NYISO 2025-2029 ICAP Demand Curve Reset (DCR)

ICAP Working Group Meeting

May 30, 2024

Update:
Battery Energy Storage System (BESS) Preliminary Estimates

BESS 2-Hour Results: Update

4-Hour BESS	Load Zone C	Load Zone J
EPC Project Cost ($MM)	$289	$361
Owner's Costs ($MM)	$68	$112
AFUDC ($MM)	$28	$37
Total Cost ($MM)	**$385**	**$510**

2-Hour BESS	Load Zone C	Load Zone J
EPC Project Cost ($MM)	$168	$206
Owner's Costs ($MM)	$61	$103
AFUDC ($MM)	$18	$24
Total Cost ($MM)	**$247**	**$333**

- Initial, high-level cost estimates for a 2-hour BESS were utilized in the calculation of the preliminary reference point prices in Analysis Group's 5/20/2024 ICAPWG meeting presentation.
- Updated preliminary capital cost estimates for 2-hour BESS have been developed utilizing the same methodology as all other BESS options and are included in the Appendix.
- The table above shows a comparison of 2-hour BESS and 4-hour BESS costs for two example locations.


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Appendix A: Preliminary BESS 2-Hour Capital Costs

	Load Zone C: Central	Load Zone F: Capital	Load Zone G: Dutchess	Load Zone G: Rockland	Load Zone J: New York City	Load Zone K: Long Island
ESTIMATED CAPITAL COSTS						
EPC Project Capital Costs, 2024 MM$ (w/o Owner's Costs)	**$168**	**$169**	**$168**	**$174**	**$206**	**$178**
Owner's Costs, 2024 MM$						
Owner's Project Development	$0.7	$0.7	$0.7	$0.7	$0.9	$0.7
Owner's Operational Personnel Prior to COD	$0.1	$0.1	$0.1	$0.1	$0.1	$0.1
Owner's Engineer	$0.6	$0.6	$0.6	$0.6	$0.7	$0.6
Owner's Project Management	$0.8	$0.8	$0.8	$0.8	$1.1	$0.8
Owner's Legal Costs	$0.7	$0.7	$0.7	$0.7	$0.9	$0.7
Owner's Start-up Engineering and Commissioning	$0.1	$0.1	$0.1	$0.1	$0.1	$0.1
Sales Tax	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Construction Power and Water	$0.2	$0.2	$0.2	$0.2	$0.2	$0.2
Permitting Support	$1.0	$1.0	$1.0	$1.0	$1.3	$1.0
Switchyard	$18.2	$18.2	$18.2	$18.2	$51.0	$13.0
Transmission Line and Electrical Interconnection	$26.1	$26.1	$26.1	$26.1	$29.3	$23.0
Gas Interconnection & Reinforcement	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
System Deliverability Upgrade Costs	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Water Supply Infrastructure	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Emission Reduction Credits	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Public Outreach and Area Development	$0.3	$0.3	$0.3	$0.3	$0.4	$0.3
Startup/Testing (Fuel & Consumables)	$0.1	$0.1	$0.1	$0.1	$0.1	$0.1
Initial Fuel Inventory	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Site Security	$0.4	$0.4	$0.4	$0.4	$0.6	$0.4
Operating Spare Parts	$0.5	$0.5	$0.5	$0.5	$0.5	$0.5
Builders Risk Insurance (0.45% of Construction Costs)	$0.8	$0.8	$0.8	$0.8	$0.9	$0.8
Owner's Contingency (5% for Screening Purposes)	$10.9	$11.0	$10.9	$11.2	$14.7	$11.0
Owner's Cost Allowance Subtotal, 2024 MM$	**$61**	**$61**	**$61**	**$62**	**$103**	**$53**
AFUDC as a Percentage of Capital Costs (%)	7.85%	7.85%	7.85%	7.85%	7.85%	7.85%
AFUDC, 2024 MM$						
EPC Portion	$13.2	$13.3	$13.2	$13.7	$16.2	$14.0
Non-EPC Portion	$4.8	$4.8	$4.8	$4.8	$8.1	$4.2
AFUDC Subtotal, 2024 MM$	**$18**	**$18**	**$18**	**$18**	**$24**	**$18**
Total Project Costs, 2024 MM$	**$247**	**$249**	**$247**	**$254**	**$333**	**$249**

Notes:
[1] EPC electrical scope ends at the high side of the MPT. Includes engineering, procurement, construction (EPC) contracting methodology.
[2] EPC cost accounts for BESS sizing that accommodates system losses, equipment efficiencies, minimum state of charge, aux load, degradation during shipping/construct
[3] Estimated Costs exclude decommissioning costs and salvage values.

Appendix B: Preliminary BESS 2-Hour O&M Costs

	Load Zone C: Central	Load Zone F: Capital	Load Zone G: Dutchess	Load Zone G: Rockland	Load Zone J: New York City	Load Zone K: Long Island
ESTIMATED O&M COSTS						
FIXED O&M COSTS						
Fixed O&M Cost - Assumes LTSA with Integrator/OEM, 2024$MM/Yr	$2.4	$2.4	$2.4	$2.4	$2.4	$2.4
Capacity Maintenance Agreement (Fixed Portion Levelized), 2024$MM/Yr	$0.9	$0.9	$0.9	$0.9	$0.9	$0.9
Site Leasing Allowance, 2024$MM/Yr	$0.3	$0.3	$0.3	$0.3	$1.9	$0.3
Property Insurance Allowance, 2024$MM/Yr	$1.0	$1.0	$1.0	$1.0	$1.2	$1.1
Total Fixed O&M Cost 2024$MM/Yr	**$4.5**	**$4.6**	**$4.5**	**$4.6**	**$6.4**	**$4.6**
VARIABLE O&M COSTS (Augmentation Model)						
Capacity Maintenance Agreement (Variable Portion Levelized), 2024 $/MWh	$6.47	$6.47	$6.47	$6.47	$6.47	$6.47

Notes:

[1] Battery FOM accounts for routine BESS and PCS maintenance, BOP maintenance, remote monitoring, asset management, performance guarantees, extended warranties, stanby/idle aux loads, and an inverter replacement allowance.

[2] Augmentation typically occurs in milestone events, but the total lifetime augmentation estimates are levelized here, intended to account for maintaining rated energy capacity for 20-year life. Augmentation estimates are modeled in fixed and variable components to allow for cycle adjustments in DCR (both components together make up the augmentation estimate).

Appendix C: Preliminary BESS 2-Hour Performance

	Load Zone C: Central	Load Zone F: Capital	Load Zone G: Dutchess	Load Zone G: Rockland	Load Zone J: New York City	Load Zone K: Long Island
BASE PLANT DESCRIPTION						
Nominal Output, MW	200	200	200	200	200	200
Nominal Duration, hr	2	2	2	2	2	2
Assumed Useful Life (years)	20	20	20	20	20	20
Equivalent Availability Factor (%)	98%	98%	98%	98%	98%	98%
Assumed Land Use During Operation, Acres (Not Construction Land Use)	10	10	10	10	6	9
Annual System Cycles	365	365	365	365	365	365
Storage System Initial Overbuild (Years)	4	4	4	4	4	4
Storage System AC Roundtrip Efficiency (%)	85%	85%	85%	85%	85%	85%
Interconnection Voltage, kV	345	345	345	345	345	138
Technology Rating	Mature	Mature	Mature	Mature	Mature	Mature
EPC Schedule (Years from NTP)	2.50	2.50	2.50	2.50	2.50	2.50
ESTIMATED PERFORMANCE						
BESS Performance						
Net Plant Output, kW	200,000	200,000	200,000	200,000	200,000	200,000
Discharge Duration,hr	2	2	2	2	2	2
Net Plant Energy Capacity, kWh	400,000	400,000	400,000	400,000	400,000	400,000
Energy Capacity Installed with Overbuild, kWh AC at POI	451,500	451,500	451,500	451,500	451,500	451,500
Notes:						
[1] Availability and outage rate assumptions are based on vendor correspondence and industry publications.						