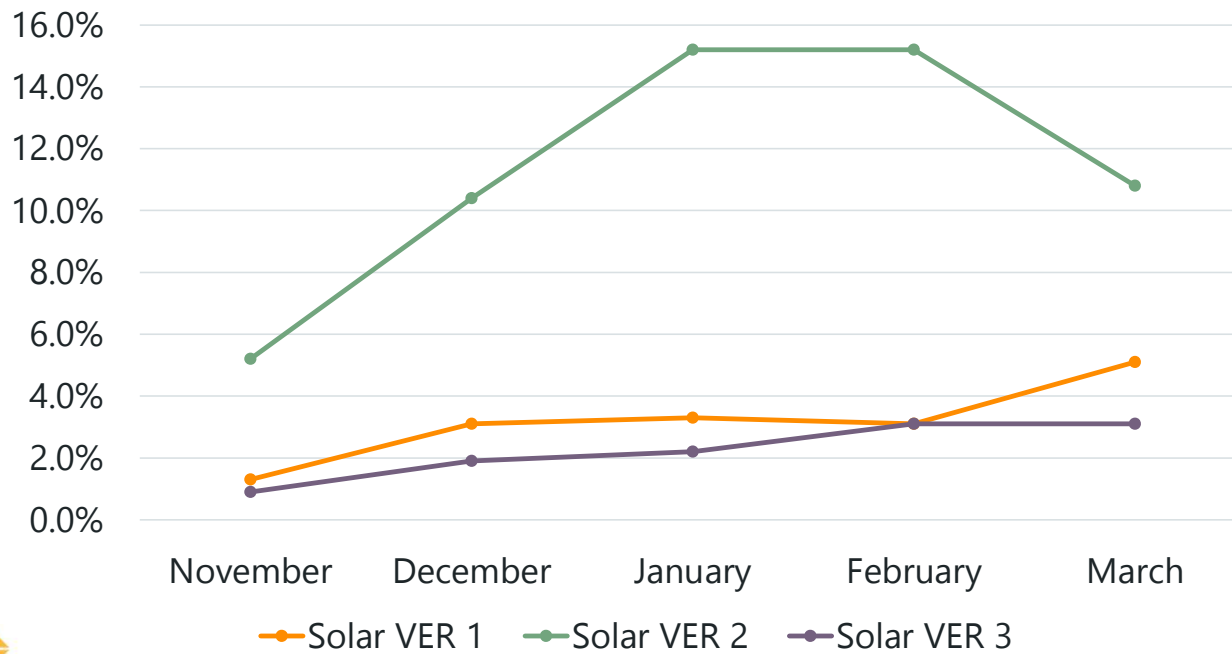
# SOLAR ZONES



Zone	Nameplate Capacity (MW)
Solar VER1	1,700
Solar VER2	8,674
Solar VER3	895
<b>Total</b>	<b>11,269</b>

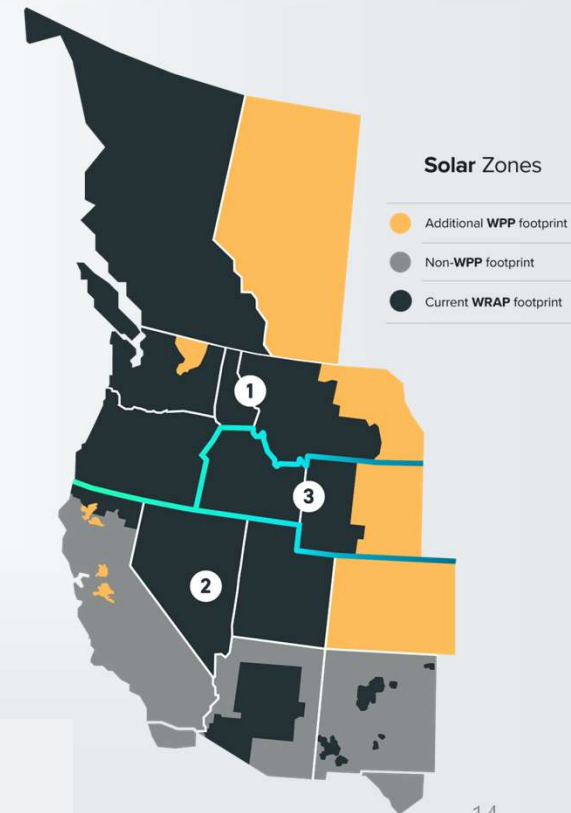
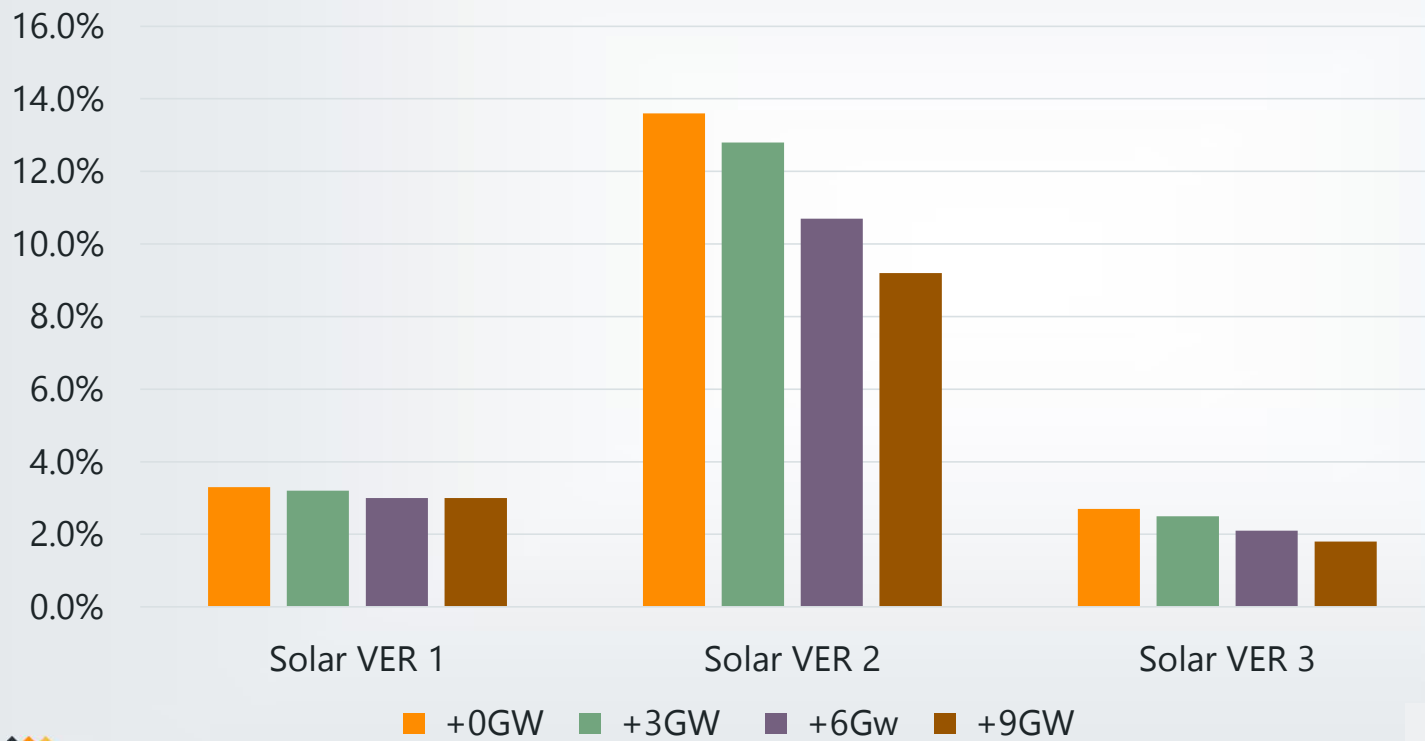
# SOLAR ELCC - WINTER

ELCC by VER Zone



# SOLAR ELCC

## *SOLAR AT INCREMENTAL GW INSTALLATIONS*

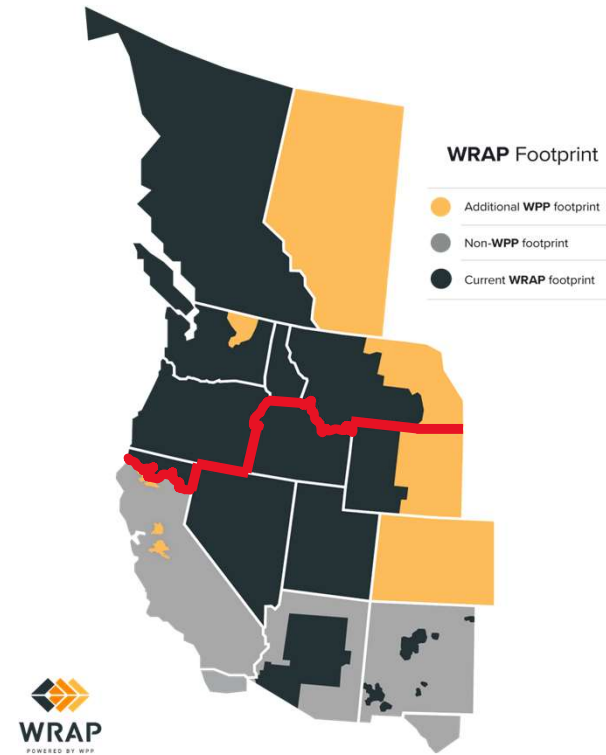
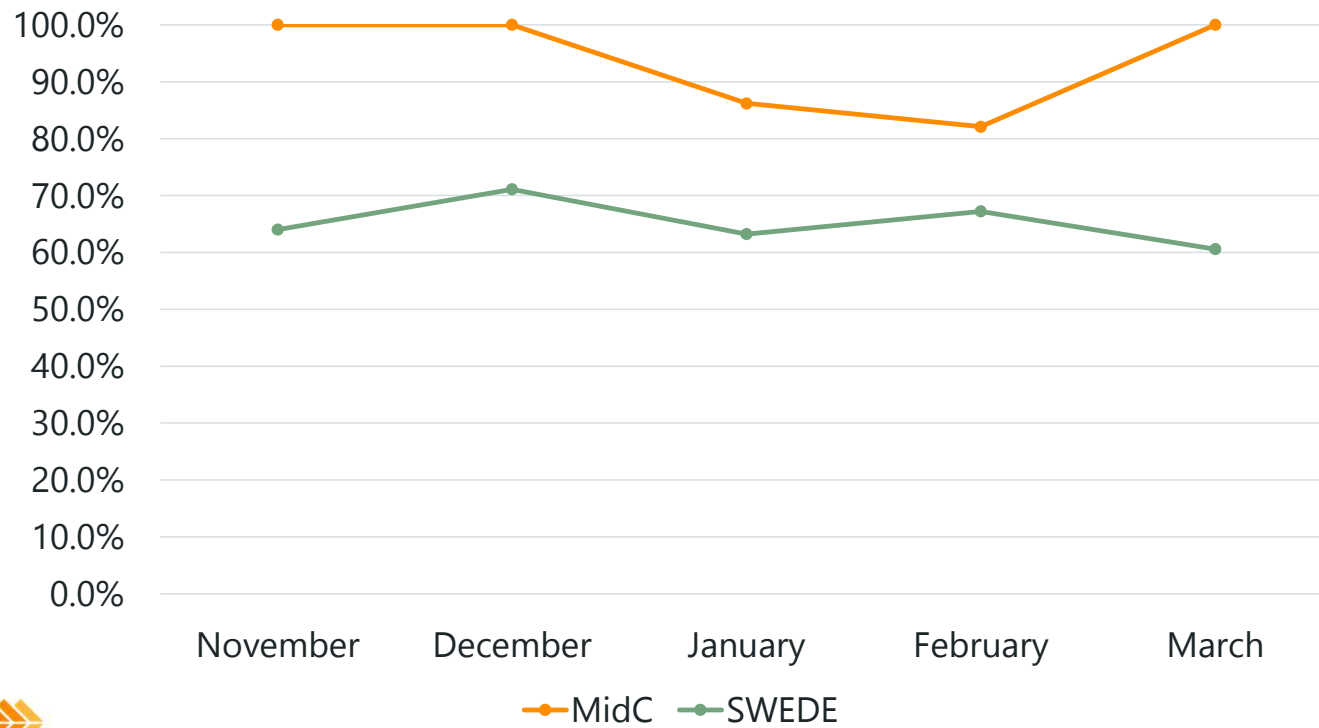


# ENERGY STORAGE RESOURCE (ESR) ZONES



Subregion	Nameplate Capacity (MW)
MidC	248
SWEDE	3,407
<b>Total</b>	<b>3,655</b>

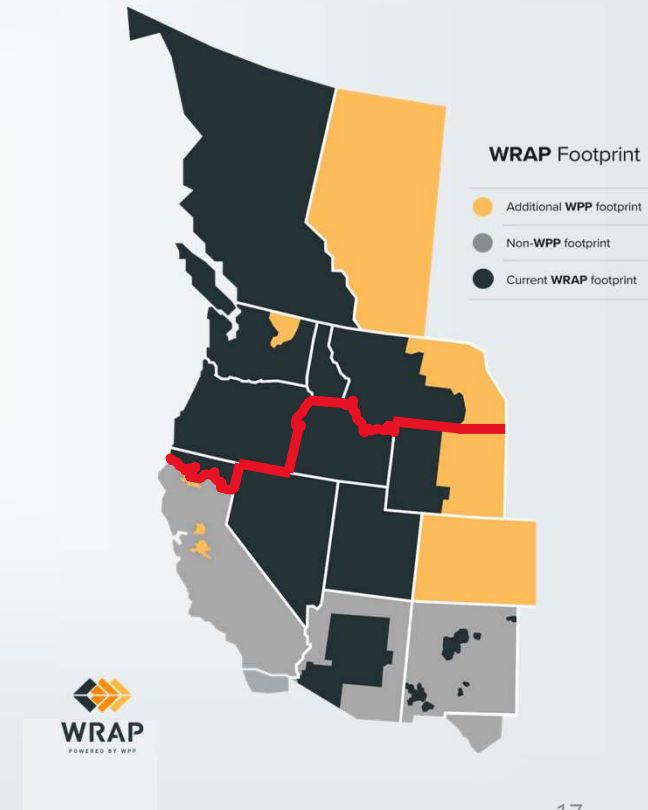
# ESR ELCC - WINTER





# ESR ELCC

## ESR AT INCREMENTAL GW INSTALLATIONS

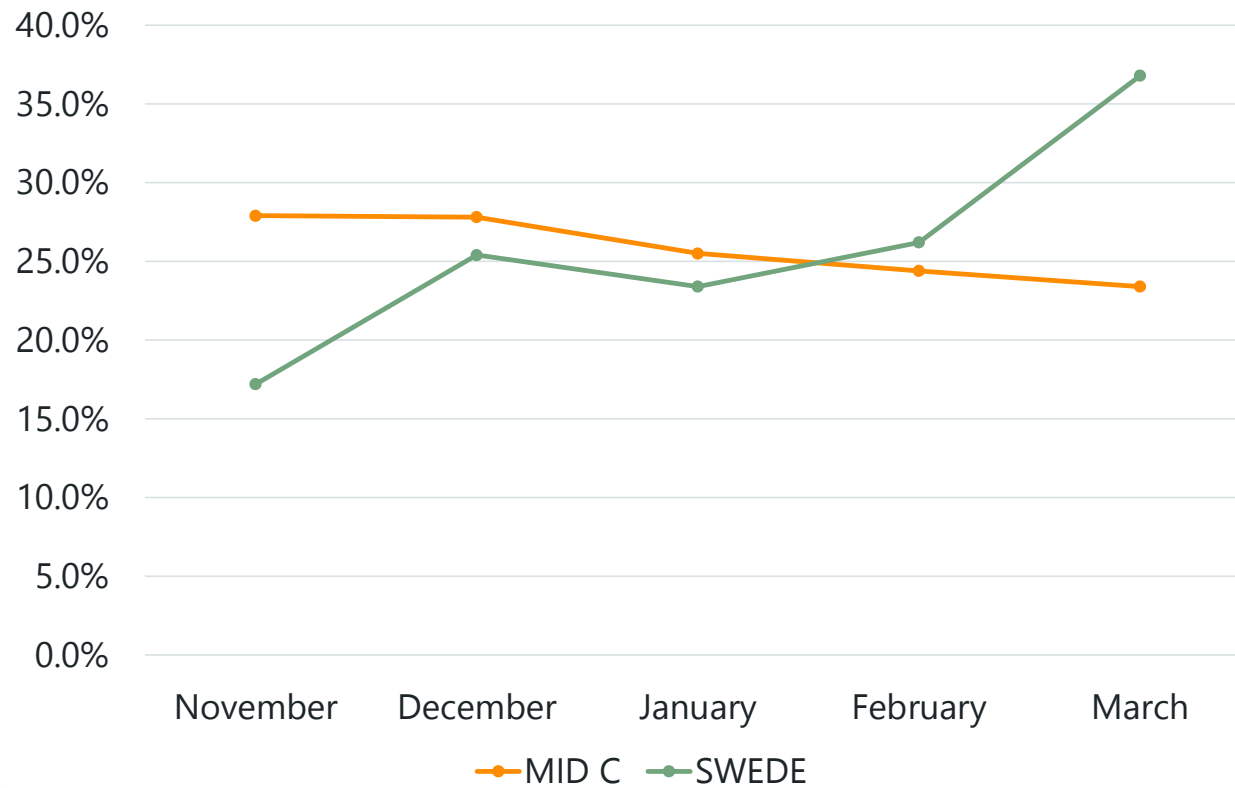


# RUN OF RIVER (RoR) ZONES

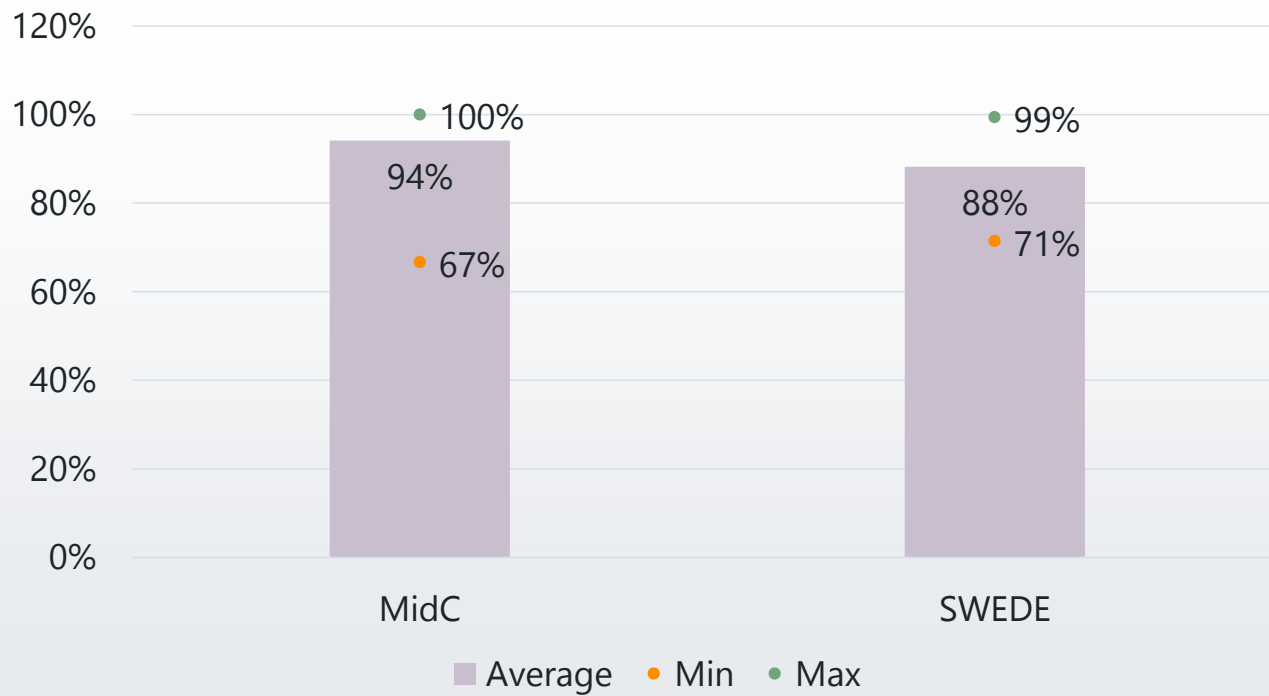


Subregion	Nameplate Capacity (MW)
MidC	3,568
SWEDE	1,253
<b>Total</b>	<b>4,821</b>

# RoR QCC - WINTER

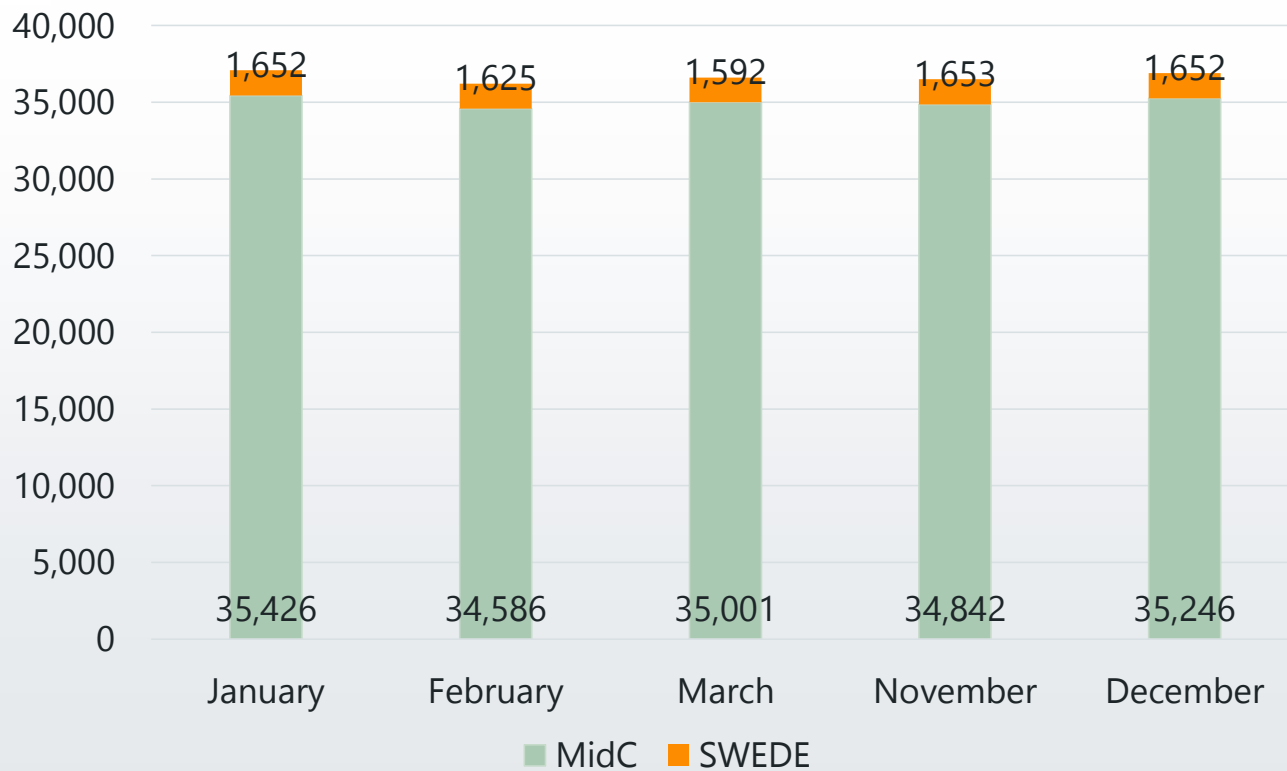


# THERMAL QCC

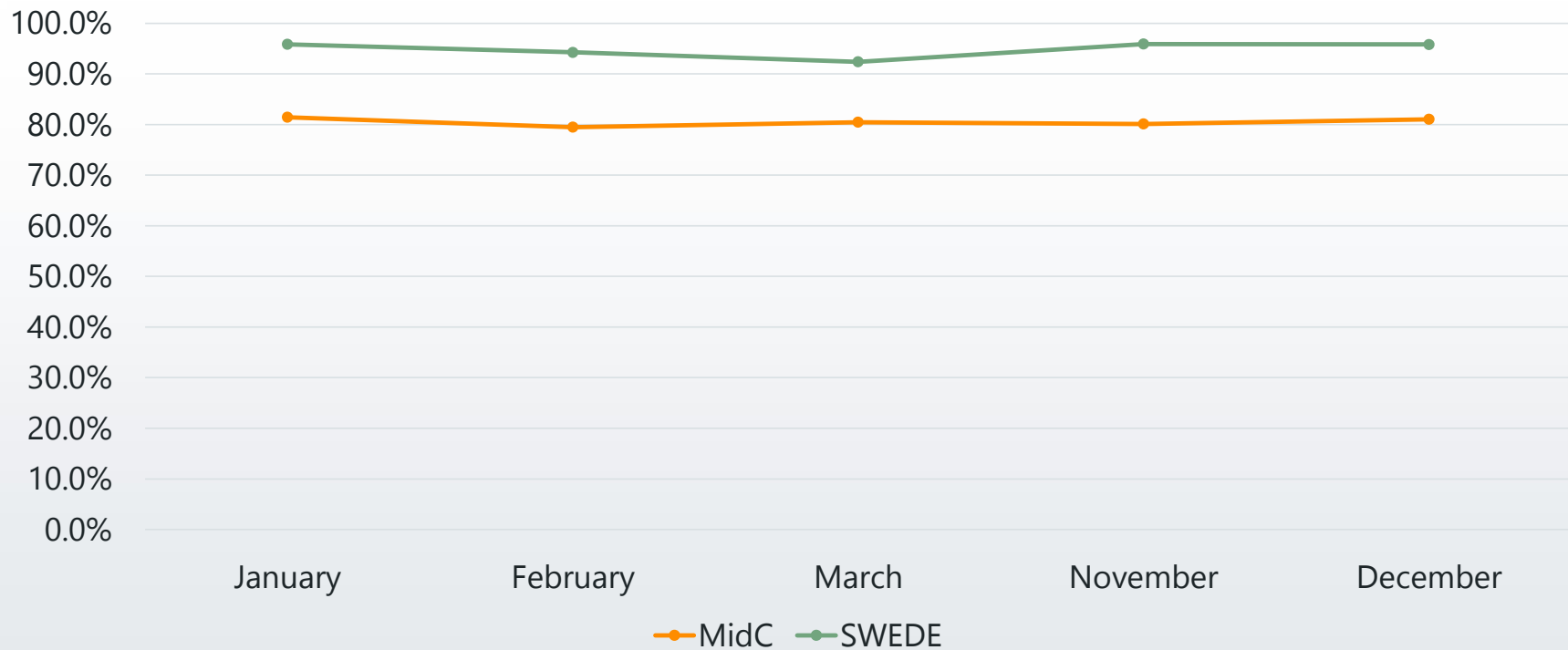


*\*Uses indicative values for resources that did not provide GADS data*

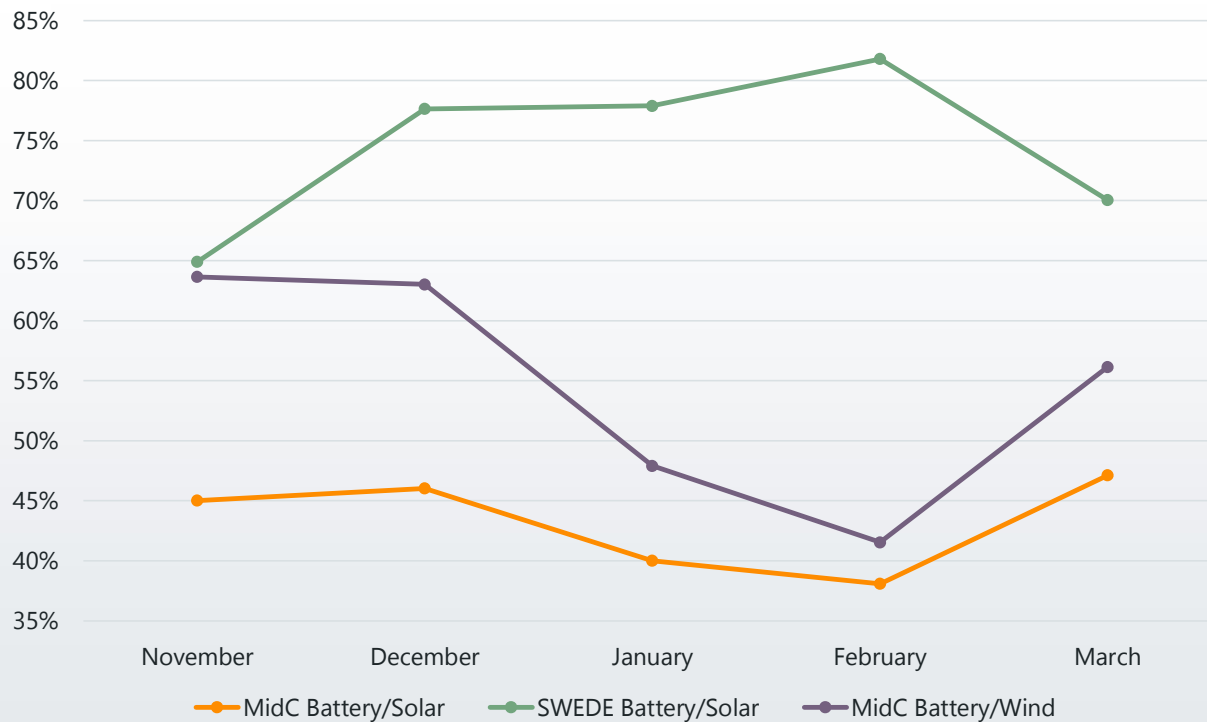
# STORAGE HYDRO QCC MW



# AVERAGE STORAGE HYDRO QCC



# HYBRID RESOURCE QCC



Number of installed pairings

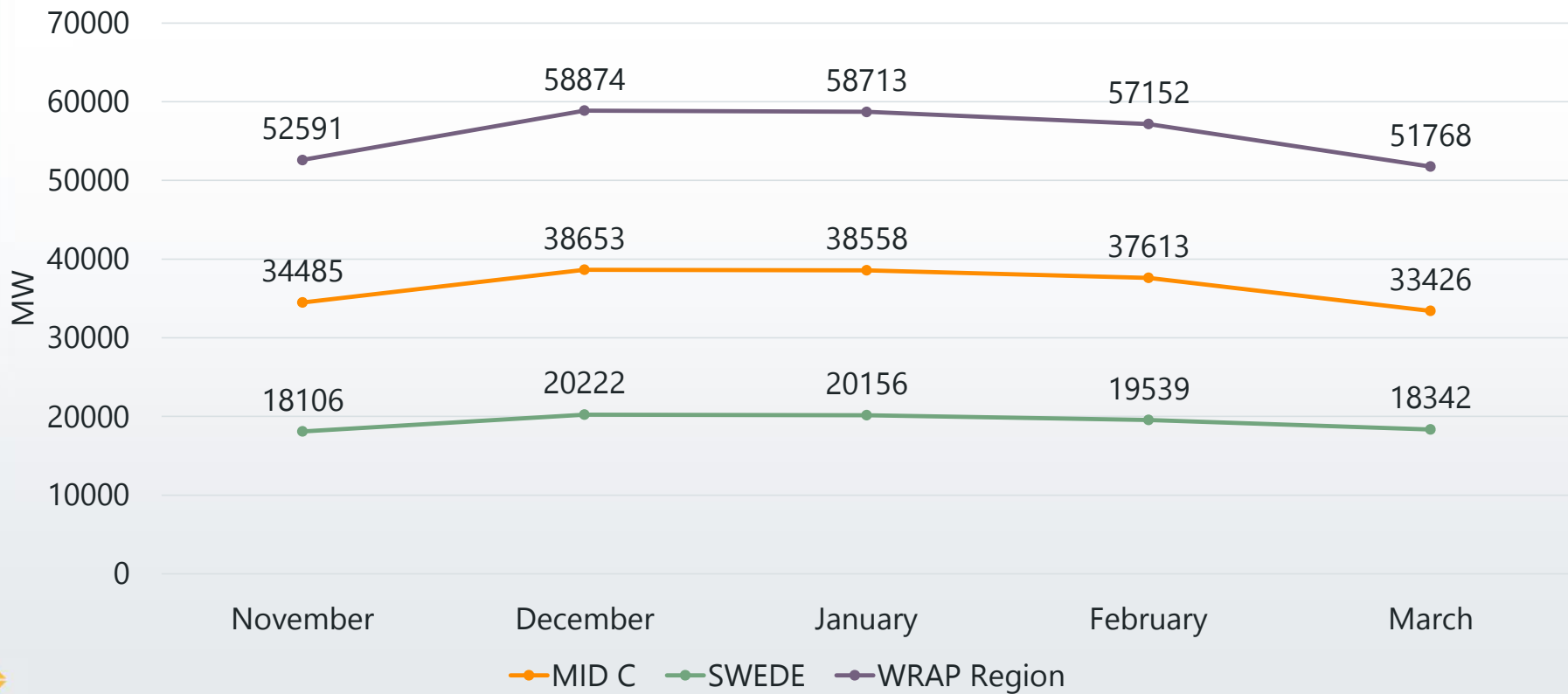
	MidC	SWEDE
Battery/Solar	4	30
Battery/Wind	4	0

# PRM CONSIDERATIONS

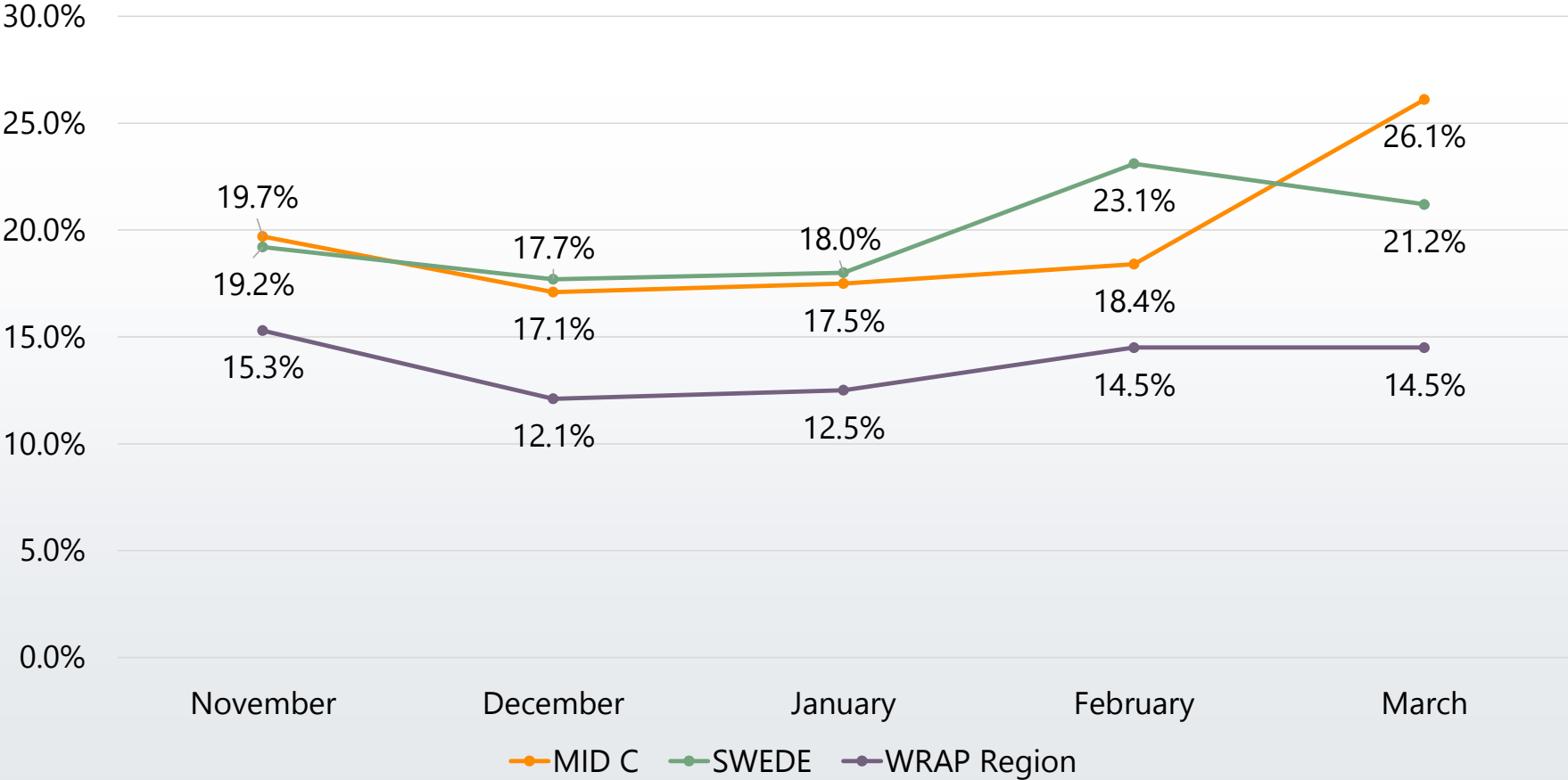
- » Attempting to maintain 0.1 LOLE across the season
- » Minimum of 0.01 LOLE in each individual month
- » NCP load for a given month a significant factor in calculation of PRM (lower load months will have higher PRM value)



# PEAK LOAD

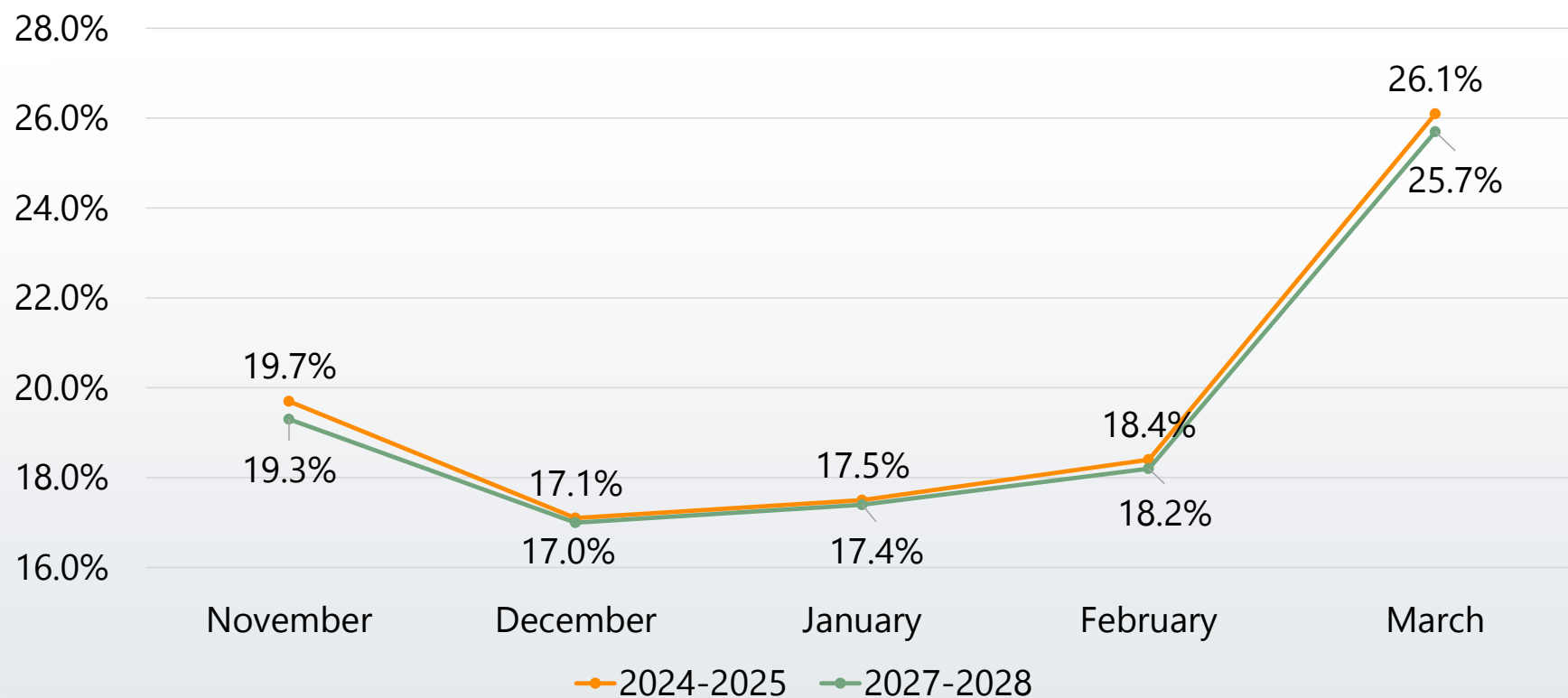


# PRM – WINTER 2024-2025



# PRM – MIDC WINTER

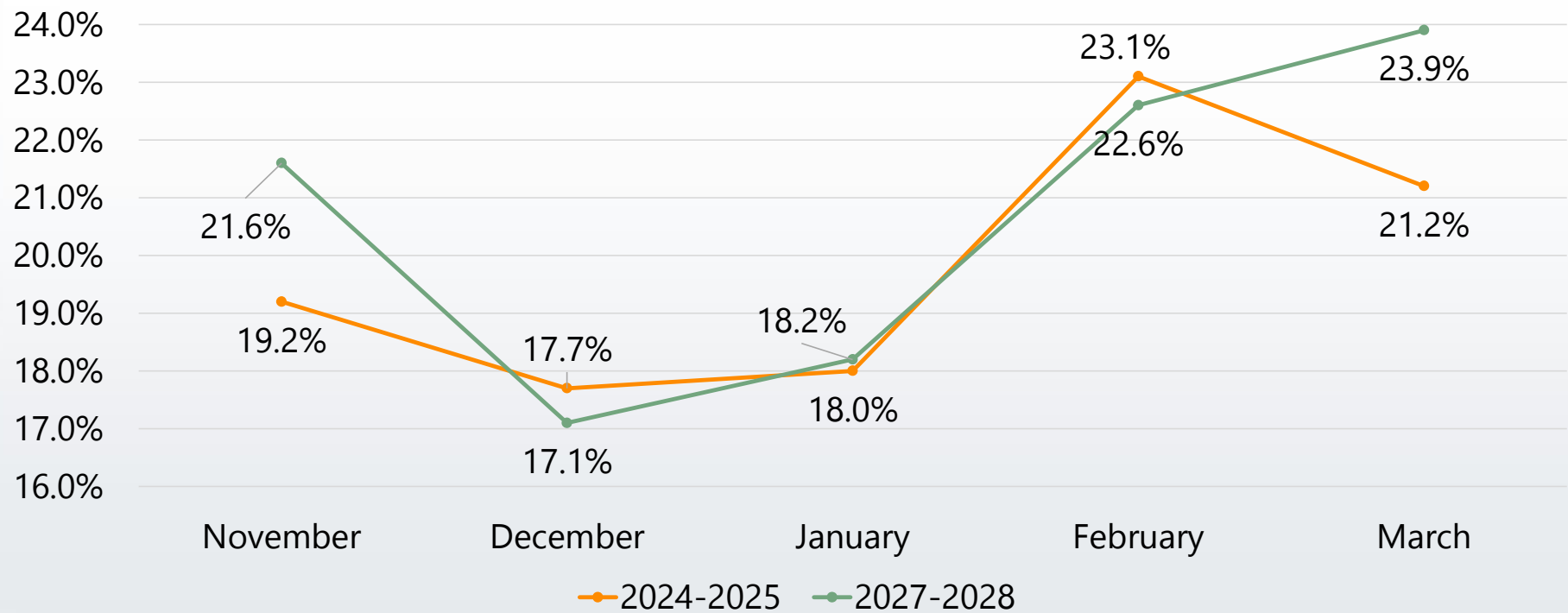
*2024-2025 AND 2027-2028*



# PRM – SWEDE WINTER

*2024-2025 AND 2027-2028*

SWEDE

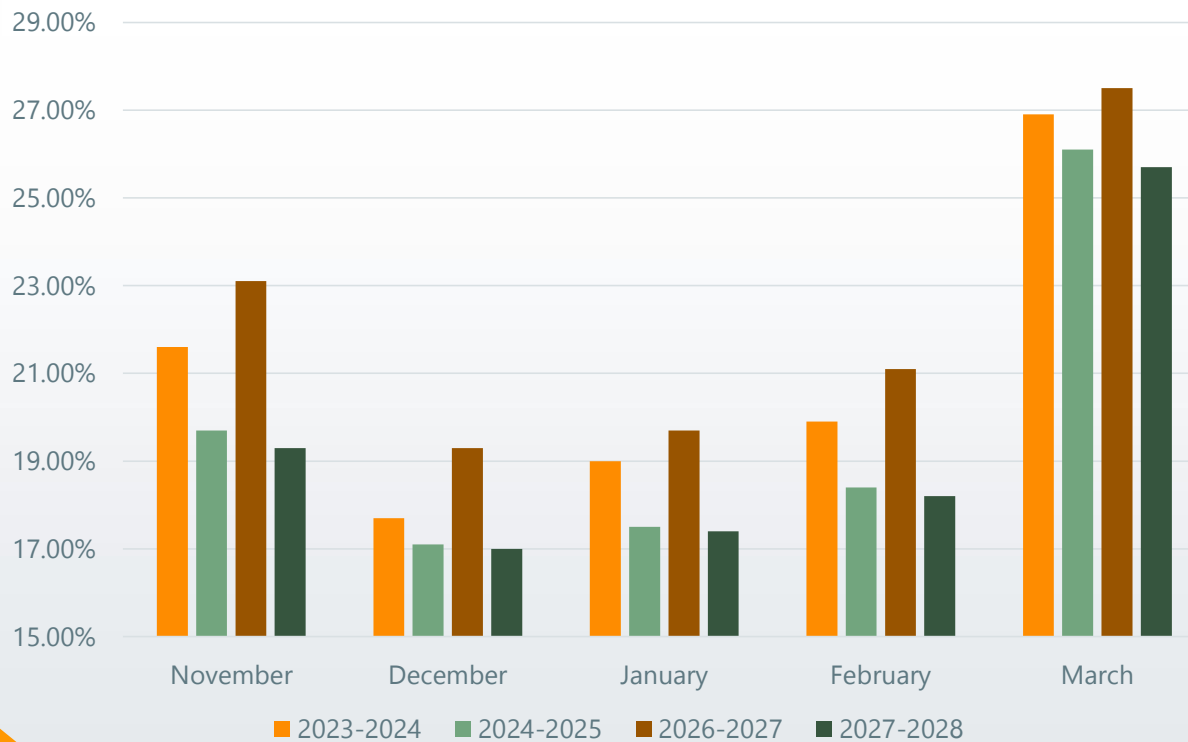


# THANK YOU

*For general inquiries or to be added to our mailing list:  
[wrap@westernpowerpool.org](mailto:wrap@westernpowerpool.org)*

# PRM FROM PREVIOUS WINTER SEASONS

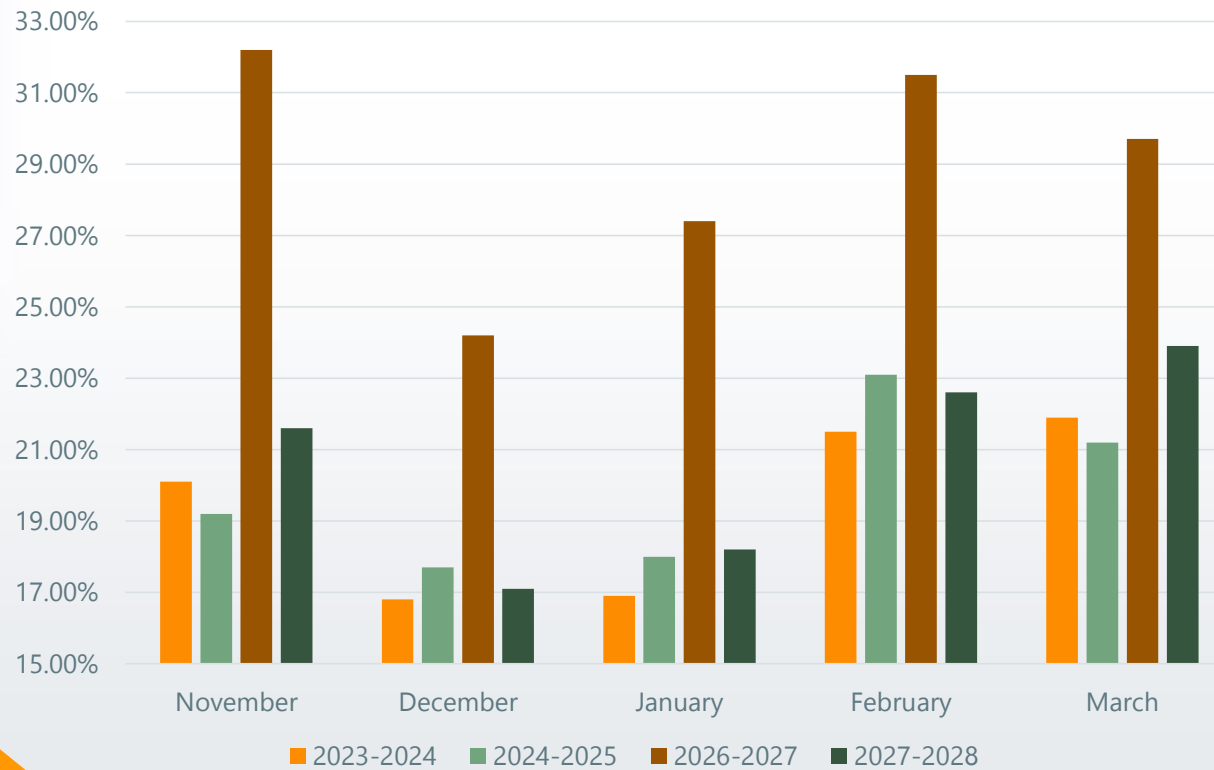
# PRMs – NORTHWEST



» 2023-2024 and 2026-2027 studies were done in 2022 with a slightly different footprint and different methodology

» 2026-2027 and 2027-2028 are advisory only

# PRMs – SOUTHWEST

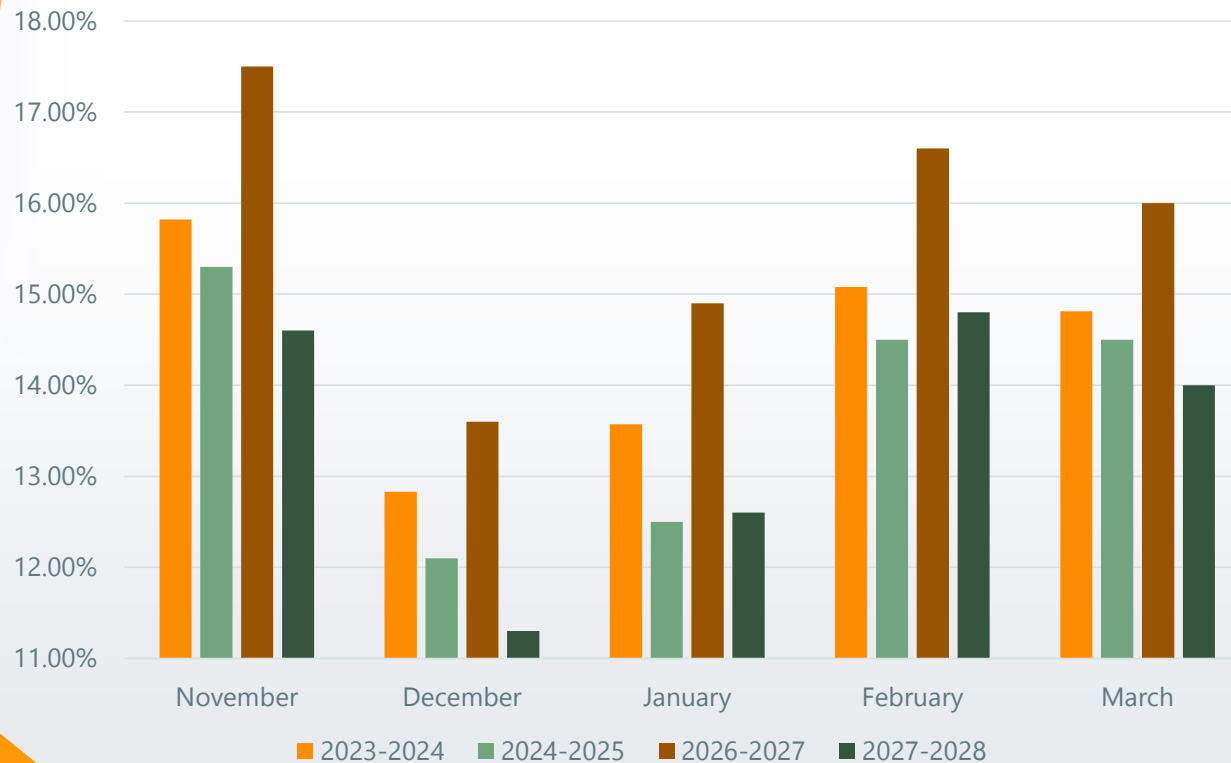


» 2023-2024 and 2026-2027 studies were done in 2022 with a slightly different footprint different methodology

» 2026-2027 and 2027-2028 are advisory only



# PRMs – WRAP REGION



- » 2023-2024 and 2026-2027 studies were done in 2022 with a slightly different footprint different methodology
- » 2026-2027 and 2027-2028 are advisory only