



# 2023 RTP Sensitivity Assumptions

ERCOT Regional Transmission Planning

October 18, 2023

# Introduction

- ❑ NERC Reliability Standard TPL-001-5.1
  - Requires sensitivity analyses to be performed
  
- ❑ 2023 RTP off peak sensitivity analysis
  - Study year 2026
  
- ❑ 2023 RTP on peak sensitivity analysis
  - Study years 2025 and 2028
  
- ❑ Assumptions and methodology
  - Starting cases and case development
  - Generation and load

# Off Peak – Overview

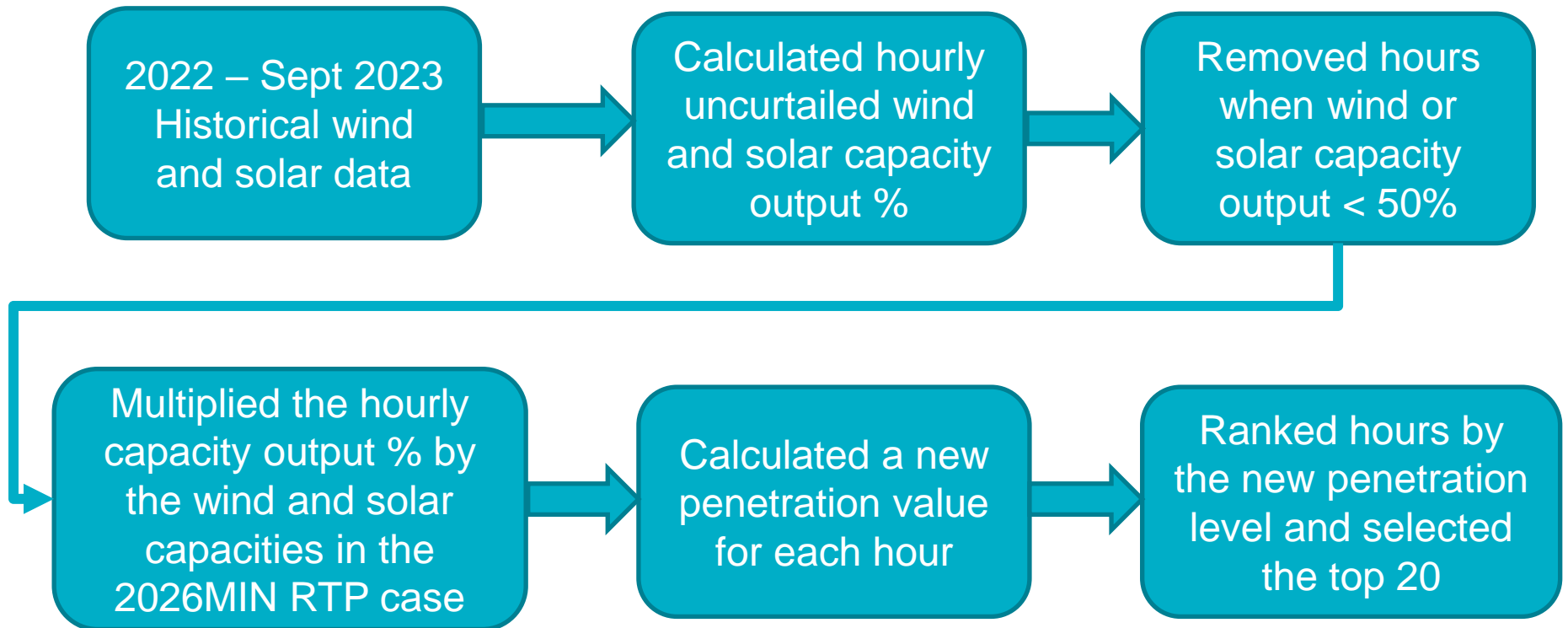
- ❑ High Renewable Light Load (HRLL) off peak sensitivity
  - Study year: 2026
  - Start case: 2023 RTP 2026 MIN case topology
  
- ❑ Goal is to identify potential needs to accommodate the assumed level of renewable generation
  - Wind and solar generation will not be curtailed to resolve thermal and voltage violations
  
- ❑ All stability limits used in the 2023 RTP will be respected<sup>1</sup>
  - Wind and solar generation may be scaled to accomplish this
  
- ❑ ERCOT critical inertia levels will be respected<sup>2</sup>
  - Wind and solar generation may be scaled to accomplish this

1: [https://www.ercot.com/files/docs/2023/05/15/2023\\_RTP\\_Reliability\\_Study\\_Assumptions\\_Update\\_05162023.pdf](https://www.ercot.com/files/docs/2023/05/15/2023_RTP_Reliability_Study_Assumptions_Update_05162023.pdf)

2: <https://www.ferc.gov/media/inertia-basic-concepts-and-impacts-ercot-grid>

# Off Peak – Generation Assumptions

## □ Top 20 Hour Selection



# Off Peak – Solar and Wind Dispatch Levels

## ☐ Solar and Wind Dispatch

- Utilized the average hourly capacity output % of the top 20 hours
  - Wind evaluated by region: Coastal, Panhandle, Other
- Results in 25,141 MW of solar generation
- Results in 29,973 MW of wind generation
- Output may be scaled lower to maintain 2023 RTP stability limits and critical inertia

Resource Region	Capacity Output %
Coastal wind	72.27%
Panhandle wind	86.35%
Other wind	76.09%
Solar	79.45%

# Off Peak – Hydro Dispatch and DC Ties

## □ Hydro Dispatch

- Reviewed historical output during the top 20 hours
- Resulted in 26 MW of hydro generation

## □ DC Tie Import/Export

- Reviewed historical output during the top 20 hours
- DC East: 0 MW
- DC North: 0 MW
- DC Laredo: 100 MW export
- DC Railroad: 0 MW

# Off Peak – Load Level

## □ Based on 2023 RTP Economic Analysis data

- Pulled 8760 data from the 2025 Economic Analysis case
- Removed hours with an uncurtailed wind or solar capacity output of less than 50%
- Ranked all remaining hours by uncurtailed renewable penetration
- Calculated the average load of the resulting top 20 hours
  - Resulted in 57,978 MW of load

# On Peak – Overview

## ❑ On peak sensitivity

- Study years: 2025 and 2028
- Starting cases: 2023 RTP 2025 and 2028 summer peak case topologies

## ❑ Goal is to capture early evening conditions

- High net load
- Low solar
- Low Panhandle wind
- High south wind (coastal and non-coastal)



# On Peak – Generation Assumptions

- ❑ Solar and wind capacity factors
  - Based on historical analysis of similar conditions

<i>Solar</i>	<i>Wind (Panhandle)</i>	<i>South Wind (Coastal)</i>	<i>South Wind (Non-Coastal)</i>	<i>Other Wind</i>
13.26%	12%	63.3%	70.9%	33.6%

- ❑ Batteries dispatched at 45.9%

# On Peak – Load Levels

Year	Coast	East	Far West	North	North Central	South Central	Southern	West	Total CP <sup>1,3</sup>
2025	22,823	2,785	10,804	4,482	25,237	13,413	6,346	2,871	88,762
2028	23,525	2,848	13,137	4,740	25,713	14,216	6,366	3,126	93,670

1: Adjustment includes approved large load addition, IHS load forecast, etc.

<https://www.ercot.com/files/docs/2023/04/10/2023-RTP-Assumptions-Update-April-2023-RPG.pdf>

2: CP: Coincident Peak



# Questions / Comments

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