Installed Reserve Margin (IRM), Forecast Pool Requirement (FPR), and Effective Load Carrying Capability (ELCC) for 2028/2029 BRA

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Parameter Overview: 2028/29 BRA vs 2027/28 BRA

Parameter	2027/28 BRA	2028/29 BRA
Load Scenarios	2025 PJM Load Forecast	2026 PJM Load Forecast
Weather Data	June 1, 1993 through May 31, 2024	June 1, 1993 through May 31, 2025
Unlimited Resource Performance Data	June 1, 2012 through May 31, 2024	June 1, 2012 through May 31, 2025
Variable Resource Performance Data	June 1, 2012 through May 31, 2024	June 1, 2012 through May 31, 2025
DR ICAP	2025 PJM Load Forecast	2026 PJM Load Forecast

Highlights on Data Inputs: Resource Mix

1. **Notice of Intent to Offer (NOI):**
   Planned resources that submitted a Notice of Intent to Offer for the 2028/29 BRA were included in the assumed resource mix

2. **Installed Capacity Ratings (ICAP Ratings):**
   ICAP Ratings reflect any 2028/29 transitional system capability awarded

3. **Announced Deactivations:**
   Resources with announced deactivations scheduled to occur before June 1, 2029 were removed from the assumed resource mix

Overall decrease of 1,508 MW ICAP in the 28/29 BRA versus the 27/28 BRA

Highlights on Data Input: Load Scenarios

Hourly load profiles for the 2028/29 BRA were derived using the 2026 PJM load forecast

- 2027/28 BRA run used scenarios from the 2025 PJM Load Forecast
- Summer extreme loads relative to the 50/50 annual peaks are slightly lower in the 2026 PJM Load Forecast (for 2028/29) than the 2025 PJM Load Forecast (for 2027/28)
- Winter extreme loads relative to the 50/50 annual peaks are lower in the 2026 PJM Load Forecast (for 2028/29) than the 2025 PJM Load Forecast (for 2027/28)

2026 Load Forecast resulted in downward pressure on winter risk

Highlights on Data Input: Performance/Availability Data

Performance Data:

- Based on data form June 1st, 2012 through May 31st, 2025
  - Includes performance post 2025 MLK weekend (Jan 21/22) which was bucketed in the second coldest bin post merging
- Oil-Fired CT and Waste to Energy Steam classes are applicable to the 2028/29 DY

Demand Response Availability:

- DR is assumed to be available 24/7 in 2028/29 DY

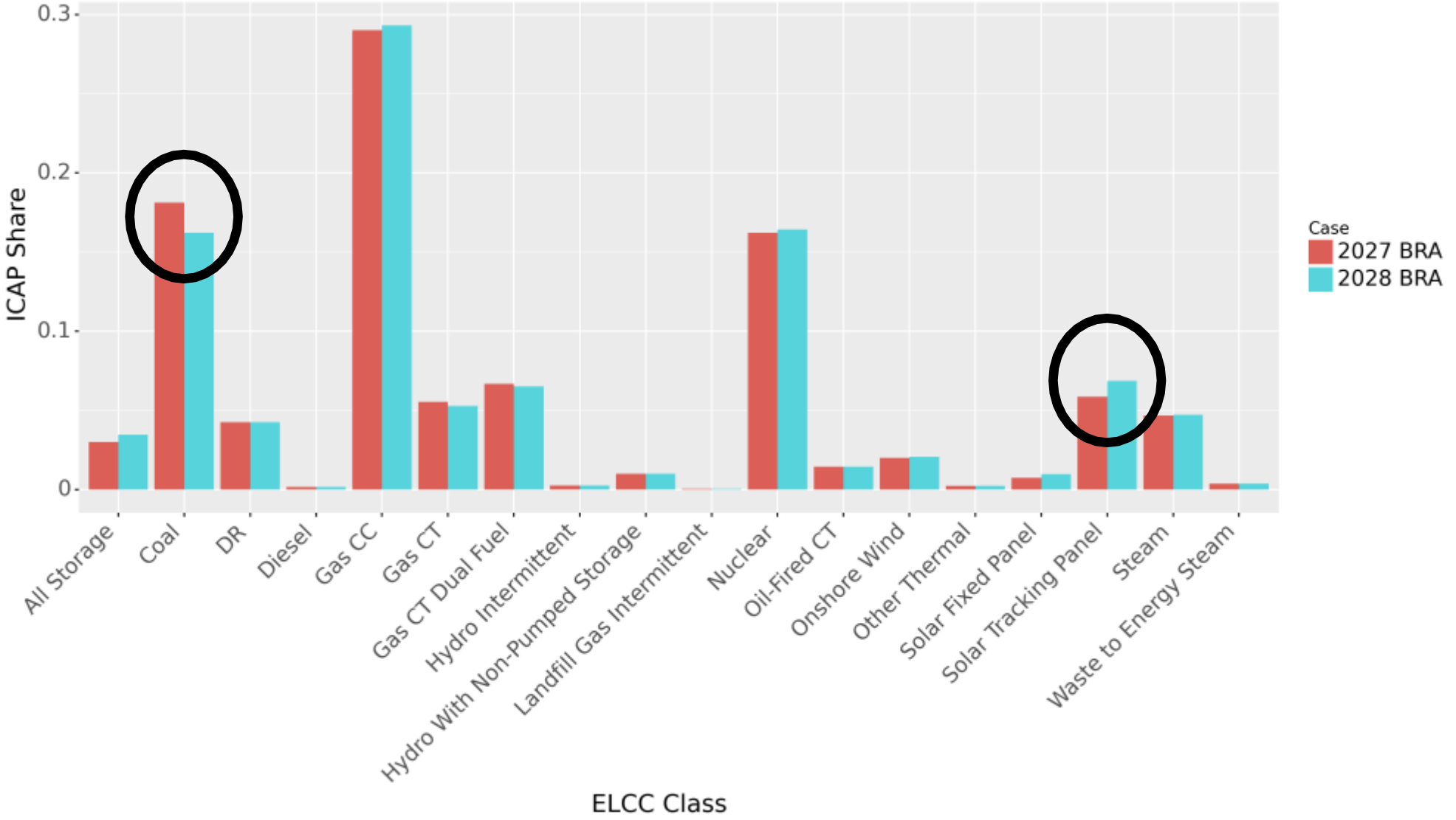
New performance data resulted in slight downward pressure on winter risk

2028/29 BRA Assumed Resource Portfolio

ELCC Class	Effective Nameplate (MW)	Installed Capacity (MW)
Onshore Wind	13,137	4,061
Offshore Wind	Small Sample Size	Small Sample Size
Solar Fixed Panel	3,483	1,916
Solar Tracking Panel	20,691	13,530
Landfill Gas Intermittent	146	101
Hydro Intermittent	721	515
4-hr Storage, 6-hr Storage,	6,836	6,836
8-hr Storage, 10-hr Storage		
Solar-Storage Hybrid	Small Sample Size	Small Sample Size
DR	n/a	8,396

ELCC Class	Effective Nameplate (MW)	Installed Capacity (MW)
Nuclear	n/a	32,316
Coal	n/a	31,906
Gas CC *(Single and Dual Fuel)*	n/a	57,719
Gas CT	n/a	10,382
Gas CT Dual Fuel	n/a	12,808
Diesel	n/a	331
Steam	n/a	9,282
Waste to Energy Steam	n/a	720
Oil-Fired CT	n/a	2,851
Hydro With Non-Pumped Storage	2,057	1,987
Other Thermal	n/a	447

ICAP Share by ELCC Class: 2028/29 BRA vs 2027/28 BRA



2028/29 BRA ELCC Class Ratings

ELCC Class	Final Rating
Onshore Wind	34%
Offshore Wind	60%
Solar Fixed Panel	7%
Solar Tracking Panel	10%
Landfill Gas Intermittent	50%
Hydro Intermittent	35%
4-hr Storage	59%
6-hr Storage	68%
8-hr Storage	71%
10-hr Storage	78%

ELCC Class	Final Rating
DR	91%
Nuclear	96%
Coal	85%
Gas CC	78%
Gas CT	67%
Gas CT Dual Fuel	79%
Diesel	93%
Steam	75%
Waste to Energy Steam	84%
Oil-Fired CT	83%

2028/29 BRA ELCC Class Ratings vs. 2027/28 BRA Ratings

ELCC Class	BRA Rating 2027/2028	BRA Rating 2028/2029	Change (%)
Onshore Wind	41%	34%	-7%
Offshore Wind	67%	60%	-7%
Solar Fixed Panel	7%	7%	0%
Solar Tracking Panel	8%	10%	2%
Landfill Gas Intermittent	48%	50%	2%
Hydro Intermittent	39%	35%	-4%
4-hr Storage	58%	59%	1%
6-hr Storage	67%	68%	1%
8-hr Storage	70%	71%	1%
10-hr Storage	78%	78%	0%
DR	92%	91%	-1%
Nuclear	95%	96%	1%
Coal	83%	85%	2%
Gas CC	74%	78%	4%
Gas CT	61%	67%	6%
Gas CT Dual Fuel	77%	79%	2%
Diesel	92%	93%	1%
Steam	72%	75%	3%
Waste to Energy Steam	83%	84%	1%
Oil-Fired CT	80%	83%	3%

- Majority of ELCC Classes see an increase in rating due to less winter risk share.
- ELCC Classes with larger decreases are those with better performance in winter relative to summer, onshore and offshore wind.
- Some classes (wind classes, gas classes) see changes that are slightly amplified due to a reduction of loss of load events driven by performance during Winter Storm Elliott.

Seasonal Changes in 2028/2029 BRA vs. 2027/2028 BRA

2028/2029
BRA

SEASONAL SHARE OF:

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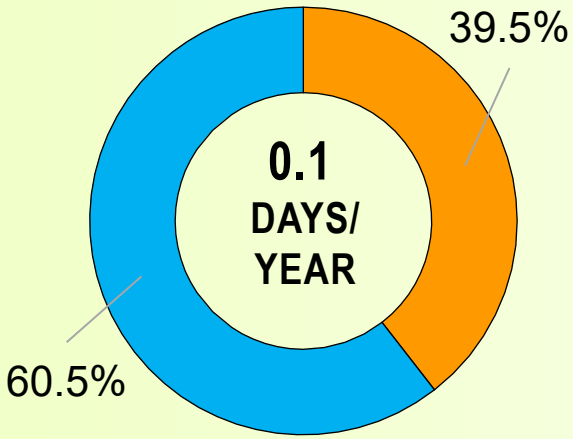

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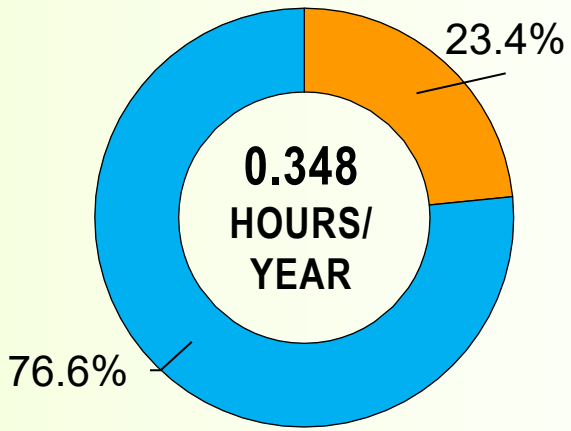

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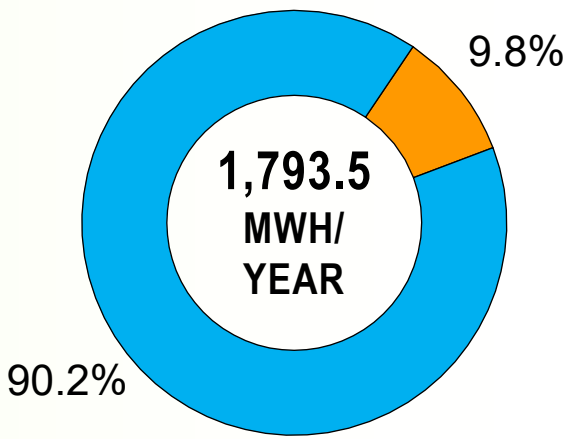

2027/2028
BRA

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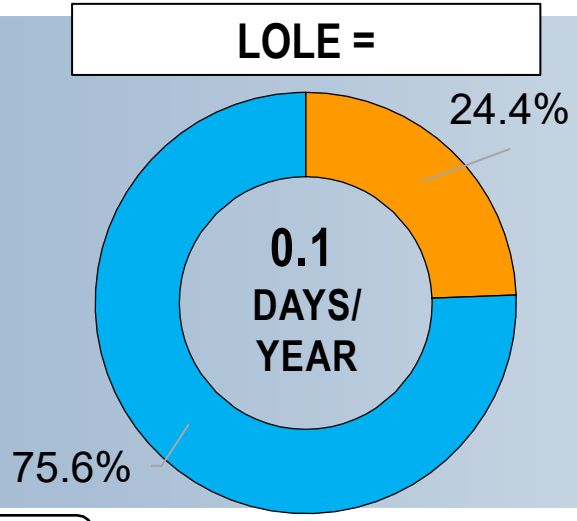

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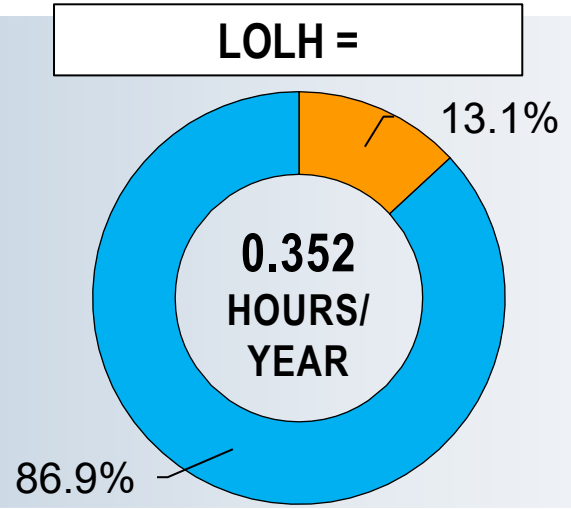

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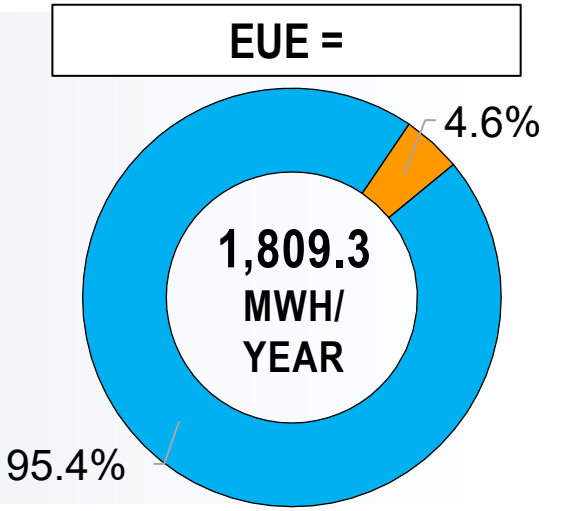

Winter Summer

IRM, AUCAP and FPR

- 2028/2029 Installed Reserve Margin (IRM) equals ***20.0%.***
- Calculation of the Accredited UCAP factor is the ratio of Unforced Capacity (UCAP) to Installed Capacity (ICAP) in the model.

  *This ratio is **0.7834.***

The FPR is then:

- (1 + IRM) x Pool-Wide Average Accredited UCAP Factor
- (1 + 0.2) x 0.7834 = 0.9401

2028/2029 BRA IRM and FPR vs. 2027/2028 BRA

PARAMETER	27/28 BRA Value	28/29 BRA Value	Change	Key Factors
ICAP (MW)	198,379	196,871	-1,508	Decreases in coal and gas not fully offset by increases in solar and 4-hr storage
"Solved Load" (MW)	163,224	162,063	-1,161	A smaller portfolio in ICAP terms serves a lower peak load at the LOLE criteria.
CBOT (%)	1.5%	1.5%	-	
Installed Reserve Margin (IRM)	20.0%	20.0%	-	Lower extreme winter loads put downward pressure on IRM, while updated portfolio puts upward pressure.
Accredited UCAP (MW)	153,095	154,234	1,139	Less winter risk share
Pool-Wide Average UCAP Factor	0.7717	0.7834	0.0117	Less winter risk share
Forecast Pool Requirement (FPR)	0.9260	0.9401	0.0141	Higher accreditation of resources

Requested Action

	Delivery Year	IRM	FPR
Endorsement of the following parameters:	2028/2029	20.0%	0.9401

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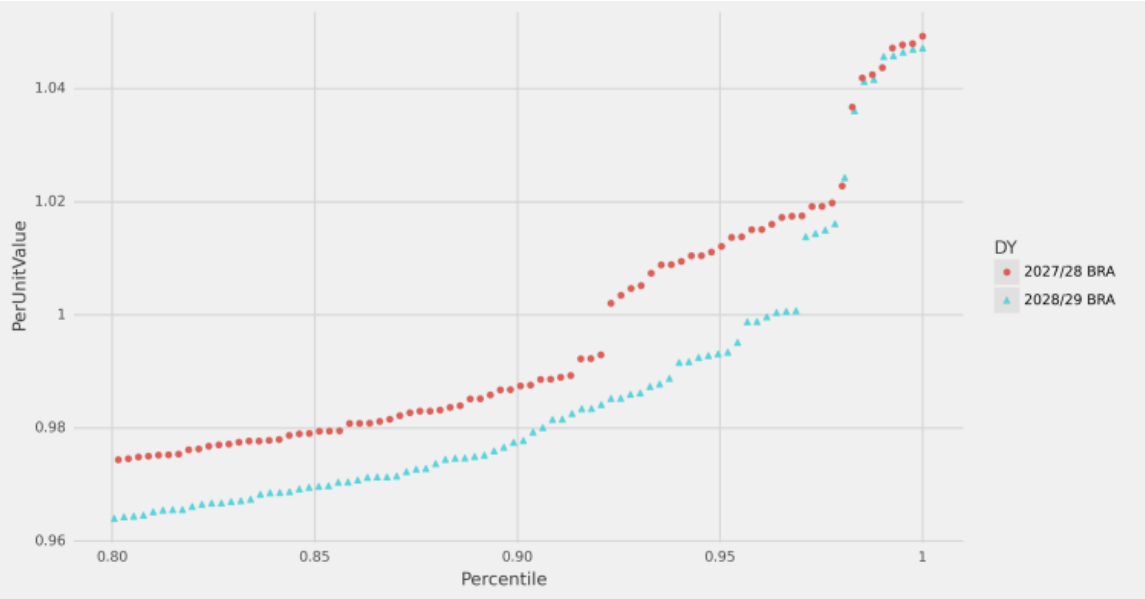
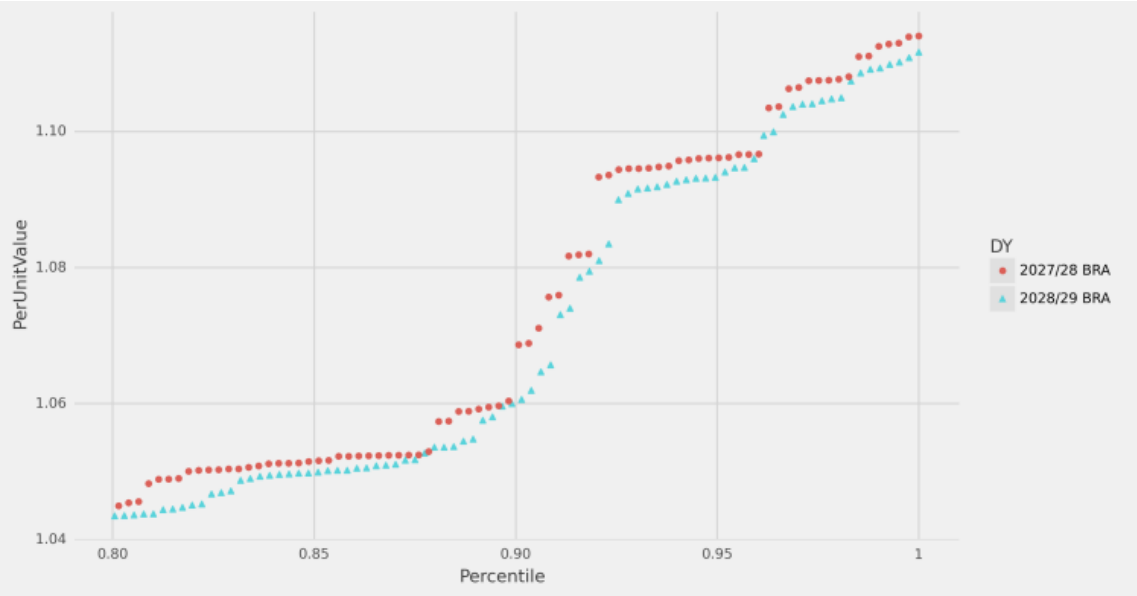
FPR, IRM, & ELCC for 28/29 BRA

Appendix

Top 20th Percentile of Seasonal Peak Distributions: 27/28 BRA (from 2025 LF) vs 28/29 BRA (from 2026 LF)



Winter



Summer

Drivers for changes between 2027/28 BRA and 2028/29 BRA

- IRM Drivers
  - The load shapes for 2028/29 in the 2026 Load Forecast put downward pressure on the IRM (about 0.4 percentage points)
  - Other inputs to the 2028/29 BRA case, particularly the updated Resource Portfolio, put upward pressure on the IRM
    - This is due to announced retirements of resources that have higher accreditation (coal, gas) than the accreditation received by the additions (solar and 4-hr storage) to the 2028/29 BRA portfolio

Drivers for changes between 2027/28 BRA and 2028/29 BRA

- Summer/Winter Risk Share Drivers
  - The load shapes for 2028/29 in the 2026 Load Forecast **put slight downward pressure on winter risk** (about 2.5 percentage points on LOLH, for example)
  - Other inputs to the 2028/29 BRA case, particularly the updated Resource Portfolio, **put upward pressure on summer risk**
    - The coal and gas units that were removed from the case have good performance during hot summer days in the afternoon and evening while the added solar units tend to have good performance only in the afternoon. This dynamic creates more loss of load events in the summer after hour beginning 18, increasing the summer risk share.

Supply/Demand Balance in 2028/29 BRA vs 2027/28 BRA cases

PARAMETER	27/28 BRA Value	28/29 BRA Value	Change
ICAP (MW)	198,379	196,871	-1,508
"Solved Load" (MW)	163,224	162,063	-1,161
CBOT (%)	1.5%	1.5%	-
Installed Reserve Margin (IRM)	20.0%	20.0%	-
Accredited UCAP (MW)	153,095	154,234	1,139
Pool-Wide Average UCAP Factor	0.7717	0.7834	0.0117
Forecast Pool Requirement (FPR)	0.9260	0.9401	0.0141
Peak Load Forecast (MW)	164,186	165,567	1,381
"Reliability Requirement" (FPR x Peak Load Forecast)	152,036	155,650	3,614
UCAP Surplus (Accredited UCAP – "Reliability Requirement")	1,058	-1,416	-2,474

*Values are based off the ELCC Case and do not include any adjustments that may be done for the capacity market (e.g. FRR)

- The UCAP Surplus in the 28/29 BRA case is 2,474 MW less than in the 27/28 BRA case. Therefore, the 28/29 BRA case is "tighter:"
- The increase in UCAP Surplus is driven by the higher Peak Load Forecast and the lower ICAP in the portfolio.

Supply/Demand Balance in 2028/29 BRA vs 2027/28 BRA cases (**if peak forecast and ICAP would not have changed in 28/29 BRA**)

PARAMETER	27/28 BRA Value	28/29 BRA Value	Change
ICAP (MW)	198,379	**198,379**	-
Installed Reserve Margin (IRM)	20.0%	20.0%	-
Accredited UCAP (MW)	153,095	**155,410**	2,315
Pool-Wide Average UCAP Factor	0.7717	0.7834	0.0117
Forecast Pool Requirement (FPR)	0.9260	0.9401	0.0141
Peak Load Forecast (MW)	164,186	**164,186**	-
"Reliability Requirement" (FPR x Peak Load Forecast)	152,036	**154,351**	2,315
UCAP Surplus (Accredited UCAP – "Reliability Requirement")	1,058	1,059	1

- The IRM and FPR have negligible impact on the UCAP Surplus change. We can get to that conclusion by using the 27/28 BRA values for ICAP and Peak Load Forecast (instead of the applicable 28/29 BRA values) and observing that the UCAP Surplus is almost identical in the two cases

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