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NYISO 2025-2029 ICAP Demand Curve Reset (DCR)

Summary of Final Report

ICAP Working Group

September 24, 2024

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Agenda

- Summary of Findings in Final Report
- Updates to Previously Discussed Assumptions
- Final 2025-2026 Capability Year Reference Point Prices

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Summary of Findings in Final Report

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Summary of Final Report

- In general, recommendations in the final report are consistent with recommendations in the interim final report (discussed at the August 1, 2024 ICAPWG meeting) and draft report (discussed at the June 13, 2024 ICAPWG meeting).
- Net Energy and Ancillary Services (EAS) and demand curve models from the interim final report were updated to reflect the final data for the 2025-2026 Capability Year curves:
  - Net EAS model was updated with energy prices, reserve prices, and applicable charges/costs for the September 1, 2021 to August 31, 2024 period.
  - Gross cost of new entry (CONE) values were escalated to $2025 using the indices and EPC component weights for the statewide composite escalation factor as presented in at the August 22, 2024 ICAPWG meeting.
  - Demand curve model incorporates updated Winter-to-Summer and Summer-to-Winter ratios for the 2025-2026 Capability Year reflecting data for the September 1, 2021 to August 31, 2024 period.
  - Indicative economic evaluation of reference technology uses NYISO's revised Capacity Accreditation Factor (CAF) values for the 2024-2025 Winter Capability Period.
- AG updated the analyses of financial metrics used in developing our recommended after-tax weighted average cost of capital (ATWACC) using data through August 31, 2024. The changes due to updated market data were modest and varied in direction. Accordingly, AG does not recommend any changes to the ATWACC relative to the interim final report.

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Summary of Final Report (cont.)

- Changes were made to several assumptions in response to stakeholder feedback (see following slides for additional detail).
  - Peak load window enhancement for the battery energy storage system (BESS) net EAS model (as discussed in the September 10, 2024 ICAPWG meeting).
    - Peak load window hours assumed for purposes of the model updated to reflect the applicable seasonal periods for the 2024-2025 Capability Year and will remain fixed for the reset period.
  - Updated voltage assumptions for interconnection of BESS projects: 115 kV high side voltage for Load Zones C, F, and G (Dutchess County), and 138 kV high side voltage for Load Zones J, K, and G (Rockland County).
  - Updated fixed operations and maintenance (O&M) estimates assuming land lease payments during the full construction period for each peaking plant technology option, and the inclusion of sales taxes on applicable BESS O&M expenses.
  - Addition of mortgage recording tax component relating to transportation districts on the debt financed for each peaking plant technology option.
- There is no change in 1898 & Co. and AG's recommended peaking plant technology option for all locations: the 2-hour BESS option minimizes UCAP costs among all candidate technologies.

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Updates to Previously Discussed Assumptions

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Updates to Previously Discussed Assumptions

- Peak load window enhancement for the BESS model (as discussed in the September 10, 2024 ICAPWG meeting):
  - Model requires the BESS plant to maintain sufficient SOC to meet DAM energy and reserve positions during Peak Load Window (PLW) hours. The model requires the BESS to achieve a RTM SOC equal to or greater than the DAM SOC at the beginning of the PLW. If the RTM SOC is greater than the DAM SOC during PLW hours, then the battery can discharge until RTM SOC is equal to the DAM SOC.
- Updated voltage assumptions for interconnection of BESS projects:
  - Interim final report assumed electrical interconnection costs for the BESS assuming interconnection to the 345kV system in all locations outside of Load Zone K, where interconnection is assumed at 138 kV.
  - Interconnection to the 115 kV or 138 kV system (depending on location) is available for the 200 MW BESS, and likely more representative of the interconnection voltage for a new 200 MW BESS plant. Additional deliverability analysis conducted by the NYISO confirmed that all BESS peaking plant options under consideration were fully deliverable at the lower kV interconnections in all locations.
  - AG and 1898 & Co. agree that it is reasonable to assume interconnection at lower voltage for the BESS options. As such, the final report assumes 115 kV high side voltage for Load Zones C, F, and G (Dutchess County), and 138 kV high side voltage for Load Zones J, K, and G (Rockland County).

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Updates to Previously Discussed Assumptions (cont.)

- Updated fixed O&M estimates:
  - Final report assumes land lease payments during the full construction period for each peaking plant technology option, and the inclusion of sales taxes on applicable BESS O&M expenses.
- Addition of mortgage recording tax:
  - We assume that the peaking plant technology options will qualify for available abatement of mortgage recording taxes through an appropriate arrangement with a tax-exempt industrial development agency/economic development corporation.
  - Tax-exempt entities are not exempt from “additional mortgage recording tax” applicable to real property located in a county that is part of a transportation district. We assume that the peaking plant technology options will incur additional tax payments of 30 cents per $100 of mortgage debt for counties within the Metropolitan Commuter Transportation District (Load Zones G (Dutchess County), G (Rockland County), J, and K), and 25 cents per $100 of the mortgage debt for counties within the Central New York Regional Transportation District (Load Zone C) and the Capital District Transportation Authority (Load Zone F).
  - These tax payments are assumed to occur when the mortgage is recorded, prior to the plant being put into service.

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Final 2025-2026 Capability Year Reference Point Prices

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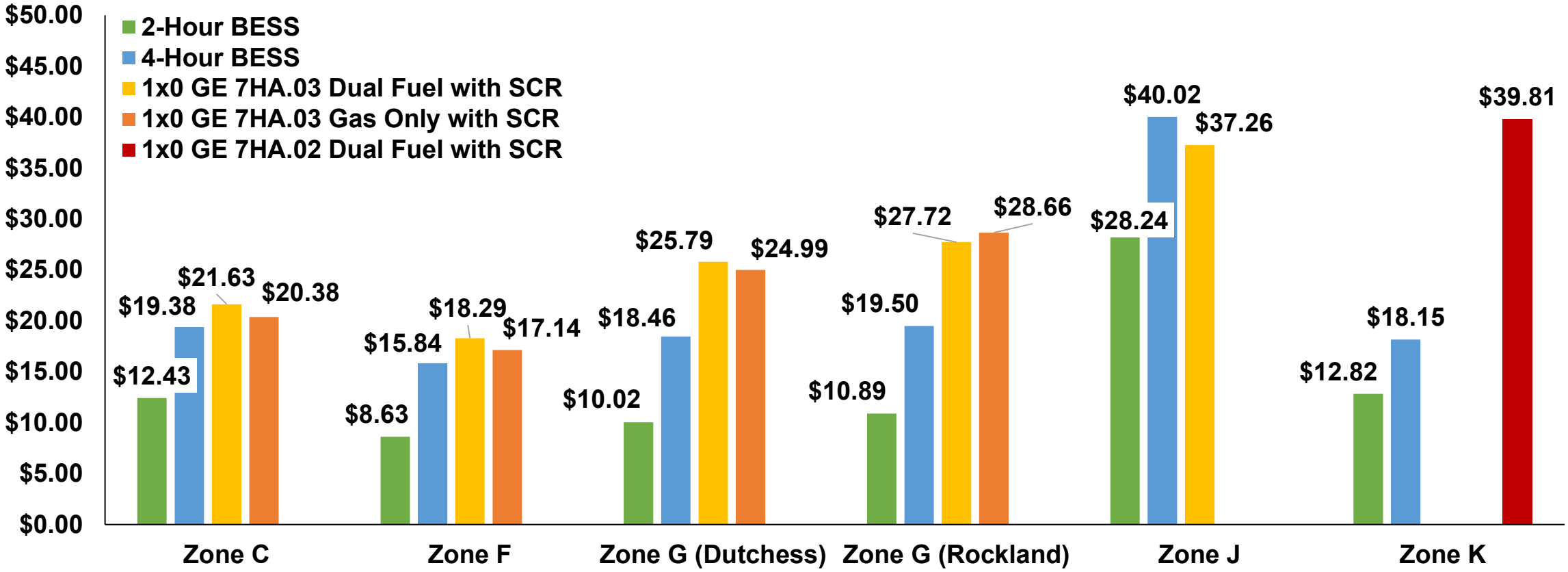
Indicative 2025-2026 Capability Year Annual Reference Point Prices ($2025/kW-month UCAP)



Notes. The indicative UCAP reference points are calculated using the currently effective methodology for determining the UCAP demand curve reference point prices. However, beginning with the 2025-2026 Capability Year, seasonal ICAP Demand Curve reference point prices will be calculated using enhancements approved earlier this year. Summer and winter reference point prices are available in the final Consultant report and following slide. Values for BESS differ from NYISO staff's final recommendations due to use of a 2% derating factor for BESS options instead of the 2.5% derating factor recommended by NYISO staff.

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Indicative Evaluation of Peaking Plant Technology Options

Comparison of Indicative Reference Point Prices by Technology
($2025/kW-month UCAP)

Technology	Fuel Type/ Emission Control	Current Year (2025-2026)					
		C - Central	F - Capital	G - Hudson Valley (Rockland)	G - Hudson Valley (Dutchess)	J - New York City	K - Long Island
Summer Reference Point Prices (UCAP Basis)							
1x0 GE 7HA.03	Dual Fuel, with SCR	$24.50	$20.80	$29.26	$27.22	$39.40	$74.52
	Gas Only, with SCR	$23.08	$19.49	$30.25	$26.38	-	-
1x0 GE 7HA.02	Dual Fuel, no SCR	$27.48	$25.74	-	$29.25	-	-
	Gas Only, no SCR	$25.77	$23.94	-	$28.42	-	-
	Dual Fuel, with SCR	-	-	-	-	-	$33.66
2-hour BESS	Battery Storage	$13.84	$9.60	$11.51	$10.60	$30.08	$11.81
4-hour BESS	Battery Storage	$21.58	$17.63	$20.61	$19.51	$42.63	$16.72
6-hour BESS	Battery Storage	$24.97	$21.85	$25.00	$23.87	$46.88	$24.94
8-hour BESS	Battery Storage	$31.57	$28.83	$32.38	$31.05	$57.32	$33.77
Winter Reference Point Prices (UCAP Basis)							
1x0 GE 7HA.03	Dual Fuel, with SCR	$17.99	$15.14	$26.54	$24.69	$35.86	$253.29
	Gas Only, with SCR	$16.95	$14.18	$27.43	$23.92	-	-
1x0 GE 7HA.02	Dual Fuel, no SCR	$19.68	$17.56	-	$25.36	-	-
	Gas Only, no SCR	$18.46	$16.33	-	$24.64	-	-
	Dual Fuel, with SCR	-	-	-	-	-	$78.82
2-hour BESS	Battery Storage	$10.46	$7.26	$9.90	$9.11	$25.36	$15.25
4-hour BESS	Battery Storage	$16.31	$13.32	$17.72	$16.78	$35.94	$21.60
6-hour BESS	Battery Storage	$18.87	$16.51	$21.49	$20.52	$39.52	$32.21
8-hour BESS	Battery Storage	$23.85	$21.78	$27.84	$26.70	$48.33	$43.62

Note: [1] The peaking plant technology choice in all locations is a 2-hour, lithium-ion BESS, which is highlighted in green. [2] The 1x0 GE 7HA.03 is tuned to NOx emissions rate of 25 ppm for all locations, the 1x0 GE 7HA.02 is tuned to NOx emissions rate of 25 ppm for Load Zone K, the 1x0 GE 7HA.02 without SCR emissions controls is tuned to NOx emissions rate of 15 ppm for Load Zones C, F, and G (Dutchess County). [3] The net EAS revenues are estimated using data for the three-year period September 1, 2021 to August 31, 2024 and the seasonal capacity availability values are based on data for the same period. [5] Assumes a $3.97/kW-year voltage support service (VSS) revenue adder for the 1x0 GE 7HA.03, $3.51/kW-year VSS revenue adder for the 1x0 GE 7HA.02, and $4.10/kW-year VSS revenue adder for lithium-ion BESS. [6] Runtime limits were applied based on New Source Performance Standards. All combustion turbines units with SCR emissions controls were limited to 3,504 hours of runtime in each modeled year (September 1, 2021 to August 31, 2022; September 1, 2022 to August 31, 2023; September 1, 2023 to August 31, 2024). All units without SCR emissions controls were limited to 200,000 lbs of NOx emissions in each modeled year. [7] UCAP reference point prices reflect the applicable CAF values for the 2024-2025 Winter Capability Period and an assumed derating factor values of 4.1% for the 1x0 GE 7HA.03 and 1x0 GE 7HA0.2 units and 2.0% for the BESS units. AG and 1898 & Co. acknowledge that NYISO staff has recommended use of 2.5% derating factor for the BESS units; therefore, the indicative UCAP reference point prices for the BESS units presented herein differ from those presented in NYISO staff's final recommendations.

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Final Recommended ICAP Demand Curve Parameters

2025-2026 Capability Year ICAP Demand Curve Parameters ($2025 ICAP)
2-Hour BESS (RTD interval pricing net EAS model)

		Current Year (2025-2026)					
Parameter	**Source**	**C - Central**	**F - Capital**	**G - Hudson Valley (Rockland)**	**G - Hudson Valley (Dutchess)**	**J - New York City**	**K - Long Island**
Gross Cost of New Entry ($/kW-Year)	[1]	$121.95	$122.86	$126.80	$122.72	$212.97	$131.34
Net EAS Revenues ($/kW-Year)	[2]	$55.86	$76.99	$75.40	$75.42	$81.18	$86.65
Annual Reference Value ($/kW-Year)	[3]=[1]-[2]	$66.10	$45.88	$51.40	$47.30	$131.79	$44.69
ICAP DMNC (MW)	[4]	200	200	200	200	200	200
Annual Reference Value	[5]=[3]*[4]	$13,219	$9,175	$10,280	$9,461	$26,359	$8,939
Level of Excess (%)	[6]	100.52%	100.52%	101.62%	101.62%	102.23%	103.77%
Ratio of Winter to Summer DMNCs	[7]	1.033	1.033	1.050	1.050	1.057	1.083
Summer DMNC (MW)	[8]	200	200	200	200	200	200
Winter DMNC (MW)	[9]	200	200	200	200	200	200
Assumed Capacity Prices at Tariff Prescribed Level of Excess Conditions							
Summer ($/kW-Month)	[10]	$7.16	$4.97	$5.57	$5.12	$14.28	$4.84
Winter ($/kW-Month)	[11]	$3.86	$2.68	$3.00	$2.76	$7.69	$2.61
Monthly Revenue (Summer)	[12]=[10]*[8]	$1,432	$994	$1,114	$1,025	$2,856	$968
Monthly Revenue (Winter)	[13]=[11]*[9]	$771	$535	$600	$552	$1,538	$521
Seasonal Revenue (Summer)	[14]=6*[12]	$8,593	$5,964	$6,682	$6,149	$17,133	$5,810
Seasonal Revenue (Winter)	[15]=6*[13]	$4,627	$3,211	$3,598	$3,311	$9,226	$3,129
Total Annual Reference Value	[16]=[14]+[15]	$13,219	$9,175	$10,280	$9,461	$26,359	$8,939
ICAP Demand Curve Parameters							
Summer ICAP Monthly Reference Point Price ($/kW-Month)		$7.48	$5.20	$6.24	$5.75	$16.29	$6.12
Winter ICAP Monthly Reference Point Price ($/kW-Month)		$5.66	$3.93	$5.37	$4.94	$13.74	$7.91
Summer ICAP Maximum Clearing Price ($/kW-Month)		$20.71	$20.87	$23.10	$22.36	$39.50	$26.99
Winter ICAP Maximum Clearing Price ($/kW-Month)		$15.65	$15.77	$19.86	$19.23	$33.30	$34.86
Demand Curve Length		12.0%	12.0%	15.0%	15.0%	18.0%	18.0%

Notes: [1] The peaking plant technology choice in all locations is a 2-hour, lithium-ion BESS. [2] The net EAS revenues are estimated using data for the three-year period September 1, 2021 through August 31, 2024 and the seasonal capacity availability values are based on data for the same period. [3] The net EAS revenues for BESS options reflect the net EAS model using RTD interval prices. Results for BESS options for a net EAS model using hourly real-time prices are provided in Appendix E of the final Consultant report. [4] Assumes a $4.10/kW-year voltage support service (VSS) revenue adder for lithium-ion BESS.

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