

Straight-Line Curves

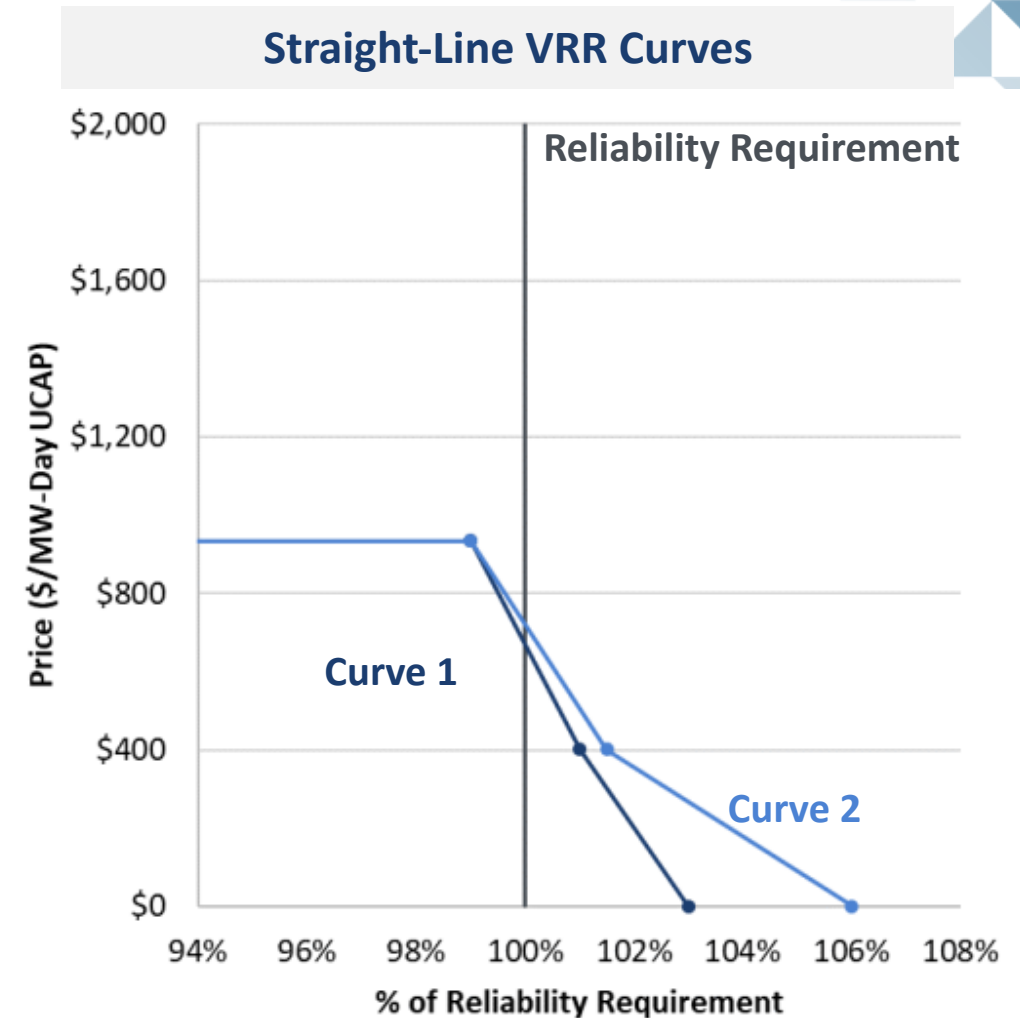
Both curves are based on the estimated 2028/29 CT parameters (Administrative Net CONE = \$534/MW-day UCAP and CONE = \$838/MW-day UCAP)

Curve 1: “Steep” Straight-Line Curve Based on Estimated CT Parameters

- Point 1: Price = $\max\{\text{CONE}, 1.75 \times \text{Net CONE}\}$; Quantity = 99% of RR
- Point 2: Price = $0.75 \times \text{Net CONE}$; Quantity = 101% of RR
- Point 3: Price = \$0; Quantity = 103% of RR

Curve 2: “Wide” Straight-Line Curve Based on Estimated CT Parameters

- Point 1: Price = $\max\{\text{CONE}, 1.75 \times \text{Net CONE}\}$; Quantity = 99% of RR
- Point 2: Price = $0.75 \times \text{Net CONE}$; Quantity = 101.5% of RR
- Point 3: Price = \$0; Quantity = 106% of RR



Sources and Notes: Curves constructed based on the estimated Net CONE and Gross CONE of a combustion turbine for the 2028/29 delivery year. See Newell, et al., [Brattle 2025 CONE Report for PJM](#), April 9, 2025.

Straight-Line Curves – Modeling Results

	Price			Reliability						Cost
	Average Clearing Price	Standard Deviation	Frequency at Cap	Average LOLE	Average Excess (Deficit) Above Reliability Requirement	Average Excess (Deficit) Above Target Reserve Margin	Normalized Portfolio EUE (% of Target)	Frequency Below Reliability Requirement	Frequency Below 99% of Reliability Requirement	Average Procurement Cost
	(\$/MW-d)	(\$/MW-d)	(%)	(events/yr)	(MW)	(UCAP RR + X %)	(%)	(%)	(%)	(\$ mln/yr)
Curve #1: Straight-line "steep" curve										
\$334 Overest. (True Ref Price = \$200)	\$200	\$109	0.1%	0.047	2,668	1.88%	48.1%	0.7%	0.1%	\$10,017
\$184 Overest. (True Ref Price = \$350)*	\$350	\$203	3.2%	0.066	1,692	1.21%	69.0%	9.0%	3.2%	\$17,397
\$134 Overest. (True Ref Price = \$400)	\$400	\$223	5.8%	0.075	1,344	0.97%	79.5%	14.1%	5.8%	\$19,817
\$84 Overest. (True Ref Price = \$450)	\$450	\$238	9.2%	0.086	988	0.72%	92.0%	20.0%	9.3%	\$22,213
\$34 Overest. (True Ref Price = \$500)**	\$500	\$249	13.2%	0.097	631	0.47%	106.6%	26.7%	13.2%	\$24,597
\$16 Underest. (True Ref Price = \$550)**	\$550	\$254	17.8%	0.111	234	0.19%	125.1%	33.6%	17.9%	\$26,954
Curve #2: Straight-line "wide" curve										
\$334 Overest. (True Ref Price = \$200)	\$200	\$88	0.1%	0.025	5,003	3.53%	26.4%	0.1%	0.1%	\$10,162
\$184 Overest. (True Ref Price = \$350)*	\$350	\$170	2.1%	0.047	3,110	2.21%	49.0%	5.2%	2.1%	\$17,536
\$134 Overest. (True Ref Price = \$400)	\$400	\$194	3.8%	0.057	2,554	1.82%	59.5%	9.2%	3.9%	\$19,951
\$84 Overest. (True Ref Price = \$450)	\$450	\$212	5.9%	0.067	2,023	1.45%	71.9%	13.7%	6.1%	\$22,346
\$34 Overest. (True Ref Price = \$500)**	\$500	\$225	9.7%	0.080	1,507	1.09%	86.7%	19.5%	9.9%	\$24,721
\$16 Underest. (True Ref Price = \$550)**	\$550	\$234	14.3%	0.094	997	0.74%	104.5%	26.5%	14.6%	\$27,077

Sources and Notes: For further information see the description in the VRR Curve Report. Spees et. al., [Sixth Review of PJM's Variable Resource Requirement Curve](#), April 9, 2025.

*True Reference Price = \$350/MW-Day, consistent with Brattle base estimate.

**True Reference Price is close to assumed \$534/MW-Day CT Net CONE.

MRI-Based Curves

“Tuned” MRI-based curves are based on the estimated 2028/29 CT parameters. Tuning of each curves assumes that the true Net CONE = Administrative Net CONE = \$534/MW-day UCAP and Administrative CONE = \$838/MW-day UCAP)

Curve 1: “Tuned” MRI Curve through the Target Point

⌘ Price Cap = \$1,830/MW-day starting at 97.0% of reliability requirement

Curve 2: “Tuned” MRI Curve with Price Cap at 99% of the Reliability Requirement

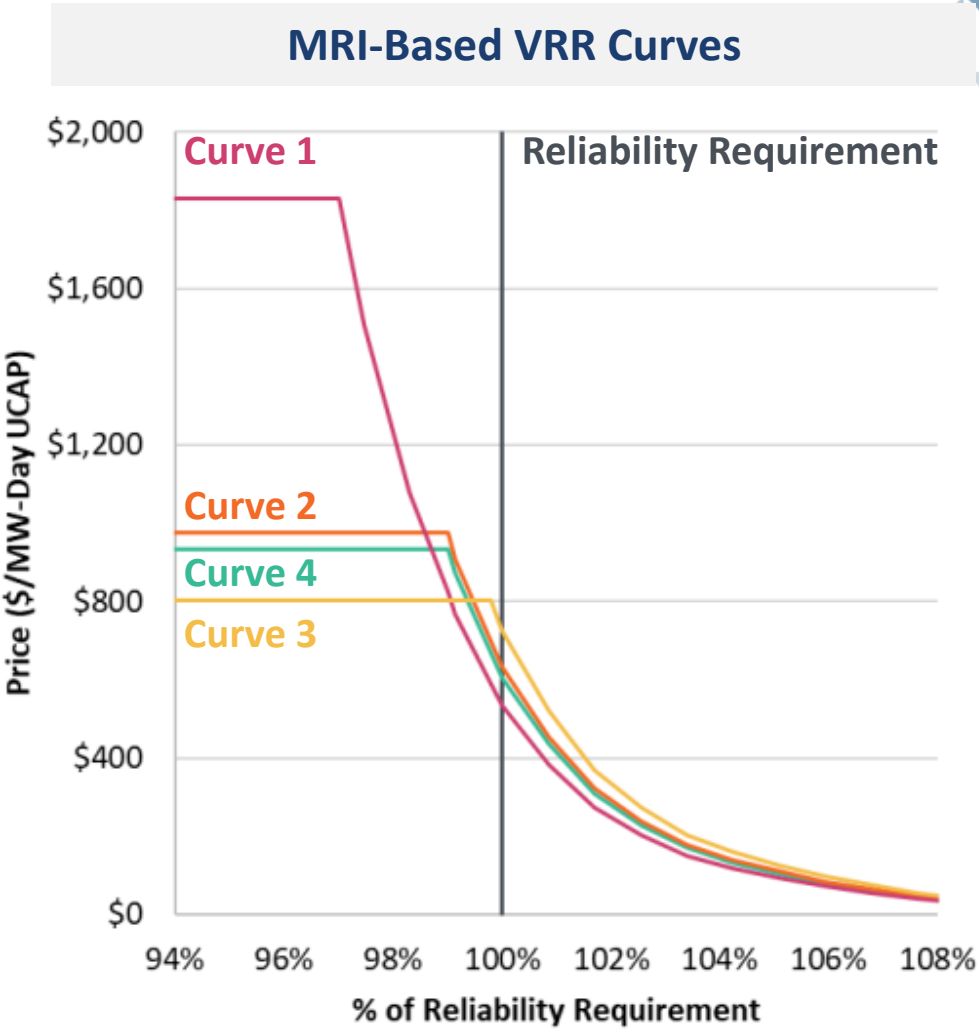
⌘ Price Cap = \$975/MW-day starting at 99% of the reliability requirement

Curve 3: “Tuned” MRI Curve with Price Cap at 1.5 x Net CONE

⌘ Price Cap = \$801/MW-day starting at 99.8% of reliability requirement

Curve 4: MRI Curve with Price Cap at max {CONE, 1.75 x Net CONE}, starting at 99% of the Reliability Requirement

⌘ Price Cap = \$935/MW-day starting at 99% of the reliability requirement



Sources and Notes: Curves constructed based on the estimated Net CONE and Gross CONE of a combustion turbine for the 2028/29 delivery year. See Newell, et al., [Brattle 2025 CONE Report for PJM](#), April 9, 2025.

MRI-Based Curves – Modeling Results

	Price			Reliability						Cost
	Average Clearing Price	Standard Deviation	Frequency at Cap	Average LOLE	Average Excess (Deficit) Above Reliability Requirement	Average Excess (Deficit) Above Target Reserve Margin	Normalized Portfolio EUE (% of Target)	Frequency Below Reliability Requirement	Frequency Below 99% of Reliability Requirement	Average Procurement Cost
	(\$/MW-d)	(\$/MW-d)	(%)	(events/yr)	(MW)	(UCAP RR + X %)	(%)	(%)	(%)	(\$ mln/yr)
Curve #1: MRI-based curve tuned to CT Net CONE through Target Point										
\$334 Overest. (True Ref Price = \$200)	\$200	\$91	0.0%	0.036	3,845	2.72%	37.6%	0.6%	0.1%	\$10,064
\$184 Overest. (True Ref Price = \$350)*	\$350	\$231	0.6%	0.064	1,980	1.42%	66.0%	10.6%	3.1%	\$17,392
\$134 Overest. (True Ref Price = \$400)	\$400	\$274	1.2%	0.073	1,546	1.11%	76.7%	16.6%	5.9%	\$19,810
\$84 Overest. (True Ref Price = \$450)	\$450	\$311	2.1%	0.083	1,159	0.84%	88.0%	22.6%	9.0%	\$22,213
\$34 Overest. (True Ref Price = \$500)**	\$500	\$346	2.3%	0.093	811	0.60%	99.9%	29.2%	11.6%	\$24,607
\$16 Underest. (True Ref Price = \$550)**	\$550	\$382	3.3%	0.103	475	0.36%	113.0%	33.9%	15.4%	\$26,992
Curve #2: MRI-based curve tuned to CT Net CONE with cap @ 99% of Reliability Requirement										
\$334 Overest. (True Ref Price = \$200)	\$200	\$83	0.1%	0.031	4,517	3.20%	31.4%	0.1%	0.1%	\$10,111
\$184 Overest. (True Ref Price = \$350)*	\$350	\$181	2.3%	0.056	2,434	1.74%	58.8%	8.0%	2.3%	\$17,452
\$134 Overest. (True Ref Price = \$400)	\$400	\$208	5.1%	0.067	1,917	1.38%	70.4%	12.9%	5.1%	\$19,866
\$84 Overest. (True Ref Price = \$450)	\$450	\$229	8.2%	0.078	1,436	1.04%	83.8%	18.6%	8.2%	\$22,257
\$34 Overest. (True Ref Price = \$500)**	\$500	\$244	12.1%	0.091	979	0.72%	99.2%	25.7%	12.3%	\$24,634
\$16 Underest. (True Ref Price = \$550)**	\$550	\$254	16.4%	0.105	525	0.40%	117.4%	33.1%	16.5%	\$26,992
Curve #3: MRI-based curve tuned to CT Net CONE with cap @ 1.5 x Net CONE										
\$334 Overest. (True Ref Price = \$200)	\$200	\$81	0.1%	0.027	5,079	3.59%	27.0%	0.1%	0.1%	\$10,152
\$184 Overest. (True Ref Price = \$350)*	\$350	\$166	4.7%	0.051	2,855	2.03%	52.7%	5.9%	2.3%	\$17,506
\$134 Overest. (True Ref Price = \$400)	\$400	\$185	8.8%	0.061	2,274	1.63%	64.6%	10.4%	5.2%	\$19,912
\$84 Overest. (True Ref Price = \$450)	\$450	\$196	13.2%	0.073	1,729	1.25%	78.8%	15.6%	8.7%	\$22,298
\$34 Overest. (True Ref Price = \$500)**	\$500	\$203	19.1%	0.088	1,178	0.86%	96.8%	22.4%	12.6%	\$24,661
\$16 Underest. (True Ref Price = \$550)**	\$550	\$203	27.4%	0.106	589	0.45%	120.4%	30.9%	18.4%	\$26,990
Curve #4: MRI-based curve with cap quantity @ 99% of RR and cap price @ 1.75 x CT Net CONE										
\$334 Overest. (True Ref Price = \$200)	\$200	\$83	0.1%	0.032	4,348	3.08%	32.9%	0.2%	0.1%	\$10,099
\$184 Overest. (True Ref Price = \$350)*	\$350	\$179	2.4%	0.059	2,266	1.62%	61.6%	8.9%	2.4%	\$17,432
\$134 Overest. (True Ref Price = \$400)	\$400	\$204	5.5%	0.070	1,744	1.25%	74.1%	15.3%	5.6%	\$19,840
\$84 Overest. (True Ref Price = \$450)	\$450	\$222	8.9%	0.082	1,260	0.92%	88.3%	21.7%	9.1%	\$22,228
\$34 Overest. (True Ref Price = \$500)**	\$500	\$236	13.2%	0.095	794	0.59%	105.0%	29.0%	13.2%	\$24,599
\$16 Underest. (True Ref Price = \$550)**	\$550	\$243	17.9%	0.111	317	0.26%	125.2%	35.7%	18.1%	\$26,949

Sources and Notes: For further information see the description in the VRR Curve Report. Spees et. al., [Sixth Review of PJM's Variable Resource Requirement Curve](#), April 9, 2025.

*True Reference Price = \$350/MW-Day, consistent with Brattle base estimate.

**True Reference Price is close to assumed \$534/MW-Day CT Net CONE.

Maximum Cost Exposure of Simulated Curves

	Curve Parameters			Customer Costs		
	Price @ Cap	Quantity @ Cap	Quantity @ Cap (for Maximum Cost Exposure)	Expected Avg. Customer Cost @ \$350	Maximum Cost Exposure @ Cap	Ratio of Maximum to Average Cost Exposure
	(\$/MW-day)	(% of Reliability Req.)	(MW)	(\$ mln/yr)	(\$ mln/yr)	(%)
	[1]	[2]	[3]	[4]	[5]: [1] x [3]	[6]: [5] / [4]
Straight-Line Curves						
Curve 1	\$935	99.0%	132,228	\$17,397	\$45,102	259%
Curve 2	\$935	99.0%	132,228	\$17,536	\$45,102	257%
MRI-Based Curves						
Curve 1	\$1,830	97.0%	129,557	\$17,392	\$86,537	498%
Curve 2	\$975	99.0%	132,228	\$17,452	\$47,057	270%
Curve 3	\$801	99.8%	133,296	\$17,506	\$38,971	223%
Curve 4	\$935	99.0%	132,228	\$17,432	\$45,102	259%

Sources and Notes: For further information see the description in the VRR Curve Report. Spees et. al., [Sixth Review of PJM's Variable Resource Requirement Curve](#), April 9, 2025.