NYISO 2025-2029 ICAP Demand Curve Reset (DCR)

ICAP Working Group Meeting

July 23, 2024

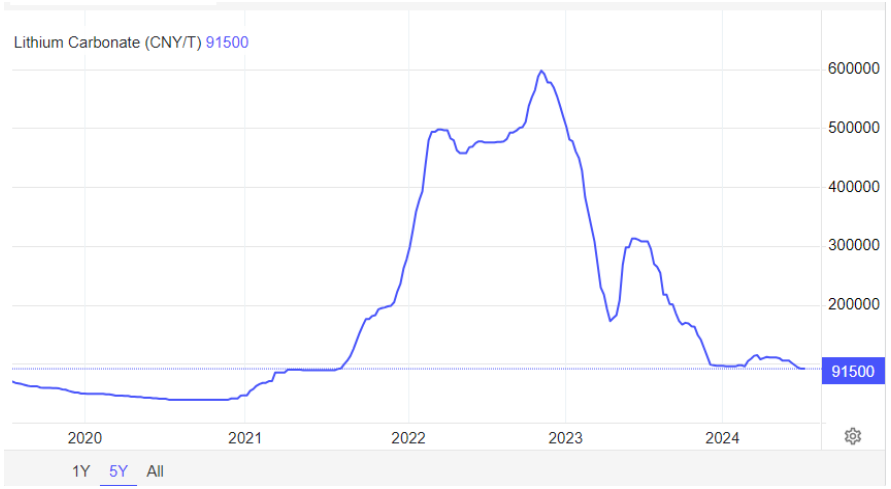
Battery Energy Storage System (BESS) Updates

BESS Capital Cost Updates

2-Hour BESS Update	Load Zone C		Load Zone J	
	Capital Cost, $MM	% Change	Capital Cost, $MM	% Change
EPC Project Cost ($MM)	$153	-8.7%	$189	-8.2%
Owner's Costs ($MM)	$71	15.9%	$120	16.7%
AFUDC ($MM)	$18	-2.1%	$24	0.2%
Total Cost ($MM)	**$242**	**-2.1%**	**$333**	**0.1%**

- Changes are depicted relative to the 2025-2029 DCR Independent Consultant Draft Report. Example shown for 2-hour BESS.
- EPC Project Cost updates:
  - Reduction based on BESS equipment pricing trends for Q2 2024.
- Owner's Costs updates:
  - Added sales tax for engineered equipment in BESS EPC Project Cost
  - Added sales tax for equipment within Transmission Line and Switchyard line items
  - Removed $1 mil right of way (ROW) allowance for Zone J Transmission Line
  - Added line item for Land Lease During Construction
  - Builder's risk and contingency follow as percentages
- Appendix A of the 2025-2029 DCR Independent Consultant final report will be updated to include the revised details for 2, 4, 6, and 8-hour BESS.

BESS Equipment Cost Trend Discussion



- Capital cost reductions account for BESS equipment estimate updates from multiple suppliers reflect information as of Q2 2024.
- Lithium carbonate 5-year spot price history shown in image above (shown in Chinese yuan renminbi (CNY)/ton)
  - Publicly Available Source: Trading Economics (https://tradingeconomics.com/commodity/lithium)
  - Lithium carbonate is a key raw material for lithium-ion battery cells.
  - Note price spikes/volatility from 2021-2023 and relatively stability in 2024
  - BESS equipment price is correlated with raw material. Indexed equipment pricing offered by some providers.
- BESS equipment pricing trends have been observed to lag raw material trends by approximately 3-6 months.
- Due to recent stability in raw material spot price, we believe the project capital costs provided in this update are reasonably indicative of current market pricing and therefore suitable for the 2025-2029 DCR Independent Consultant final report.

BESS O&M Cost Updates

2-Hour BESS Update (15 Year Amortization)	Load Zone C		Load Zone J	
	O&M Cost, $MM/Yr	% Change	O&M Cost, $MM/Yr	% Change
Fixed O&M for BESS and Balance of Plant	$2.3	-1.7%	$2.7	15.1%
Capacity Maintenance (Fixed Component)	$0.9	-1.1%	$0.9	2.2%
Site Leasing Allowance	$0.3	0.0%	$3.9	-0.1%
Property Insurance Allowance	$0.9	-8.7%	$1.1	-8.2%
Underground Transmission Revocable Consent	N/A	N/A	$0.2	New O&M Cost
Total Fixed O&M	**$4.4**	-3.0%	**$8.6**	3.3%

- Changes are depicted relative to the 2025-2029 DCR Independent Consultant Draft Report. Example shown for 2-hour BESS.
- Fixed operations and maintenance (O&M) for BESS and Balance of Plant (BOP)
  - Prior estimates based on market observations indicative of approximate midpoint cost for all locations.
  - Update accommodates reasonable adjustments for locational labor variations.
  - Load Zone J update includes additional allowance for fire protection equipment maintenance and monitoring.
- Capacity maintenance (augmentation) estimates updated to account for locational labor variations and BESS equipment cost reductions per recent trends.
  - Variable component (not shown in example above) exhibits similar percentage changes as fixed component.
- Property insurance is a percentage-based item that follows capital cost changes.
- New line item for Load Zone J underground transmission line revocable consent payment.
- Appendix A of the 2025-2029 DCR Independent Consultant final report will be updated to include the revised details for 2, 4, 6, and 8-hour BESSs.

Investment Tax Credit (ITC) Assumptions Update

ITC Assumption Items	Load Zone J	Other Locations
ITC Percentage Assumption, %	30%	30%
Eligible Basis Allowance as Percent of Total Project Cost, %	75%	90%
ITC Transfer Legal Fees (Seller pays both sides), $	$750k	$750k
Recapture Insurance Coverage Adder, %	15%	15%
Recapture Insurance Premium Assumption, %	2.5%	2.5%
Assumed Value of Transferable Tax Credit (net of brokerage fees), %	92%	92%

- Updated ITC related assumptions and allowances to better align with industry trends.
  - Eligible costs include equipment required for supplying electricity to point of change of ownership with the utility, plus related direct and indirect costs. Point of change of ownership assumed to be at ring bus switchyard. Transmission line included in eligible tax basis assumption.
  - Eligible basis excludes switchyard, portions of site prep/civil scope, fencing, external fire protection, noise mitigation, site security systems.
  - Percentage of eligible basis for all locations except Load Zone J were generally similar and were thus normalized across the BESS technology options. Note that Load Zone J project estimates have higher costs for switchyard, fire protection, and site preparation, so percentage of eligible basis is appreciably different.
- Legal fees included for tax credit transfer transaction are intended to cover buy side and sell side.
- Recapture insurance is commonly included in ITC transfers. Coverage and premium assumptions are the same for all BESS options in all locations.
- Current market value for transfer is approximately $0.92 per $1 ITC, net of broker fees.
- Updated ITC assumptions and allowances are based on 1898 & Co. knowledge of project-specific (confidential) eligible cost information (performed by others), correspondence with tax consultants and developers, and related research.

Simple Cycle Gas Turbine (SCGT) Updates

Emission Reduction Credits (ERC)

ERC Costs	NOx	VOC
Attainment Zones (OTR)	$1,350 / ton	$5,500 / ton
Non-Attainment Zones	$15,000 / ton	$19,500 / ton

- Currently, there are sufficient ERCs available for the fossil fired SCGT options evaluated.
- VOC ERCs are more limited and higher costs compared to the 2021-2025 DCR due to recent high-volume of purchases.
- ERCs are a one-time purchase and included in the capital cost estimates.
  - Variable component (not shown in example) follows similar percentage changes as fixed component.

System Deliverability Upgrade (SDU) Costs

- The NYSIO provided the results of the required SDU analysis for the 2025-2029 DCR for all technology options
  - All technology options were found to be fully deliverable in all locations, except for the J-class frame turbine option for Load Zone K.
  - Load Zone K SDU costs for the J-class frame turbine option were estimated to be at least $300 million.
  - Load Zone K SDU costs were zero for the H-class frame turbine and all BESS options (i.e., these options were all fully deliverable without incurring any need for SDUs).
- 1898 & Co. provided updated cost and performance information for a H-class frame turbine (7HA.02) with selective catalytic reduction (SCR) emissions controls and dual fuel capability for Load Zone K.
  - Analysis Group confirmed that the 7HA.02 option would be a lower fixed cost SCGT technology option for Load Zone K considering the SDU cost applicable to a J-class frame turbine option (7HA.03).

DMNC Ambient Condition Update

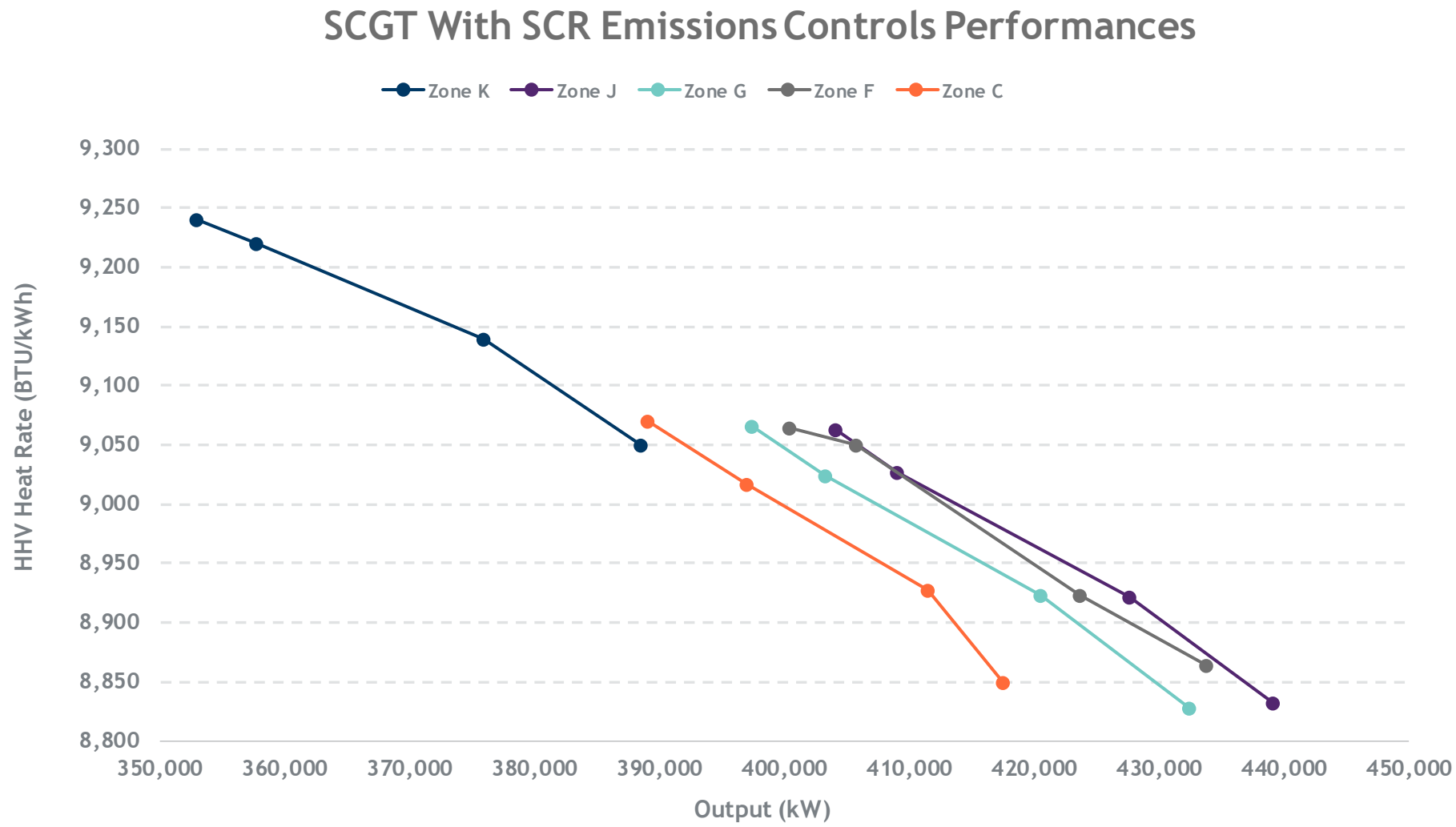
Gas Turbine Performance Basis

- DMNC Summer and Winter conditions were updated based on the new framework for adjusting DMNC results for air temperature and humidity-dependent units starting in May 2025. Ambient values estimated based on conditions from 2024 NYISO Load & Capacity Data report (Gold Book).

	Zone C	Zone F	Zone G-R	Zone G-D	Zone J	Zone K
Site Elevation	1099 FT	279 FT	492 FT	492 FT	10 FT	85 FT
ISO Conditions	59°F 60% RH	59°F 60% RH	59°F 60% RH	59°F 60% RH	59°F 60% RH	59°F 60% RH
ICAP Conditions	90°F 70% RH	90°F 70% RH	90°F 70% RH	90°F 70% RH	90°F 70% RH	90°F 70% RH
DMNC Summer Conditions	90°F 48% RH	92°F 46% RH	94°F 43% RH	94°F 43% RH	95°F 43% RH	92°F 50% RH
DMNC Winter Conditions	9°F 56% RH	10°F 59% RH	13°F 58% RH	13°F 58% RH	17°F 46% RH	20°F 50% RH

International Standards Organization (ISO) | Dependable Maximum Net Capability (DMNC) | Degrees Fahrenheit (°F) | Relative Humidity (RH)

GAS TURBINE PERFORMANCE RESULTS



Higher Heating Value (HHV) | Kilowatt (kW) | Kilowatt-Hour (kWh) | Selective Catalytic Reduction (SCR) | High-Efficiency and Air-Cooled (HA)
Note: Performance reflects 7HA.03 turbine option for all locations except Load Zone K which reflects performance of a 7HA.02 turbine option

SCGT Terminal Value

- Since the fossil fuel fired SCGT unit is recommended to be amortized over 13 years and assumed to cease operating in 2040 to comply with the Climate Leadership and Community Protection Act (CLCPA) zero-emissions energy requirements, certain stakeholders requested that the terminal value of the SCGT facility be considered.
- As presented at the March 25, 2024 ICAPWG meeting, it is 1898 & Co.'s recommendation that the terminal or salvage value of the facility not be considered in this analysis.
- Grey market equipment pricing is highly volatile and dependent on a number of factors.
  - Asset age, operating hours/starts, condition, time since last major maintenance activity, combustor technology compared to latest technology, gas turbine market, etc.
  - Impossible to project a grey market value in 2040 at this time.
- Additionally, facility decommissioning and/or remediation cost considerations could make the terminal value a cost rather than a positive value.
- While there may be value in an existing interconnection today, presumably additional fossil plants may also be required to cease operation by 2040 which would reduce the value due to increased availability of interconnection opportunities from other similarly situated generators.
- Estimating terminal value is seen as highly speculative and anticipated to be a relatively small net value.

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Additional Updates and Considerations

Additional Updates/Considerations

- Added land lease cost during construction in the capital cost estimates.
- Removed $1 million from capital cost for ROW in Load Zone J. Added revocable consent payments to fixed O&M.
- 1898 & Co. reviewed capitalization rates for industrial properties in Load Zone J based on stakeholder comments. Capitalization rates have increased in 2024, and 1898 & Co. is recommending increasing the assumed capitalization rate from 5.5% to 5.9%. Land lease costs will be adjusted accordingly in the final report.
- Land lease costs have also been adjusted to appropriately account for property taxes on the land without consideration of the additions related to the SCGT and BESS technologies. Taxes and property insurance for the SCGT and BESS facilities is accounted for in the fixed O&M costs.
- 1898 & Co. recommends maintaining the assumption of a 1 mile of transmission lateral in Load Zone J and the previously assumed additional community outreach cost to address potential environmental justice areas.


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