



# 2022 Reserve Requirement Study (RRS) Preliminary Results

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September 6, 2022

- Study results will re-set the FPR and IRM for 2023/24, 2024/25, 2025/26 and establish initial IRM and FPR for 2026/27.
  - The Study also sets the Winter Weekly Reserve Target (WWRT) for Winter 2022/2023
- Capacity model built with GADS data from 2017-2021 time period for all weeks of the year except the winter peak week.
  - For the winter peak week, the capacity model is created using historical actual RTO-aggregate outage data from time period DY 2007/08 – DY 2021/22 (in addition, data from DY 2013/14 was dropped and replaced with data from DY 2014/15)
- PJM and World load models based on 2002-2012 time period and 2022 PJM Load Forecast.
- Study assumptions were endorsed at June, 2022 PC meeting.
- Load Model selection was endorsed at August, 2022 PC meeting.

# 2022 RRS Results vs 2021 RRS Results

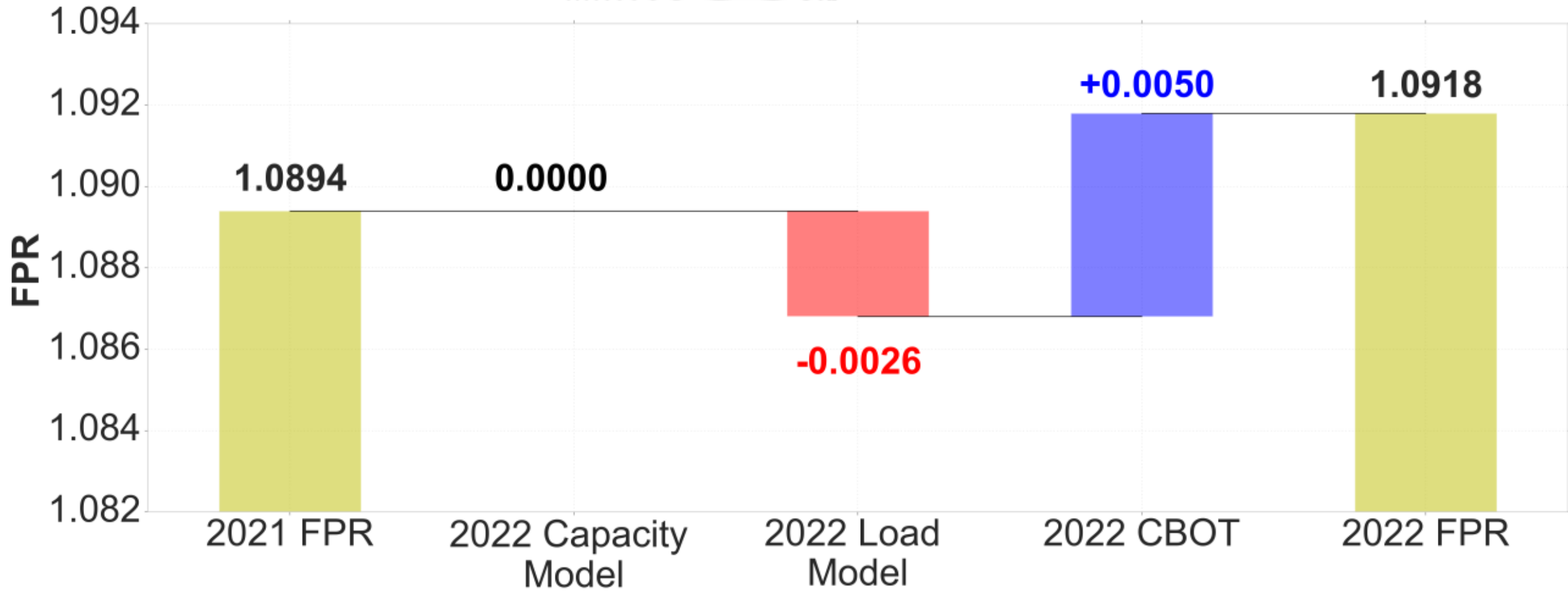
## 2022 RRS Study results:

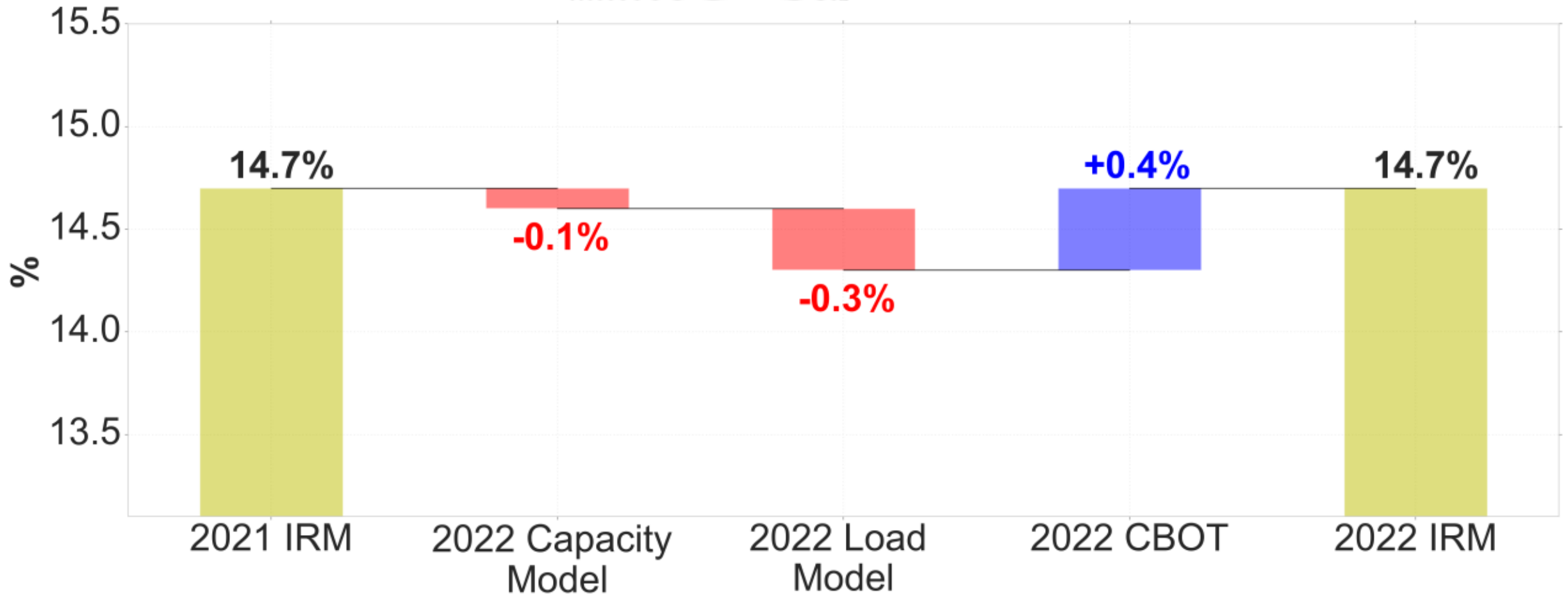
RRS Year	Delivery Year Period	Calculated IRM	Recommended IRM	Average EFORd	Recommended FPR*
2022	2023 / 2024	14.87%	<b>14.9%</b>	4.87%	<b>1.0930</b>
2022	2024 / 2025	14.75%	<b>14.8%</b>	4.83%	<b>1.0926</b>
2022	2025 / 2026	14.72%	<b>14.7%</b>	4.81%	<b>1.0918</b>
2022	2026 / 2027	14.70%	<b>14.7%</b>	4.81%	<b>1.0918</b>

## 2021 RRS Study results:

RRS Year	Delivery Year Period	Calculated IRM	Recommended IRM	Average EFORd	Recommended FPR*
2021	2022 / 2023	14.93%	<b>14.9%</b>	5.08%	<b>1.0906</b>
2021	2023 / 2024	14.76%	<b>14.8%</b>	5.04%	<b>1.0901</b>
2021	2024 / 2025	14.68%	<b>14.7%</b>	5.02%	<b>1.0894</b>
2021	2025 / 2026	14.66%	<b>14.7%</b>	5.02%	<b>1.0894</b>

\* FPR = (1 + IRM)\*(1 - Average EFORd)





- The 2022 Load Model, relative to the 2021 Load Model, puts downward pressure on both the FPR and the IRM
  - Variability of the annual peak load distribution is less in 2022 RRS than in 2021 RRS
- The 2022 Capacity Benefit of Ties (CBOT), relative to the 2021 CBOT, puts upward pressure on both the FPR and the IRM
  - The CBOT decreased to 1.0% (2022 RRS) from 1.4% (2021 RRS).
  - The decrease is driven by a higher PJM peak load at the time of the World's peak (96.7% of the annual peak in 2022 while in 2021 it was 92.1%)
- The 2022 Capacity Model, relative to the 2021 Capacity Model, puts downward pressure on the IRM.
  - The Average EEFORd in the 2022 RRS (for DY 2026) is 5.70% whereas in the 2021 RRS (for DY 2025) was 5.80 %

- **Background**
  - WWRT is supplied to the PJM Operations Department so that it can be used to coordinate planned outages scheduling during the upcoming winter period
- **Objective**
  - Cover against uncertainties associated with load and forced outages during the winter months so that the calculated winter LOLE is practically zero

- Procedure
  - Step 1: Set up an IRM case with total LOLE = 0.1 days/year.
  - Step 2: In addition to the required planned outage schedule, simulate additional planned outages during each week of the three winter months until the annual LOLE is worse than 0.1 days/year.
  - Step 3: Calculate the available reserves in each of the winter weeks as a percentage of the corresponding monthly peak.
  - Step 4: The WWRT for each month is the highest weekly reserve percentage (rounded up to the next integer value).





# 2022/23 Winter Weekly Reserve Targets

Month	% Available Reserves	WWRT (Max Monthly % Available Reserves)
December	17.58%	21%
	20.84%	
	20.76%	
	9.83%	
January	23.79%	27%
	12.85%	
	18.58%	
	26.24%	
February	17.07%	23%
	22.70%	
	18.73%	
	13.73%	

Last year's values were:

December: 24%  
 January: 27%  
 February: 21%

- For FPR and IRM
  - Sep, MRC: first read of FPR and IRM
  - Oct, PC: vote on FPR and IRM
  - Oct-Nov, MRC and MC: review and vote on FPR and IRM
  - Dec, PJM Board: final approval of FPR and IRM
- For WWRT
  - Oct, PC: vote on WWRT
  - Oct, OC: first read of WWRT
  - Nov, OC: vote on WWRT

SME/Presenter:

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**2022 Reserve Requirement Study**



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