

LAZARD'S LEVELIZED COST OF STORAGE ANALYSIS—VERSION 5.0

LAZARD

Table of Contents

I	INTRODUCTION	1
II	LAZARD'S LEVELIZED COST OF STORAGE ANALYSIS V5.0	2
III	ENERGY STORAGE VALUE SNAPSHOT ANALYSIS	8
IV	SUMMARY OF KEY FINDINGS	10
APPENDIX		
A	Supplementary LCOS Analysis Materials	11
B	Supplementary Value Snapshot Materials	
1	Landscape of Energy Storage Revenue Potential	15
2	Value Snapshot Supporting Materials	20



I Introduction

Introduction

Lazard's Levelized Cost of Storage ("LCOS") analysis⁽¹⁾ addresses the following topics:

- **Introduction**
- **Lazard's LCOS Analysis**
 - Overview of the selected energy storage systems for each use case analyzed and their associated operational parameters
 - Comparative LCOS analysis for various energy storage systems on a \$/MWh and \$/kW-year basis
 - Comparison of capital costs for various energy storage systems on a \$/kWh and \$/kW basis
- **Energy Storage Value Snapshot Analysis**
 - Overview of the Value Snapshot analysis and identification of selected geographies for each use case analyzed
 - Summary results from the Value Snapshot analysis
- **Summary of key findings from Lazard's LCOS v5.0**
- **Selected appendix materials**
 - Supplementary materials for Lazard's LCOS analysis, including overviews of the use cases analyzed, methodology employed, breakdowns of "low" and "high" levelized costs by component and key assumptions utilized
 - Supplementary materials for the Value Snapshots analysis, including an overview of the landscape of potential sources of revenue for various use cases
 - Supporting materials for the Value Snapshot analysis, including an overview of the methodology employed, key assumptions for both U.S. and International use cases analyzed and pro forma results for each use case



II Lazard's Levelized Cost of Storage Analysis v5.0

Energy Storage Use Cases—Overview

We have identified and evaluated the most common applications for new energy storage deployments—Lazard's LCOS examines the cost of energy storage applications on the grid and behind-the-meter

	Use Case Description	Technologies Assessed
In-Front-of-the-Meter	1 Wholesale <ul style="list-style-type: none"> Large-scale energy storage system designed for rapid start and precise following of dispatch signal. Variations in system discharge duration are designed to meet varying system needs (i.e., short duration frequency regulation, longer duration energy arbitrage⁽¹⁾ or capacity, etc.) <ul style="list-style-type: none"> To better reflect current market trends, this report analyzes one-, two- and four-hour durations 	<ul style="list-style-type: none"> Lithium-Ion Flow Battery-Vanadium Flow Battery-Zinc Bromide
	2 Transmission and Distribution <ul style="list-style-type: none"> Energy storage system designed to defer or avoid transmission and/or distribution upgrades, typically placed at substations or distribution feeders controlled by utilities to provide flexible capacity while also maintaining grid stability 	<ul style="list-style-type: none"> Lithium-Ion Flow Battery-Vanadium Flow Battery-Zinc Bromide
	3 Wholesale (PV + Storage) <ul style="list-style-type: none"> Energy storage system designed to be paired with large solar PV facilities to better align timing of PV generation with system demand, reduce solar curtailment and provide grid support 	<ul style="list-style-type: none"> Lithium-Ion Flow Battery-Vanadium Flow Battery-Zinc Bromide
Behind-the-Meter	4 Commercial & Industrial (Standalone) <ul style="list-style-type: none"> Energy storage system designed for behind-the-meter peak shaving and demand charge reduction for commercial energy users <ul style="list-style-type: none"> Units often configured to support multiple commercial energy management strategies and provide optionality for the system to provide grid services to a utility or the wholesale market, as appropriate in a given region 	<ul style="list-style-type: none"> Lithium-Ion Advanced Lead (Lead Carbon)
	5 Commercial & Industrial (PV + Storage) <ul style="list-style-type: none"> Energy storage system designed for behind-the-meter peak shaving and demand charge reduction services for commercial energy users <ul style="list-style-type: none"> Systems designed to maximize the value of the solar PV system by optimizing available revenues streams and subsidies 	<ul style="list-style-type: none"> Lithium-Ion Advanced Lead (Lead Carbon)
	6 Residential (PV + Storage) <ul style="list-style-type: none"> Energy storage system designed for behind-the-meter residential home use—provides backup power, power quality improvements and extends usefulness of self-generation (e.g., “solar PV + storage”) <ul style="list-style-type: none"> Regulates the power supply and smooths the quantity of electricity sold back to the grid from distributed PV applications 	<ul style="list-style-type: none"> Lithium-Ion Advanced Lead (Lead Carbon)

For the purposes of this analysis, “energy arbitrage” in the context of storage systems paired with solar PV includes revenue streams associated with the sale of excess generation from the solar PV system, as appropriate, for a given use case.

Energy Storage Use Cases—Operational Parameters

For comparison purposes, this report evaluates six illustrative use cases for energy storage; while there may be alternative or combined/“stacked” use cases available to energy storage systems, the six use cases below represent illustrative current and contemplated energy storage applications and are derived from Industry survey data

		A	B		C	D x C =	E	F	D x E x F =	A x G =
		Project Life (Years)	Storage (MW) ⁽²⁾	Solar PV (MW)	Storage Duration (Hours)	Capacity (MWh) ⁽³⁾	100% DOD Cycles/Day ⁽⁴⁾	Days/Year ⁽⁵⁾	Annual MWh	Project MWh
In-Front-of-the-Meter	1 Wholesale	20	100	--	1	100	1	350	35,000	700,000
		20	100	--	2	200	1	350	70,000	1,400,000
		20	100	--	4	400	1	350	140,000	2,800,000
	2 Transmission and Distribution	20	10	--	6	60	1	25	1,500	30,000
	3 Wholesale (PV + Storage)	20	50	100	4	200	1	350	70,000	1,400,000
Behind-the-Meter	4 Commercial & Industrial (Standalone)	10	1	--	2	2	1	250	500	5,000
	5 Commercial & Industrial (PV + Storage)	20	0.50	1	4	2	1	350	700	14,000
	6 Residential (PV + Storage)	20	0.006	0.010	4	0.025	1	350	9	175

= “Usable Energy”⁽¹⁾

Note: Battery chemistries included in this report include Lithium Ion, Advanced Lead, Vanadium and Zinc Bromide (denoted as Flow (V) and Flow (Zn), respectively).

(1) Usable energy indicates energy stored and able to be dispatched from the storage system.

(2) Indicates power rating of system (i.e., system size).

(3) Indicates total battery energy content on a single, 100% charge, or “usable energy.” Usable energy divided by power rating (in MW) reflects hourly duration of system.

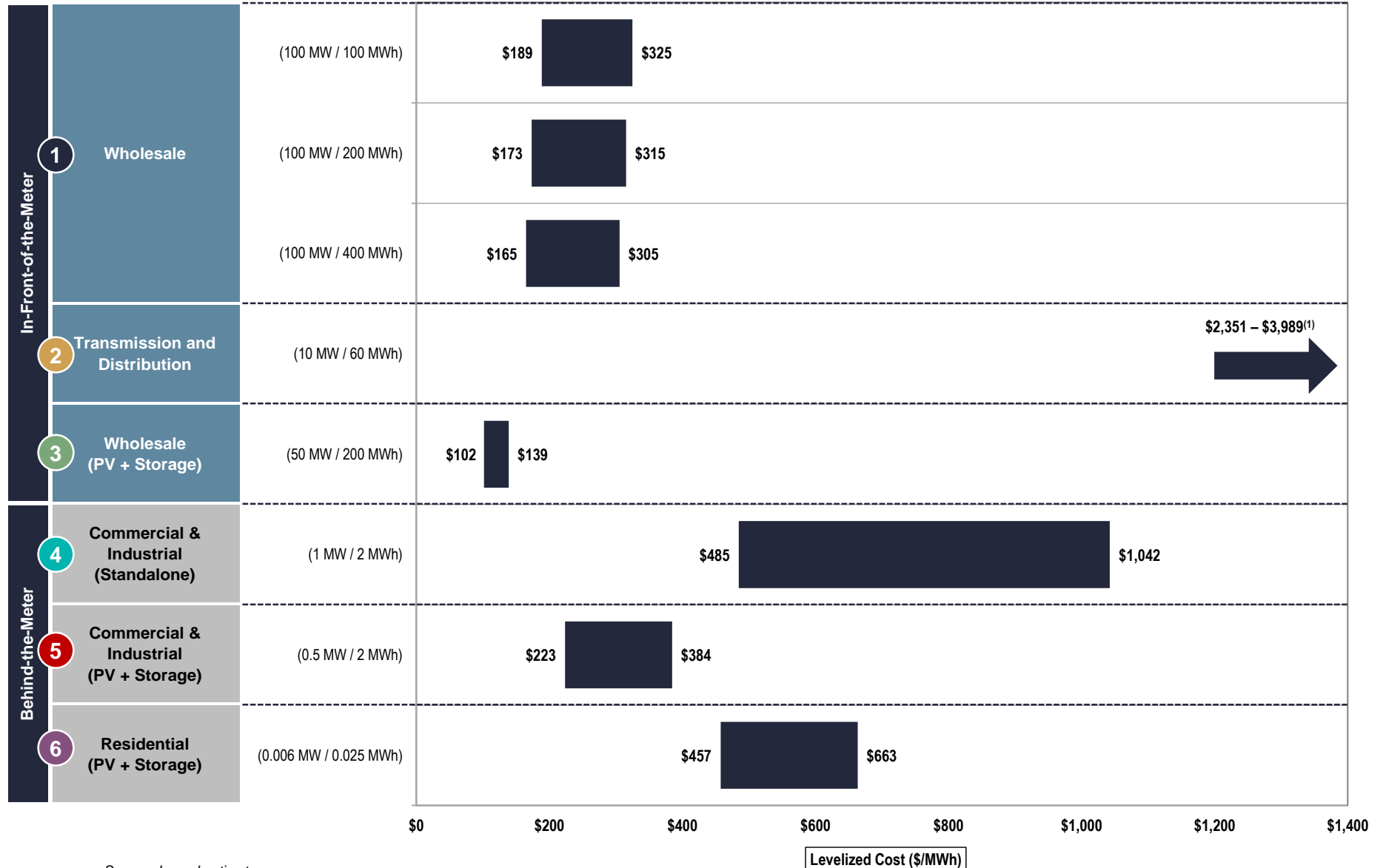
(4) “DOD” denotes depth of battery discharge (i.e., the percent of the battery’s energy content that is discharged). Depth of discharge of 100% indicates that a fully charged battery discharges all of its energy. For example, a battery that cycles 48 times per day with a 10% depth of discharge would be rated at 4.8 100% DOD Cycles per Day.

(5) Indicates number of days of system operation per calendar year.

This study has been prepared by Lazard for general informational purposes only, and it is not intended to be, and should not be construed as, financial or other advice. No part of this material may be copied, photocopied or duplicated in any form by any means or redistributed without the prior consent of Lazard.

Unsubsidized Levelized Cost of Storage Comparison—Energy (\$/MWh)

Lazard's LCOS analysis evaluates storage systems on a levelized basis to derive cost metrics based on annual energy output

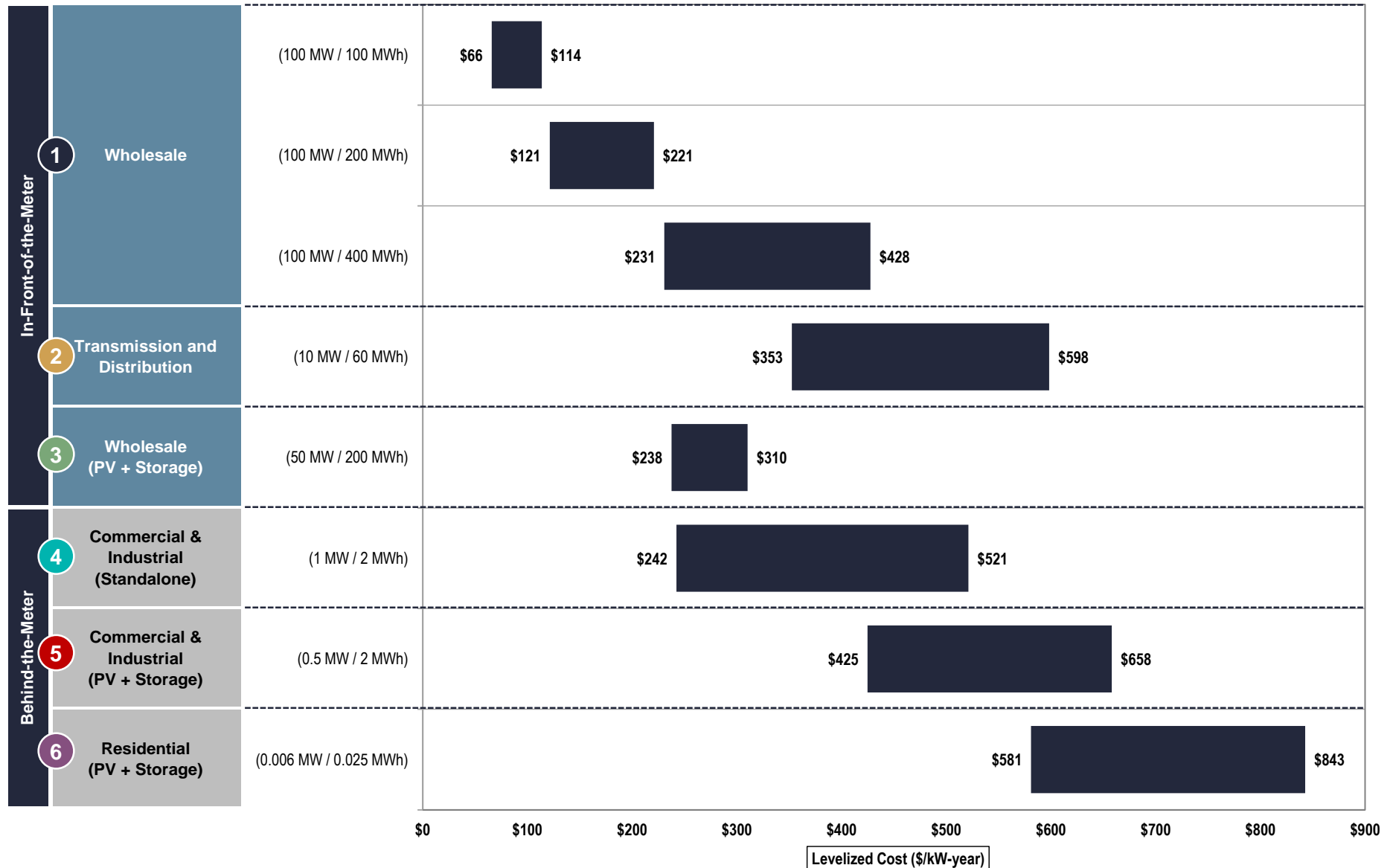


Source: Lazard estimates.

Note: Here and throughout this presentation, unless otherwise indicated, analysis assumes a capital structure consisting of 20% debt at an 8% interest rate and 80% equity at a 12% cost of equity. Capital costs are comprised of the storage module, balance of system and power conversion equipment, collectively referred to as the Energy Storage System ("ESS"), solar equipment (where applicable) and EPC. Augmentation costs are included as part of O&M expenses in this analysis and vary across use cases due to usage profiles and lifespans. Given the operational parameters for the Transmission and Distribution use case (i.e., 25 cycles per year), levelized metrics are not comparable between this and other use cases presented in Lazard's Levelized Cost of Storage report.

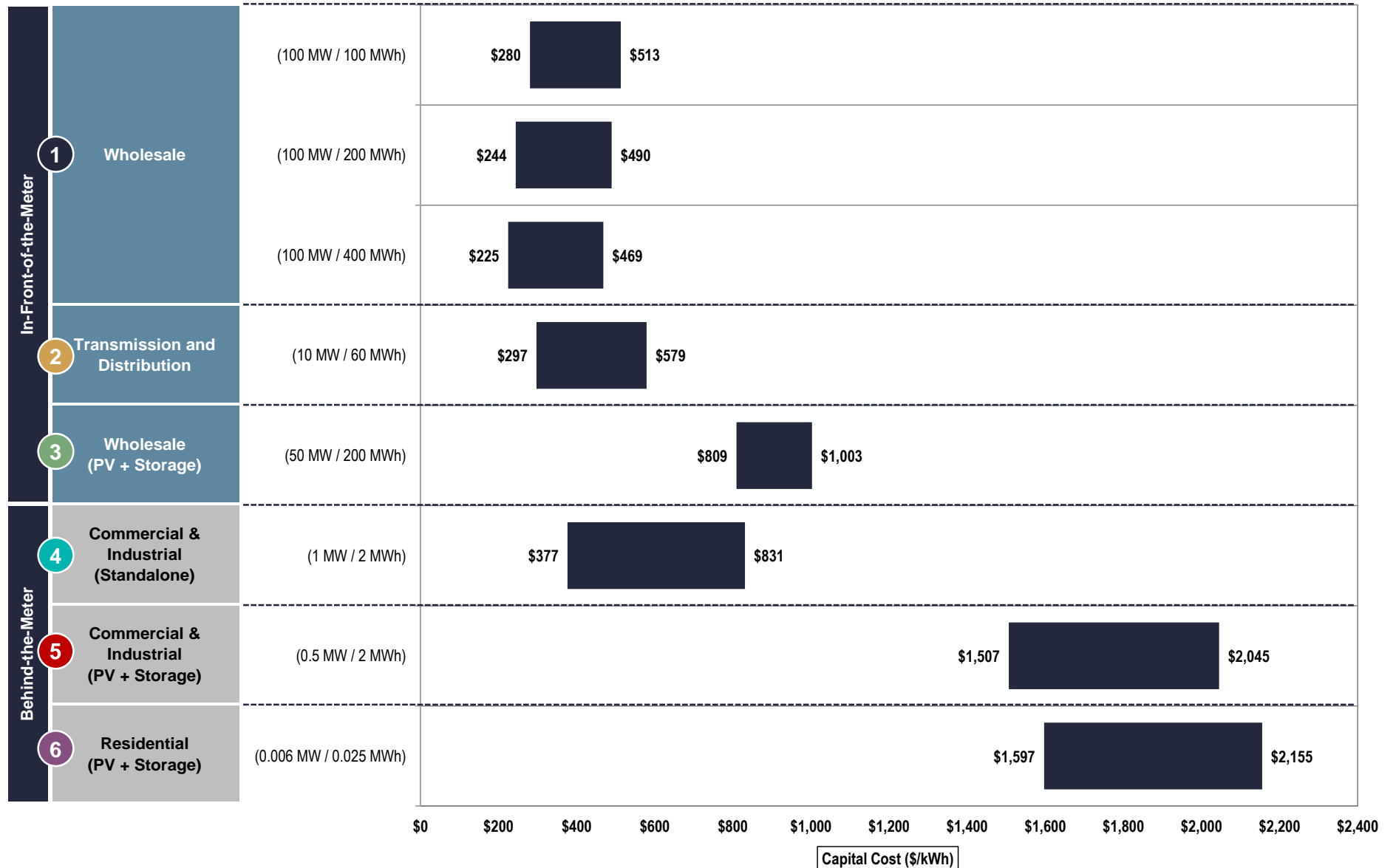
Unsubsidized Levelized Cost of Storage Comparison—Capacity (\$/kW-year)

Lazard's LCOS analysis evaluates storage systems on a levelized basis to derive cost metrics based on annual energy output



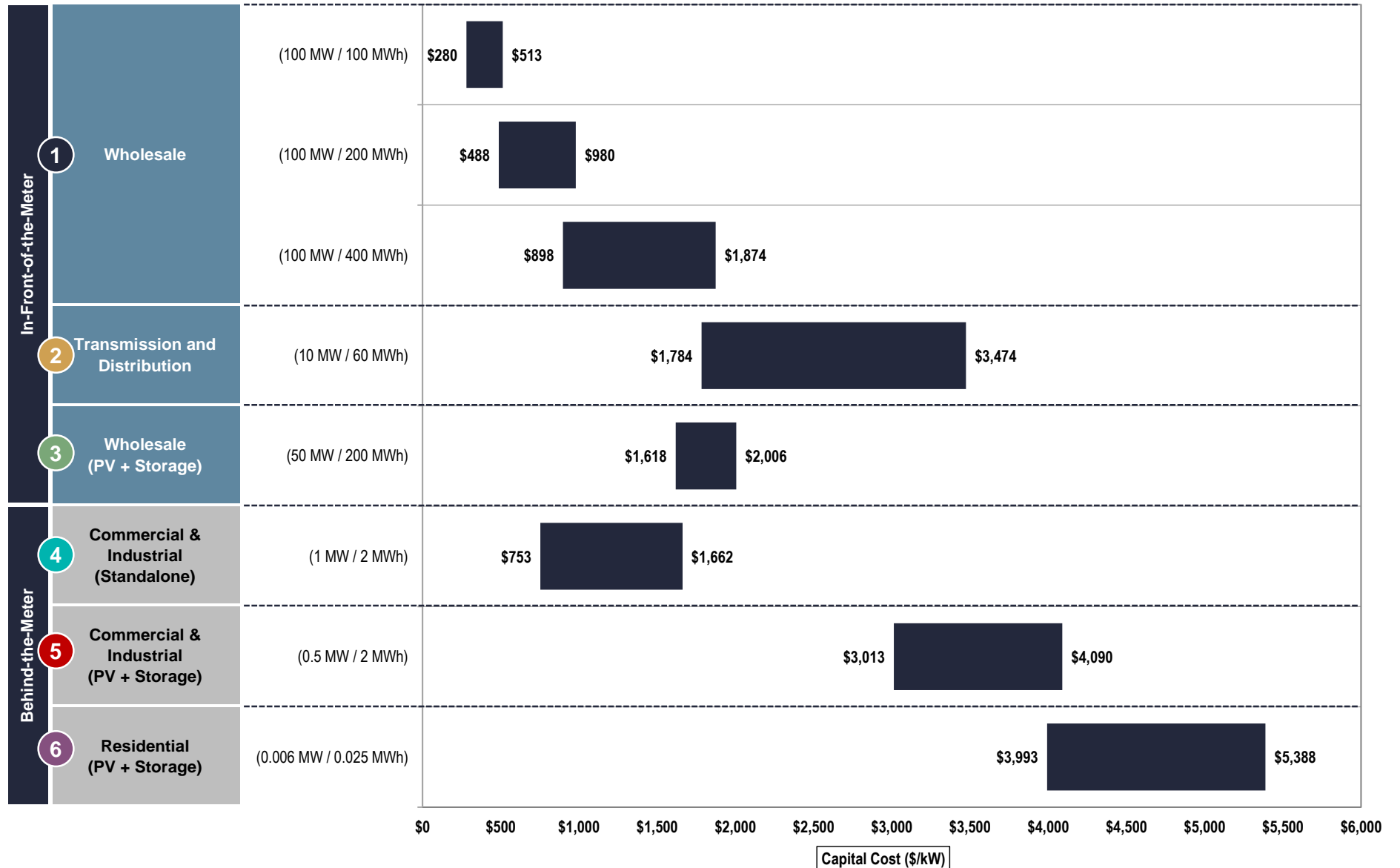
Capital Cost Comparison—Nameplate Energy (\$/kWh)

In addition to analyzing storage costs on a levelized basis, Lazard's LCOS also evaluates system costs on the basis of nameplate energy



Capital Cost Comparison—Nameplate Capacity (\$/kW)

In addition to analyzing storage costs on a levelized basis, Lazard's LCOS also evaluates system costs on the basis of nameplate capacity





III Energy Storage Value Snapshot Analysis

Illustrative Value Snapshots—Overview

Our Value Snapshots analyze the financial viability of illustrative energy storage systems designed for selected use cases. The geographic locations, assumed installed and operating costs and associated revenue streams reflect current energy storage market activity

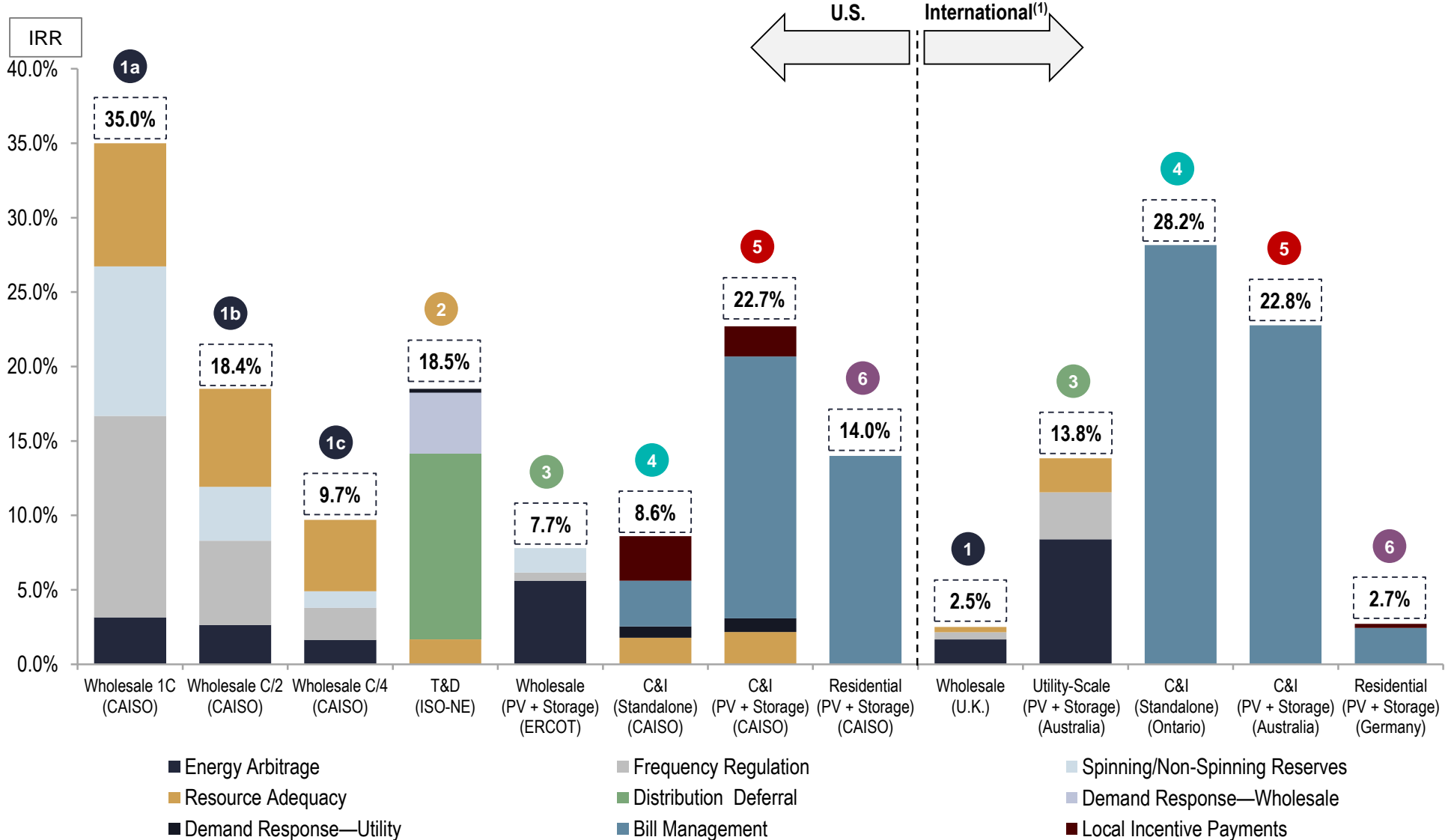
- Actual project returns may vary due to differences in location-specific costs, revenue streams and owner/developer risk preferences

Use Case	U.S. Location	International Location	Owner	Revenue Streams
1 Wholesale	CAISO (SP-15)	U.K.	<ul style="list-style-type: none"> • IPP in a competitive wholesale market 	<ul style="list-style-type: none"> • Wholesale market settlement • Local capacity resource programs
2 Transmission and Distribution	ISO-NE (New Hampshire)	--(1)	<ul style="list-style-type: none"> • Wires utility in a competitive wholesale market 	<ul style="list-style-type: none"> • Capital recovery in regulated rates, avoided cost to wires utility and avoided cost incentives
3 Wholesale (PV + Storage)	ERCOT (South Texas)	Australia	<ul style="list-style-type: none"> • IPP in a competitive wholesale market 	<ul style="list-style-type: none"> • Wholesale market settlement • Excess solar generation is monetized at prevailing market rates
4 Commercial & Industrial (Standalone)	CAISO (San Francisco)	Ontario	<ul style="list-style-type: none"> • Customer or financier 	<ul style="list-style-type: none"> • Tariff settlement, DR participation, avoided costs to commercial customer, local capacity resource programs and incentives
5 Commercial & Industrial (PV + Storage)	CAISO (San Francisco)	Australia	<ul style="list-style-type: none"> • Customer or financier 	<ul style="list-style-type: none"> • Tariff settlement, DR participation, avoided costs to commercial customer, local capacity resource programs and incentives • Excess solar generation is monetized at applicable rates based on the relevant parameters of the use case
6 Residential (PV + Storage)	HECO (Hawaii)	Germany	<ul style="list-style-type: none"> • Customer or financier 	<ul style="list-style-type: none"> • Tariff settlement, avoided costs to residential customer and incentives • Excess solar generation is monetized at applicable rates based on the relevant parameters of the use case

(1) Lazard's Value Snapshot analysis intentionally excluded a Transmission and Distribution use case from its international analysis given the lack of substantive publicly available data for projects deployed for this use case.

Illustrative Value Snapshots—Summary Results

Project economics evaluated in the Value Snapshots analysis continue to demonstrate modest improvements year-over-year for the selected use cases, driven primarily by improved costs rather than rising revenues



Source: Lazard estimates.
(1) Lazard's Value Snapshot analysis intentionally excluded a Transmission and Distribution use case from its international analysis.



IV Summary of Key Findings

Summary of Key Findings from Lazard's Levelized Cost of Storage v5.0

<p>1</p> <p>Continued Cost Declines</p>	<ul style="list-style-type: none"> • LCOS v5.0 reveals significant cost declines across most use cases, despite industry concern about rising costs for future deliveries of Lithium-ion systems due to higher commodity pricing and challenges related to storage module availability <ul style="list-style-type: none"> – Observed cost declines have been most pronounced for Lithium-ion technologies over the past year, while more limited cost improvements were observed in advanced lead and flow battery technologies – Cost declines were more pronounced for storage modules than for balance of system components or O&M – Year-over-year cost declines were less pronounced than those observed in LCOS v4.0, albeit there is notable variance between use cases (e.g., compared to LCOS v4.0, the rate of cost declines for Commercial & Industrial systems increased, while that of Wholesale systems decreased) – The previously observed trend of growing cost disparity within use cases continued, as the gap between the lowest- and highest-cost systems increased, on a relative basis, vs. LCOS v4.0
<p>2</p> <p>Improving Project Economics</p>	<ul style="list-style-type: none"> • Project economics observed in the Value Snapshots have revealed a modest improvement year-over-year, primarily reflecting improved costs rather than rising revenues <ul style="list-style-type: none"> – In most geographies, project economics still depend heavily on subsidized revenues or related incentives – Ancillary service products, demand response and demand charge mitigation represent the most attractive revenue streams available to storage projects
<p>3</p> <p>Solar PV + Storage Viability</p>	<ul style="list-style-type: none"> • Project economics analyzed for solar PV + storage systems are attractive for short-duration wholesale and commercial use cases but remain challenged for residential and longer-duration wholesale projects <ul style="list-style-type: none"> – Combining energy storage with solar PV can create value through shared infrastructure (e.g., inverters, interconnection) and reducing the need to curtail production by delaying the dispatch of electricity onto the grid – Energy storage is increasingly being sold with commercial and residential solar PV systems to provide customers with reliability benefits and demand charge mitigation – Wholesale solar PV + storage projects can offer attractive returns when combining multiple revenue streams, while commercial and residential solar PV + storage use cases rely on avoiding high retail energy or demand charges
<p>4</p> <p>Technology Trends</p>	<ul style="list-style-type: none"> • Lithium-ion technologies dominate the energy storage market across applications with Lithium Nickel Manganese Cobalt Oxide (“NMC”) and Lithium Iron Phosphate (“LFP”) representing the majority of deployments <ul style="list-style-type: none"> – Survey respondents reported an increased focus on Lithium-ion chemistry selection, weighing trade-offs between cost and storage module availability/deliverability, thermal stability and supplier reputation • Traditional lead chemistries represent marginal competition to their Lithium-ion counterparts, although advanced lead technologies appear to be maintaining a presence in the marketplace



Appendix



A Supplementary LCOS Analysis Materials

Levelized Cost of Storage Analysis—Methodology

Our Levelized Cost of Storage analysis consists of creating an energy storage model representing an illustrative project for each relevant technology and solving for the \$/MWh figure that results in a levered IRR equal to the assumed cost of equity (see appendix for detailed assumptions by technology)

		Wholesale (100 MW / 200 MWh)—Low Case Sample Calculations						
Year (1)		0	1	2	3	4	5	20
Capacity (MW)	(A)		100	100	100	100	100	100
Total Generation ('000 MWh) ⁽²⁾	(B)*		70	70	70	70	70	70
Levelized Storage Cost (\$/MWh)	(C)		\$173	\$173	\$173	\$173	\$173	\$173
Total Revenues	(B) x (C) = (D)*		\$12.1	\$12.1	\$12.1	\$12.1	\$12.1	\$12.1
Total Charging Cost ⁽³⁾	(E)		(\$3.3)	(\$3.3)	(\$3.4)	(\$3.5)	(\$3.6)	(\$5.0)
Total O&M ⁽⁴⁾	(F)*		(1.3)	(1.3)	(1.7)	(1.7)	(1.7)	(1.7)
Total Operating Costs	(E) + (F) = (G)		(\$4.6)	(\$4.7)	(\$5.1)	(\$5.1)	(\$5.2)	(\$6.7)
EBITDA	(D) - (G) = (H)		\$7.5	\$7.5	\$7.1	\$7.0	\$6.9	\$5.5
Debt Outstanding - Beginning of Period	(I)		\$9.8	\$9.5	\$9.3	\$9.1	\$8.8	\$0.9
Debt - Interest Expense	(J)		(0.8)	(0.8)	(0.7)	(0.7)	(0.7)	(0.1)
Debt - Principal Payment	(K)		(0.2)	(0.2)	(0.2)	(0.3)	(0.3)	(0.9)
Levelized Debt Service	(J) + (K) = (L)		(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)
EBITDA	(H)		\$7.5	\$7.5	\$7.1	\$7.0	\$6.9	\$5.5
Depreciation (7-yr MACRS)	(M)		(11.9)	(8.5)	(6.1)	(4.4)	(4.4)	0.0
Interest Expense	(J)		(0.8)	(0.8)	(0.7)	(0.7)	(0.7)	(0.1)
Taxable Income	(H) + (M) + (J) = (N)		(\$5.2)	(\$1.8)	\$0.2	\$1.9	\$1.9	\$5.4
Tax Benefit (Liability)	(N) x (Tax Rate) = (O)		\$2.1	\$0.7	(\$0.1)	(\$0.8)	(\$0.7)	(\$2.2)
After-Tax Net Equity Cash Flow	(H) + (L) + (O) = (P)		(\$39.0)⁽⁷⁾	\$8.6	\$7.2	\$5.8	\$5.3	\$5.2
IRR For Equity Investors			12.0%					

Key Assumptions ⁽⁵⁾	
Power Rating (MW)	100
Duration (Hours)	2
Usable Energy (MWh)	200
100% Depth of Discharge Cycles/Day	1
Operating Days/Year	350
Capital Structure	
Debt	20.0%
Cost of Debt	8.0%
Equity	80.0%
Cost of Equity	12.0%
Taxes	
Combined Tax Rate	40.0%
Contract Term / Project Life (years)	20
MACRS Depreciation Schedule	7 Years
Total Initial Installed Cost (\$/MWh)⁽⁶⁾	
O&M, Warranty & Augmentation Cost (\$/MWh)	\$20
Charging Cost (\$/kWh)	\$0.042
Charging Cost Escalator (%)	2.25%
Efficiency (%)	90%

Source: Lazard estimates.

Note: Wholesale (100 MW / 200 MWh)—Low LCOS case presented for illustrative purposes only. Assumptions specific to Wholesale (100 MW / 200 MWh) Low Case.

* Denotes unit conversion.

(1) Assumes half-year convention for discounting purposes.

(2) Total Generation reflects (Cycles) x (Capacity) x (Depth of Discharge) x (1 - Fade). Note for the purpose of this analysis, Lazard accounts for Fade in Augmentation costs (included in O&M).

(3) Charging Cost reflects (Total Generation) / [(Efficiency) x (Charging Cost) x (1 + Charging Cost Escalator)].

(4) O&M costs include general O&M (\$0.25/kWh, plus relevant Solar PV O&M, escalating annually at 2.5%), augmentation costs (2.5% of ESS equipment) and warranty costs (0.8% of equipment, starting in year 3).

(5) Reflects a "key" subset of all assumptions for methodology illustration purposes only. Does not reflect all assumptions.

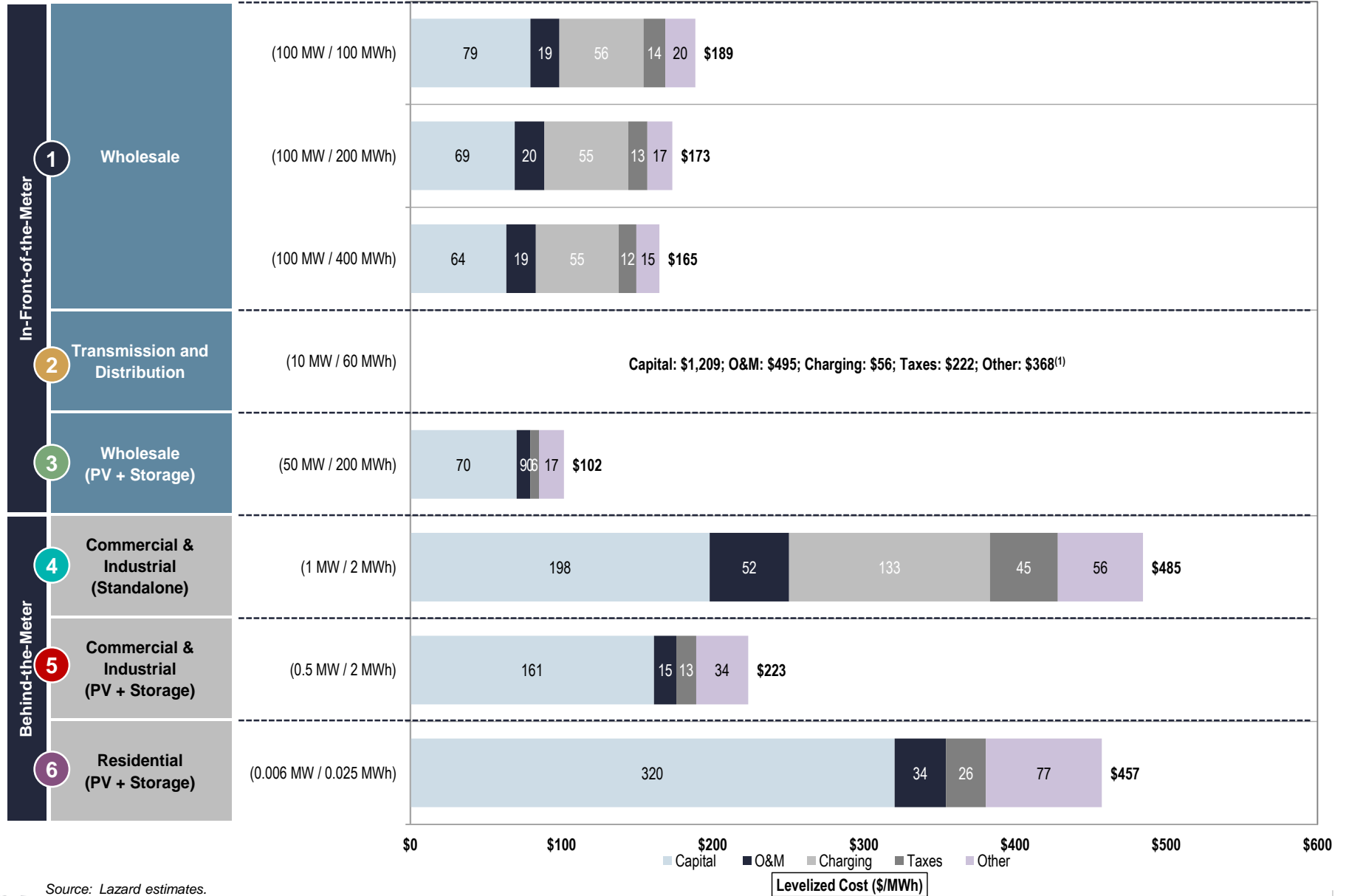
(6) Initial Installed Cost includes Inverter cost of \$62/kWh, Module cost of \$146/kWh, Balance of System cost of \$30/kWh and a 17.7% engineering procurement and construction ("EPC") cost.

(7) Reflects initial cash outflow from equity sponsor.

■ Technology-dependent

■ Levelized

Levelized Cost of Storage Components—Low

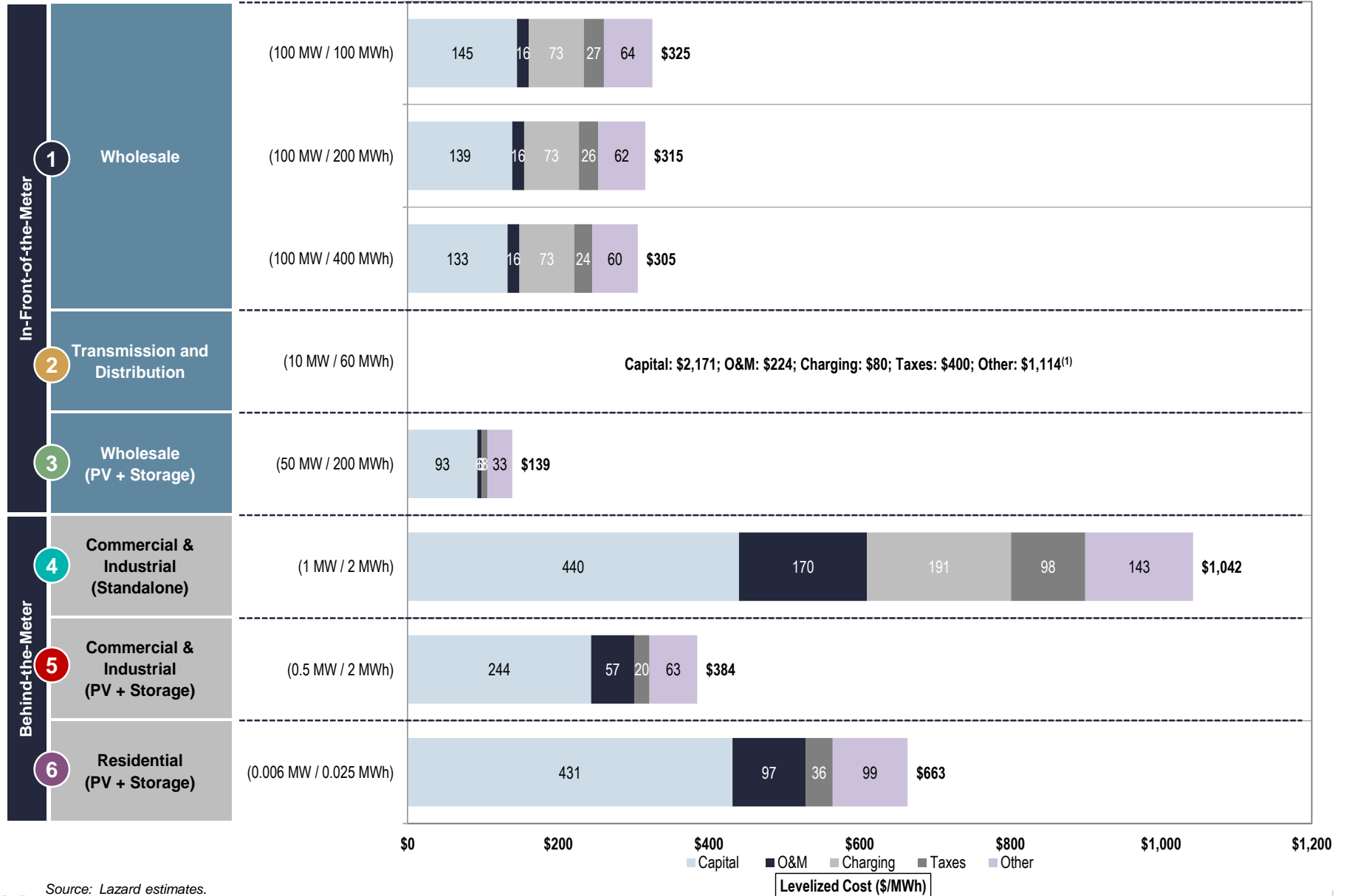


Source: Lazard estimates.

Note: O&M costs include augmentation costs.

(1) Given the operational parameters for the Transmission and Distribution use case (i.e., 25 cycles per year), levelized metrics are not comparable between this and other use cases presented in Lazard's Levelized Cost of Storage report.

Levelized Cost of Storage Components—High



Source: Lazard estimates.

Note: O&M costs include augmentation costs.

(1) Given the operational parameters for the Transmission and Distribution use case (i.e., 25 cycles per year), levelized metrics are not comparable between this and other use cases presented in Lazard's Levelized Cost of Storage report.

Levelized Cost of Storage—Key Assumptions

		Wholesale (Standalone)			Transmission & Distribution	Utility-Scale (PV + Storage)	Commercial & Industrial (Standalone)	Commercial & Industrial (PV + Storage)	Residential (PV + Storage)
Units		(100 MW / 100 MWh)	(100 MW / 200 MWh)	(100 MW / 400 MWh)	(10 MW / 60 MWh)	(50 MW / 200 MWh)	(1 MW / 2 MWh)	(0.5 MW / 2 MWh)	(0.006 MW / 0.025 MWh)
Power Rating	MW	100	100	100	10	50	1	0.5	0.006
Duration	Hours	1.0	2.0	4.0	6.0	4.0	2.0	4.0	4.2
Usable Energy	MWh	100	200	400	60	200	2	2	0.025
100% Depth of Discharge Cycles/Day		1	1	1	1	1	1	1	1
Operating Days/Year		350	350	350	25	350	250	350	350
Solar PV Capacity	MW	0.00	0.00	0.00	0.00	100.00	0.00	1.00	0.010
Annual Solar PV Generation	MWh	0	0	0	0	240,900	0	1,971	14
Project Life	Years	20	20	20	20	20	10	20	20
<i>Memo: Annual Used Energy</i>	<i>MWh</i>	<i>35,000</i>	<i>70,000</i>	<i>140,000</i>	<i>1,500</i>	<i>70,000</i>	<i>500</i>	<i>700</i>	<i>9</i>
<i>Memo: Project Used Energy</i>	<i>MWh</i>	<i>700,000</i>	<i>1,400,000</i>	<i>2,800,000</i>	<i>30,000</i>	<i>1,400,000</i>	<i>5,000</i>	<i>14,000</i>	<i>175</i>
Initial Capital Cost—DC	\$/kWh	\$180 – \$440	\$176 – \$429	\$173 – \$419	\$228 – \$450	\$228 – \$429	\$255 – \$534	\$226 – \$534	\$271 – \$661
Initial Capital Cost—AC	\$/kW	\$62 – \$0	\$62 – \$0	\$65 – \$0	\$70 – \$0	\$70 – \$0	\$82 – \$217	\$58 – \$255	\$227 – \$356
EPC Costs	\$	\$4 – \$6	\$7 – \$10	\$14 – \$16	\$3 – \$5	\$9 – \$9	\$0 – \$0	\$0 – \$0	\$0 – \$0
Solar PV Capital Cost	\$/kW	\$0 – \$0	\$0 – \$0	\$0 – \$0	\$0 – \$0	\$1,000 – \$1,000	\$0 – \$0	\$2,350 – \$2,350	\$2,875 – \$2,875
Total Initial Installed Cost	\$	\$28 – \$50	\$49 – \$96	\$90 – \$184	\$18 – \$32	\$162 – \$195	\$1 – \$2	\$3 – \$4	\$0 – \$0
O&M	\$/kWh	\$0.3 – \$5.0	\$0.3 – \$5.0	\$0.3 – \$5.0	\$6.0 – \$5.0	\$0.8 – \$5.0	\$0.6 – \$14.0	\$4.6 – \$18.0	\$5.6 – \$13.0
Extended Warranty Start	Year	3	3	3	3	3	3	3	3
Warranty Expense % of Capital Costs	%	0.95% – 4.00%	0.80% – 4.00%	0.82% – 4.00%	1.95% – 5.26%	1.90% – 5.26%	1.90% – 3.00%	1.90% – 3.00%	3.00% – 1.50%
Investment Tax Credit	%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Production Tax Credit	\$/MWh	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Charging Cost	\$/MWh	\$42	\$42	\$42	\$42	\$0	\$107	\$0	\$0
Charging Cost Escalator	%	2.25%	2.25%	2.25%	2.25%	0.00%	2.11%	0.00%	0.00%
Efficiency of Storage Technology	%	90% – 70%	90% – 70%	91% – 70%	92% – 65%	90% – 65%	90% – 63%	90% – 63%	90% – 90%
Levelized Cost of Storage	\$/MWh	\$189 – \$325	\$173 – \$315	\$165 – \$305	\$2,351 – \$3,989	\$102 – \$139	\$485 – \$1,042	\$223 – \$384	\$457 – \$663

Source: Lazard estimates.

Note: Assumed capital structure of 80% equity (with a 12% cost of equity) and 20% debt (with an 8% cost of debt). Capital cost units are the total investment divided by the storage equipment's energy capacity (kWh rating) and inverter rating (kW rating). Wholesale and Transmission & Distribution charging costs use the EIA's "2018 Wholesale Price \$/MWh– Wtd Avg Low" price estimate of \$42/MWh, escalating at 2.25%, based on EIA's "AEO 2018 Energy Source–Electric Price Forecast (10-year CAGR)". Commercial & Industrial charging costs use the EIA's "2018 Commercial Price \$/MWh– Wtd Avg" price estimate of \$107/MWh, escalating at 2.11%, based on EIA's "AEO 2018 Energy Source–Electric Price Forecast (10-year CAGR)". Storage systems paired with Solar PV do not charge from the grid.



B Supplementary Value Snapshot Materials

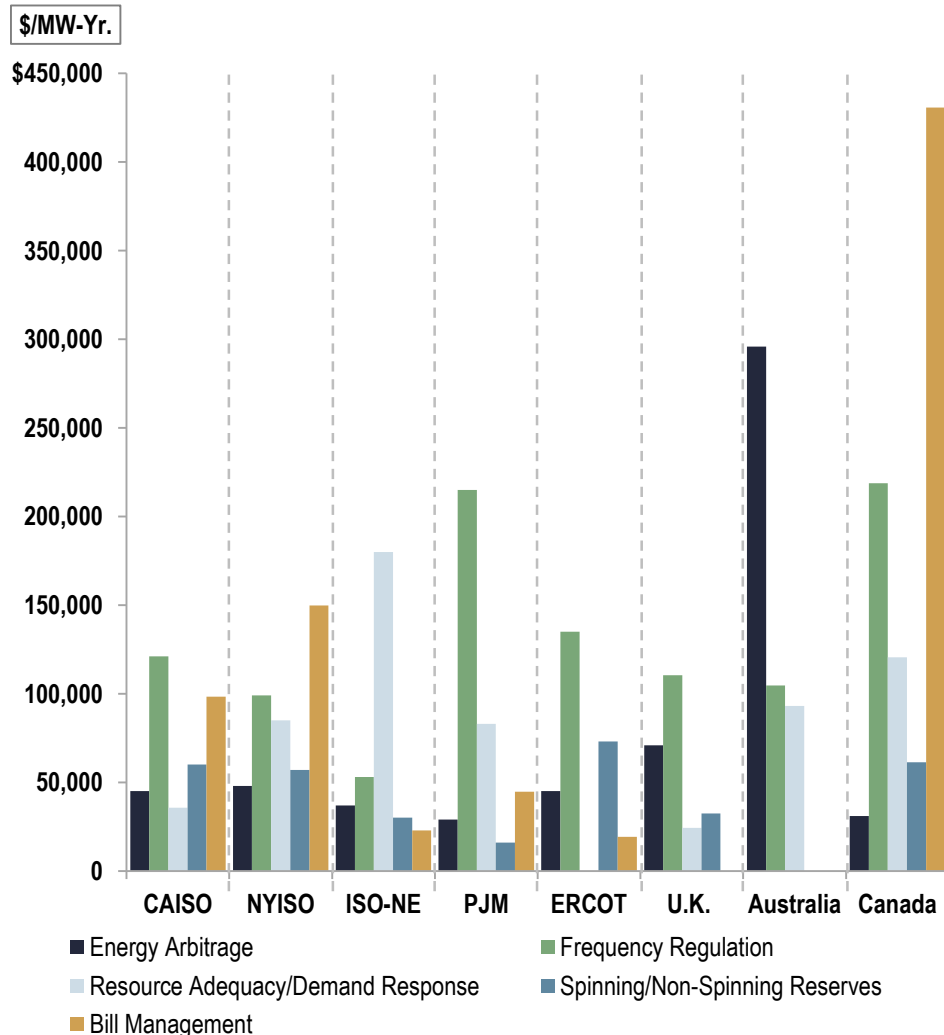


1 Landscape of Energy Storage Revenue Potential

Overview of Energy Storage Revenue Streams

As the energy storage market continues to evolve, several potential revenue streams have emerged in select U.S. and international markets; Lazard’s LCOS analyzes only those revenue streams that are quantifiable from currently deployed energy storage systems

Energy Storage Revenue Streams by Market & Use Case (2019)⁽¹⁾ What Determines Available Revenues for Energy Storage?



- Enabling policies:** Explicit targets, state goals incentivizing procurement of energy storage and wholesale/utility program rules with operational requirements favoring fast-responding assets
 - California energy storage procurement targets (e.g., AB2514) requires 1,325 MW by 2020
 - In PJM, average regulation prices of \$24.78/eff. MW in 2018, with significant revenue upside for performance for storage under “Regulation D” signal
 - Utilities in the U.K. are required to procure enhanced frequency reserves for fast response assets under four-year contracts. Short contract terms tend to increase prices, given the shorter period over which to recover capital costs
- Incentives:** Upfront or performance-based incentive payments to subsidize initial capital requirements
 - California Self-Generation Incentive Programs (“SGIP”): \$450 million budget available to behind-the-meter storage
- Market fundamentals:** Conditions resulting in higher revenue potential and/or increased opportunity to participate in wholesale markets
 - Daily volatility in energy prices lead to arbitrage opportunities worth ~\$68/MW and \$91/MW in CAISO and ERCOT, respectively
 - Constrained conditions resulted in capacity price of \$180/kW in ISO-NE for new resources
- Utility tariff structures:** Opportunities to avoid high peak and/or demand charges
 - SDG&E’s demand charge of \$42/kW is one of the highest in the U.S.

Landscape of Revenue Potential for Relevant Use Cases

Numerous potential sources of revenue available to energy storage systems reflect the benefits provided to customers and the grid

- The scope of revenue sources is limited to those captured by existing or soon-to-be commissioned projects. Revenue sources that are not identifiable or without publicly available data are not analyzed

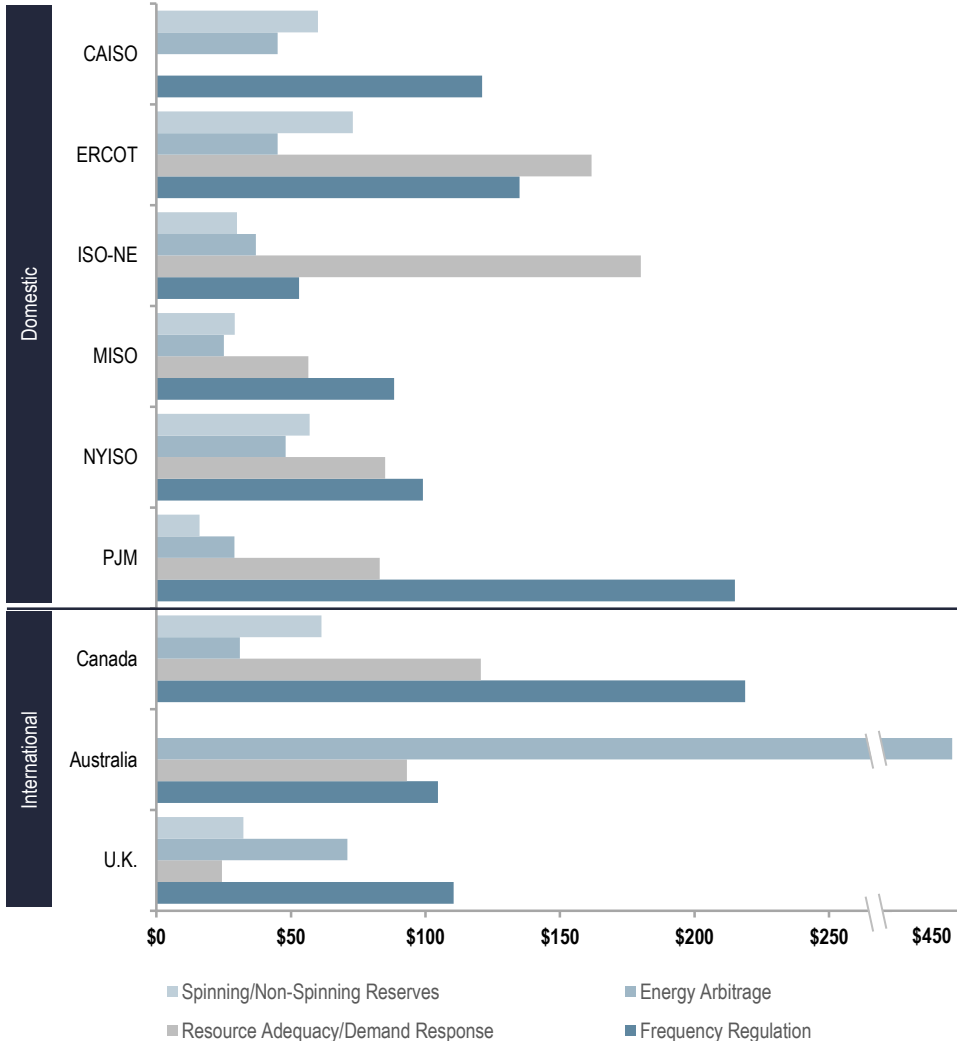
		Description	Use Cases ⁽¹⁾						
			Wholesale	Transmission & Distribution	Wholesale (PV + S)	Commercial (Standalone)	Commercial (PV + S)	Residential (PV + S)	
A	Wholesale	Demand Response—Wholesale				✓	✓	✓	
		Energy Arbitrage	• Storage of inexpensive electricity to sell later at higher prices (only evaluated in the context of a wholesale market)	✓	✓	✓			
		Frequency Regulation	• Provides immediate (four-second) power to maintain generation-load balance and prevent frequency fluctuations	✓	✓	✓	✓	✓	
		Resource Adequacy	• Provides capacity to meet generation requirements at peak loading	✓	✓	✓	✓	✓	
		Spinning/Non-Spinning Reserves	• Maintains electricity output during unexpected contingency events (e.g., outages) immediately (spinning reserve) or within a short period of time (non-spinning reserve)	✓	✓	✓	✓	✓	
B	Utility	Distribution Deferral	• Provides extra capacity to meet projected load growth for the purpose of delaying, reducing or avoiding distribution system investment		✓				
		Transmission Deferral	• Provides extra capacity to meet projected load growth for the purpose of delaying, reducing or avoiding transmission system investment		✓				
		Demand Response—Utility	• Manages high wholesale price or emergency conditions on the grid by calling on users to reduce or shift electricity demand				✓	✓	✓
C	Customer	Bill Management	• Allows reduction of demand charge using battery discharge and the daily storage of electricity for use when time of use rates are highest				✓	✓	✓
		Backup Power	• Provides backup power for use by Residential and Commercial customers during grid outages				✓	✓	✓

(1) Represents the universe of potential revenue streams available to the various use cases. Does not represent the use cases analyzed in the Value Snapshots.

A Wholesale Market Revenue Streams

Availability and value of wholesale market products to energy storage varies based on Independent System Operator (“ISO”) rules and project specifications

2018 Wholesale Revenue Streams (\$/kW-year)



Resource Adequacy (“RA”) Revenue Streams

CAISO	<ul style="list-style-type: none"> Distributed resources in CAISO can access resource adequacy payments through one of two auction programs run by Investor Owned Utilities (“IOUs”) <ul style="list-style-type: none"> Local Capacity Resource (“LCR”) Auction <ul style="list-style-type: none"> IOUs acquire RA and DR-like capabilities from bidders in a pay-as-bid 10-year contract auction Demand Response Auction Mechanism (“DRAM”) Pilot <ul style="list-style-type: none"> IOUs acquire RA for 1 – 2 years, and Distributed Energy Resource (“DERs”) assets are given a form of must-bid responsibility in the wholesale markets Focused on creating new opportunities for DERs to participate in wholesale markets Estimated revenue potential of \$35 – \$60/kW-year
MISO	<ul style="list-style-type: none"> Energy storage can qualify in MISO as behind-the-meter generation and participate alongside all conventional resources in a public Planning Resource Auction (“PRA”) <ul style="list-style-type: none"> Estimated value of \$1.09/kW-year based on 2019/2020 auction results

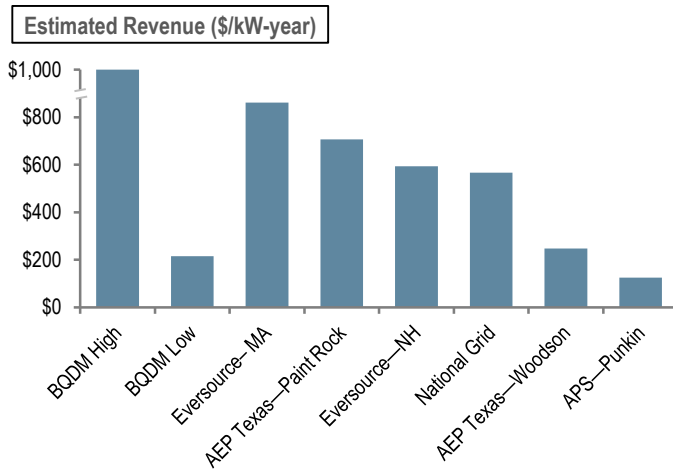
Assumptions Employed

Energy Markets	<ul style="list-style-type: none"> Daily charging is optimized around minimum/maximum pricing conditions
Frequency Regulation	<ul style="list-style-type: none"> Participation in day-ahead market(s) and fast response, energy neutral and continuous markets where available Either 90% performance factor or ISO-wide average performance if reported System average mileage ratio (fast resources where available)
Spinning Reserves	<ul style="list-style-type: none"> Capable to participate in spinning reserve market Self scheduled/price taker in the day-ahead market
Capacity/Demand Response	<ul style="list-style-type: none"> Revenue estimates are based on direct or DR program-enabled participation in the capacity markets (NYISO, PJM, ISO-NE, Canada and U.K.), responsive reserve service (ERCOT), planning resource auction (MISO) and reserve capacity mechanism (Australia)

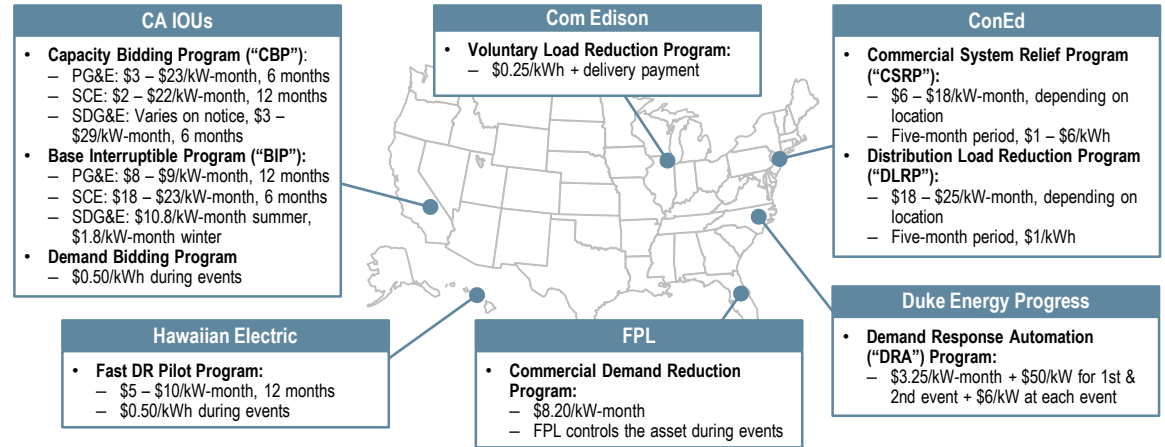
B Utility Revenue Streams

Utilities can realize substantial value (or provide lucrative revenue streams) for location-based grid services, with most common applications being in utility Demand Response (“DR”) programs and Transmission and Distribution (“T&D”) deferral applications

T&D Deferral—Selected Examples



DR Programs—Selected Examples



T&D Deferral—Selected Observations

- Limited deployment through traditional regulatory framework—majority of deployments under pilot projects
- Assets are typically transacted as a capital purchase by utilities
- Deferral length varies based on area’s expected load growth and factors independent of the battery
- Battery configuration defined by duration of expected peak that exceeds current thermal limits
- Projects are rarely transacted in absence of other revenue streams
- Asset value and revenue stream mix is highly location dependent

DR Programs—Selected Observations

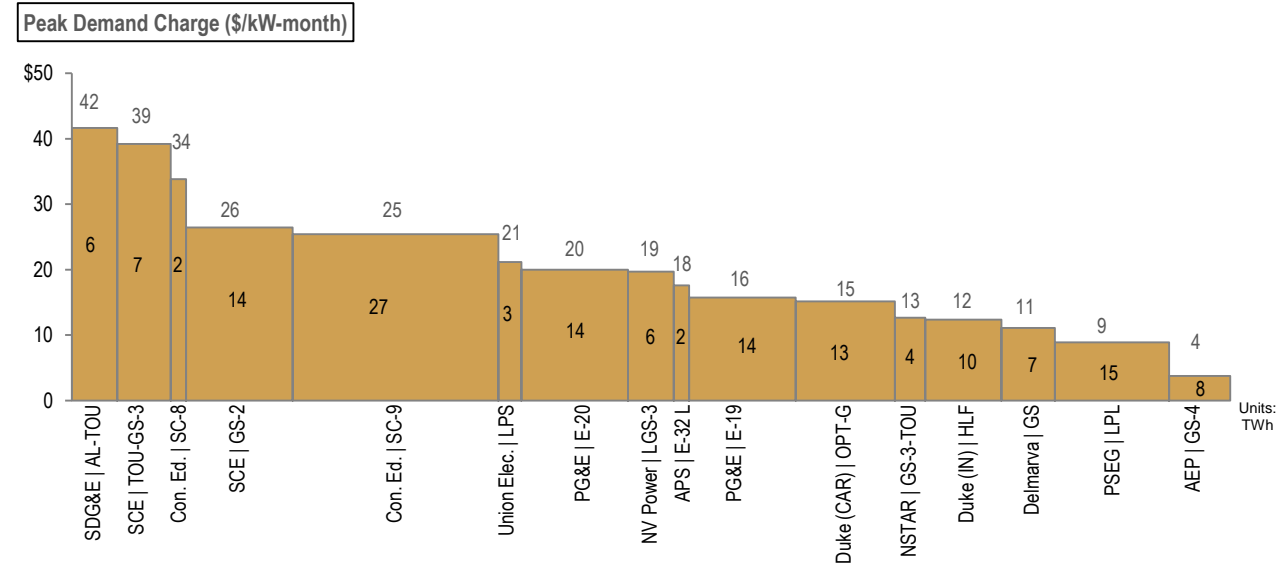
Capacity Programs	<ul style="list-style-type: none"> – Paid a substantial standby payment to be available on a monthly or seasonal basis, while being paid a comparatively lower rate per energy reduced when called – Calls are typically mandatory – Typically have harsh penalties for underperformance
Energy Programs	<ul style="list-style-type: none"> – Paid based on energy reduced – No capacity payment, often DR calls are not mandatory – Penalties are rare and when they do exist, tend to be less severe than in capacity programs
Common Issues to DR Programs	<ul style="list-style-type: none"> – Payment size and ratio of capacity to energy payments – Frequency of calls – Call trigger (supply economics or emergency situation) – Severity of penalty – Baseline methodology (i.e., where performance is based on energy used during prior days)

C Customer Revenue Streams

Utility bill management is a key driver of returns for behind-the-meter energy storage projects; project-specific needs for reliability and microgrid integration can be significant but are rarely monetized

- The best example of payment for long-term reliability is from Texas, priced at \$8 – \$10/kW-month

Representative Utility Demand Charges & Reported Volumes (2018)⁽¹⁾⁽²⁾



Utility Demand Charges

United States	<ul style="list-style-type: none"> • Demand charges are widely used in the U.S. for C&I customers. (See chart to left for examples)
Australia	<ul style="list-style-type: none"> • Demand charges are common in Australia and vary widely by utility and region (surveyed peak demand charges range from \$10 – \$100/kW-month)

Additional Avoidable Retail Electricity Charges

Type	Example	Description	Charge (2018 \$/kW-yr.) ⁽³⁾
Capacity	PJM GENCAP	• Applied to peak load during PJM’s five highest coincidental peaks for daylight hours from June through September, based on prior year load	<ul style="list-style-type: none"> • RTO Average: \$183.00 • Eastern Mid-Atlantic Area: \$219.00
Transmission	ERCOT 4CP	• Applied to load during system 15-minute coincidental peaks occurring in June, July, August and September	<ul style="list-style-type: none"> • CenterPoint: \$2.24 • Oncor: \$5.07 • Texas New Mexico Power: \$5.73
Other	Ontario/IESO Global Adjustment	• Based on Class A (1 – 5 MW) customer share of top five peak demand periods for IESO in Ontario	<ul style="list-style-type: none"> • Class A: \$55.00

Source: FERC Form 1 Filings, PUCT, PJM RPM, utility tariffs, OpenEI, Lazard estimates.

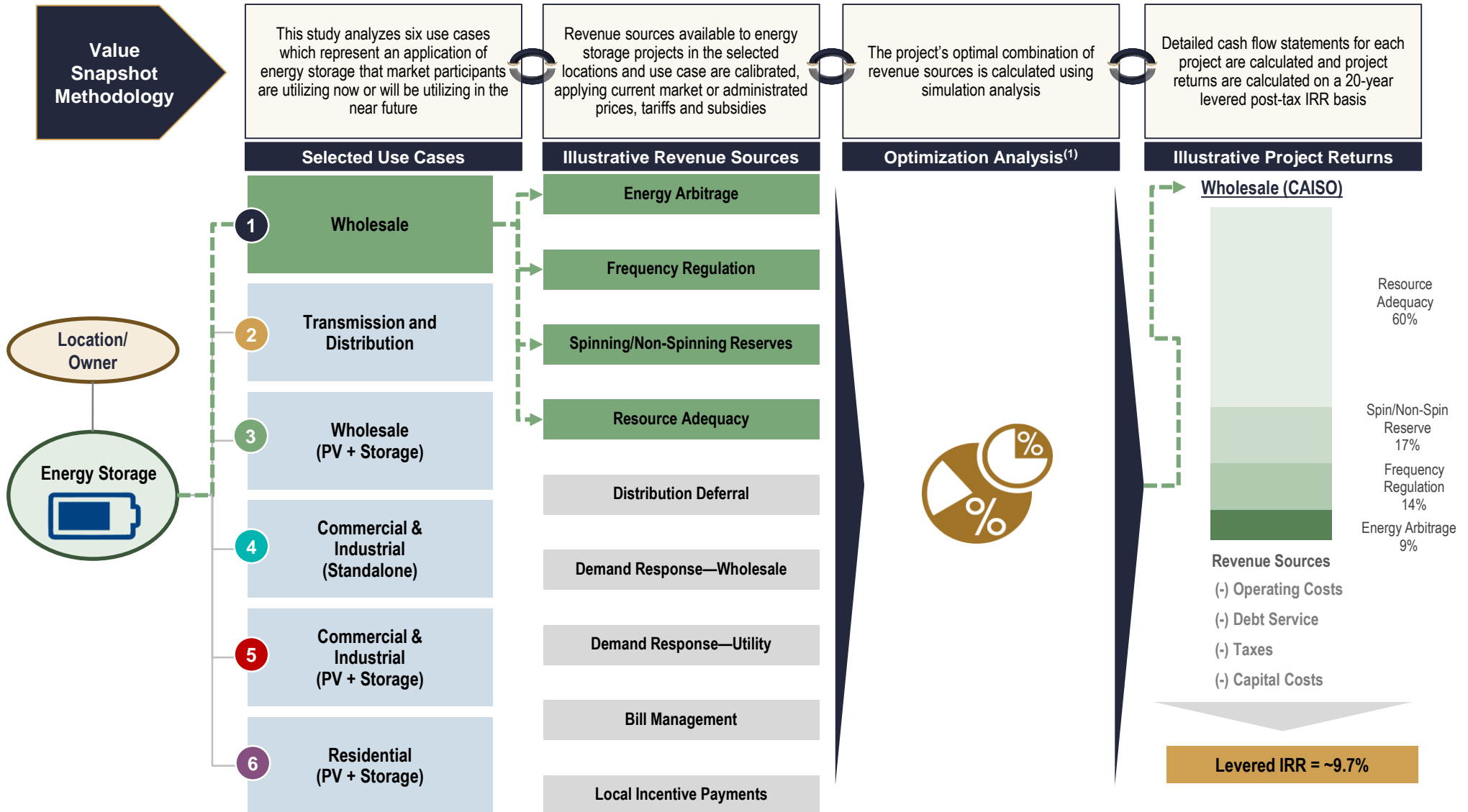
- (1) Demand charges are fixed, monthly costs typically limited to commercial customers. The rate is typically a function of a customer’s peak demand as measured over a predefined period. Energy storage can enable customers to save money through reducing peak consumption, lowering their demand charge.
- (2) Non-exhaustive list based on FERC Form 1 total reported TWh by tariff, sorted by highest total demand charges during peak periods.
- (3) Values based on PJM 19/20 DY Reliability Pricing Model results & Transmission Cost Recovery Factors for customers with >10 kVA demand in ERCOT.



2 Value Snapshot Supporting Materials

Illustrative Value Snapshots—Methodology

Our Value Snapshot analysis consists of creating a financial model representing an illustrative energy storage project designed for a specific use case and analyzing the financial viability of such project, assuming commercially available revenue streams and system costs



(1) Algorithm optimizes project returns, given applicable revenues, time series load (for BTM applications) and insolation (for PV), and reflecting performance restrictions given system configuration. The simulation assumes perfect foresight.

Illustrative U.S. Value Snapshots—Assumptions

	Revenue Source	Description	Average Modeled Price	Annual Rev. (\$/kW-year) ⁽¹⁾	Cost Assumptions
1 Wholesale ⁽²⁾	Energy Arbitrage	<ul style="list-style-type: none"> Energy prices based on 2018 CAISO nodal price Annual escalation of 1.8% 	\$45.01/MWh	\$13.66 – \$48.33	<ul style="list-style-type: none"> AC system: \$18/kWh DC system: \$249/kWh EPC: 13.1% Efficiency: 89% Augmentation costs: 4.2% of ESS
	Frequency Regulation	<ul style="list-style-type: none"> Includes Reg-Up and Reg-Down products; participation based on hourly price and battery state of charge 	Reg Up: \$11.08/MW Reg Down: \$10.50/MW	\$58.23 – \$64.59	
	Spinning Reserve	<ul style="list-style-type: none"> Spinning Reserves based on 2018 CAISO SP15 Zonal Prices 	\$7.89/MW	\$33.03 – \$43.25	
	Resource Adequacy	<ul style="list-style-type: none"> Assumes participation in SCE Local Capacity Resource programs Reliability (\$/kW-month) payment amounts vary by contract and are not publicly available Estimates assume a modified Net CONE methodology based on assumed technology costs and other available revenue sources 	\$11.87/kW-month	\$35.62 – \$142.50	
2 Transmission and Distribution	Distribution Deferral	<ul style="list-style-type: none"> Assumes savings achieved through deferral of required circuit upgrade through 2028 Traditional solution cost amortized across 25 years 	Traditional upgrade: \$6 million	\$120	<ul style="list-style-type: none"> AC system: \$44/kWh DC system: \$327/kWh EPC: 58% Efficiency: 86% Augmentation costs: 40% of ESS
	Peak Shaving	<ul style="list-style-type: none"> Achieved through peak shaving in three separate streams: Regional Network Service, Local Network Service and ISO-NE Capacity Market Annual escalation based on Eversource price forecast 	RNS: \$123/kW-yr LNS: \$10/kW-yr FCM: \$63.6/kW-yr	RNS: \$174.00 LNS: \$9.50 FCM: \$60.00	
3 Wholesale (PV + Storage)	Energy Arbitrage	<ul style="list-style-type: none"> Energy prices based on 2018 ERCOT South real time Annual escalation of 1.8% 	\$37.17/MWh	PV: \$114.36 Storage: \$22.66	<ul style="list-style-type: none"> AC system: \$20/kWh DC system: \$281/kWh EPC: 20.7% Efficiency: 89% Augmentation costs: 4.4% of ESS
	Frequency Regulation	<ul style="list-style-type: none"> Includes Reg-Up and Reg-Down products; participation based on hourly price and battery state of charge 	Reg Up: \$8.01/MW Reg Down: \$6.38/MW	\$24.55	
	Spinning Reserve	<ul style="list-style-type: none"> ERCOT responsive reserve product; participation based on hourly price and battery state of charge 	\$10.03/MW	\$73.75	

Source: ISO/RTO markets, U.S. Department of Energy, Lazard estimates.

Note: Capital cost units are the total investment divided by the storage equipment's energy capacity (kWh rating) and inverter rating (kW rating).

(1) Capacity (kW) installed.

(2) Wholesale revenue varies by installed storage duration between one and four hours.

Illustrative U.S. Value Snapshots—Assumptions (cont'd)

	Revenue Source	Description	Modeled Price	Annual Rev. (\$/kW-year)	Cost Assumptions
4 Commercial & Industrial (Standalone)	Local Capacity Resources	<ul style="list-style-type: none"> IOUs acquire RA from bidders in a pay-as-bid contract auction Focused on providing capacity to constrained zones Discounted because of duration of battery 	\$75kW-year	\$71.25	<ul style="list-style-type: none"> AC system: \$103/kWh DC system: \$404/kWh EPC: 44.6% Efficiency: 90% Augmentation costs: None
	Demand Bidding Program	<ul style="list-style-type: none"> Year-round, event-based program; credited for 50% – 200% of event performance; no underperformance penalties 	\$0.5/kWh	\$29.62	
	Bill Management	<ul style="list-style-type: none"> Reduction of demand and energy charges through time shifting Modeled PG&E E-20 TOU rate Annual escalation of 2.5% 	PG&E E-20 TOU Tariff	\$109.02	
5 Commercial & Industrial (PV + Storage)	Local Capacity Resources	<ul style="list-style-type: none"> IOUs acquire RA from bidders in a pay-as-bid contract auction Focused on providing capacity to constrained zones 	\$150kW-year	\$142.50	<ul style="list-style-type: none"> AC system: \$65/kWh DC system: \$456/kWh EPC: 34.7% Efficiency: 90% Augmentation costs: 4.4% of ESS
	Demand Bidding Program	<ul style="list-style-type: none"> Year-round, event-based program; credited for 50% – 200% of event performance; no underperformance penalties 	\$0.5/kWh	\$59.25	
	Bill Management	<ul style="list-style-type: none"> Reduction of demand and energy charges through time shifting Modeled PG&E E-20 TOU rate Annual escalation of 2.5% 	PG&E E-20 TOU Tariff	\$959.82*	
6 Residential (PV + Storage)	Bill Management	<ul style="list-style-type: none"> Reduction of energy charges through time shifting Modeled HECO TOU-R (5 – 10 PM Peak) rate Annual escalation of 2.5% 	HECO TOU-R (5 – 10 PM Peak) Tariff	\$899.09*	<ul style="list-style-type: none"> AC system: \$58/kWh DC system: \$702/kWh EPC: 13.2% Efficiency: 90% Augmentation costs: None

Illustrative International Value Snapshots—Assumptions

	Revenue Source	Description	Modeled Price	Annual Rev. (\$/kW-year)	Cost Assumptions	
1	Wholesale (U.K.)	Frequency Regulation	Enhanced frequency reserve contract for fast response assets through 2022, does not renew	\$113/kW-year	\$113	<ul style="list-style-type: none"> AC system: \$18/kWh DC system: \$249/kWh EPC: 13% Efficiency: 89% Augmentation costs: 3.0% of ESS
		Spinning Reserve	Short-term operating reserve payment Value stream isn't captured until year four, after expiration of enhanced frequency reserve contract	\$234/kW-year (year four start)	\$234	
		Capacity	Participation in U.K. capacity market auction Annual escalation of 2.8%	\$29/kW-year	\$29	
2	Transmission and Distribution ⁽¹⁾	--	--	--	--	
3	Wholesale (PV + Storage) (Australia)	Energy Arbitrage	Energy prices based on 2018/2019 Queensland region Assume discharge of battery in top four hours of each day Annual escalation of 4.0%	Hourly LMP	\$146*	<ul style="list-style-type: none"> AC system: \$16/kWh DC system: \$220/kWh EPC: 21% Efficiency: 89% Augmentation costs: 4.4% of ESS
		Ancillary Services	Participation in Queensland ancillaries (Lower & Raise, 6sec, 5min, Reg, Restart, Reactive)	\$48/MW	\$103	
		Capacity	Benchmark Reserve Capacity Price from AEMO	\$91/kW-year	\$92	
4	Commercial & Industrial (Standalone) (Ontario)	Bill Management	Ontario/IESO "Class A" Global Adjustment charge Annual escalation of 4.0%	\$430/kW-year	\$430	<ul style="list-style-type: none"> AC system: \$86/kWh DC system: \$341/kWh EPC: 45% Efficiency: 90% Augmentation costs: 4.6% of ESS
5	Commercial & Industrial (PV + Storage) (Australia)	Bill Management	Ausnet utility in Victoria, AU Reduction of demand and energy charges through time shifting Modeled NSP56 rate	Ausnet NSP56 Tariff	\$1,398*	<ul style="list-style-type: none"> AC system: \$46/kWh DC system: \$321/kWh EPC: 35% Efficiency: 90% Augmentation costs: 4.4% of ESS
6	Residential (PV + Storage) (Germany)	Local Incentive Program	German Development Bank, KfW Incentive program	10% of Capex	\$287*	<ul style="list-style-type: none"> AC system: \$45/kWh DC system: \$543/kWh EPC: 13% Efficiency: 95% Augmentation costs: None
		Bill Management	Reduction of energy charges through time shifting German residential rate is from BDEW (Bundesverband der Energie-und Wasserwirtschaft) Annual escalation of 3.4%	Retail Electric Rate: \$0.34/kWh	\$345*	

Source: Lazard estimates.

* Calculated based on size of the solar PV system.

Note: Capital cost units are the total investment divided by the storage equipment's energy capacity (kWh rating) and inverter rating (kW rating). All figures presented in USD using the following exchange rates: USD/AUD 1.39, USD/CAD 1.32, USD/EUR 0.87, USD/GBP 0.77.

(1) Lazard's Value Snapshot analysis intentionally excluded a Transmission and Distribution use case from its international analysis given the lack of substantive publicly available data for projects deployed for this use case.

This study has been prepared by Lazard for general informational purposes only, and it is not intended to be, and should not be construed as, financial or other advice. No part of this material may be copied, photocopied or duplicated in any form by any means or redistributed without the prior consent of Lazard.

1a Illustrative Value Snapshot—Wholesale (CAISO)

(\$ in thousands, unless otherwise noted)

California	2019	2020	2021	2022	2023	2024	2029	2034	2039
Total Revenue	-	\$15,077.8	\$15,043.1	\$15,053.8	\$15,056.1	\$15,064.9	\$15,054.0	\$15,056.1	\$15,054.1
Energy Arbitrage	-	1,366.6	1,356.5	1,347.6	1,369.7	1,349.3	1,341.3	1,369.6	1,347.5
Frequency Regulation	-	5,823.3	5,788.2	5,814.6	5,865.9	5,829.2	5,829.5	5,864.0	5,815.2
Spinning/Non-Spinning Reserves	-	4,325.3	4,335.9	4,329.1	4,258.1	4,323.9	4,320.7	4,259.9	4,329.0
Resource Adequacy	-	3,562.5	3,562.5	3,562.5	3,562.5	3,562.5	3,562.5	3,562.5	3,562.5
Distribution Deferral	-	-	-	-	-	-	-	-	-
Demand Response—Wholesale	-	-	-	-	-	-	-	-	-
Demand Response—Utility	-	-	-	-	-	-	-	-	-
Bill Management	-	-	-	-	-	-	-	-	-
Local Incentive Payments	-	-	-	-	-	-	-	-	-
Total Operating Costs	-	\$(3,075.1)	\$(3,113.0)	\$(3,799.4)	\$(3,838.9)	\$(3,879.4)	\$(4,096.1)	\$(4,338.7)	\$(4,610.2)
Storage O&M	-	(193.6)	(198.5)	(203.4)	(208.5)	(213.7)	(241.8)	(273.6)	(309.6)
Storage Warranty	-	-	-	(647.7)	(647.7)	(647.7)	(647.7)	(647.7)	(647.7)
Storage Augmentation Costs	-	(1,415.4)	(1,415.4)	(1,415.4)	(1,415.4)	(1,415.4)	(1,415.4)	(1,415.4)	(1,415.4)
Solar O&M	-	-	-	-	-	-	-	-	-
Storage Charging	-	(1,466.2)	(1,499.1)	(1,532.9)	(1,567.4)	(1,602.6)	(1,791.2)	(2,002.0)	(2,237.6)
EBITDA	-	\$12,002.6	\$11,930.2	\$11,254.4	\$11,217.2	\$11,185.5	\$10,957.9	\$10,717.4	\$10,443.9
Less: MACRS D&A	-	(38,232.3)	-	-	-	-	-	-	-
EBIT	-	\$(26,229.7)	\$11,930.2	\$11,254.4	\$11,217.2	\$11,185.5	\$10,957.9	\$10,717.4	\$10,443.9
Less: Interest Expense	-	(611.7)	(598.3)	(583.9)	(568.3)	(551.5)	(444.8)	(288.0)	(57.7)
Less: Cash Taxes	-	-	-	-	(2,323.9)	(4,253.6)	(4,205.2)	(4,171.7)	(4,154.5)
Tax Net Income	-	\$(26,841.4)	\$11,331.8	\$10,670.5	\$8,325.0	\$6,380.4	\$6,307.8	\$6,257.6	\$6,231.7
MACRS D&A	-	38,232.3	-	-	-	-	-	-	-
EPC	(4,251.0)	-	-	-	-	-	-	-	-
Storage Module Capital	(22,112.6)	-	-	-	-	-	-	-	-
Inverter / AC System Capital	(6,993.8)	-	-	-	-	-	-	-	-
Balance of System Capital	(4,875.0)	-	-	-	-	-	-	-	-
Solar Capital	-	-	-	-	-	-	-	-	-
ITC	-	-	-	-	-	-	-	-	-
Debt	7,646.5	-	-	-	-	-	-	-	-
Principal	-	(167.1)	(180.5)	(194.9)	(210.5)	(227.3)	(334.0)	(490.8)	(721.1)
After-Tax Levered Cash Flow	\$(30,585.9)	\$11,223.8	\$11,151.4	\$10,475.6	\$8,114.5	\$6,153.1	\$5,973.8	\$5,766.8	\$5,510.6
Levered Project IRR	35.0%								
Levered Project NPV	\$33,116,980								

Model Assumptions							
Storage Size (MW)	100.000	Storage Extended Warranty (%)	1.9%	Debt	20%	Combined Tax Rate	40%
Storage Capacity (MWh)	100.000	Storage EPC Cost (%)	15.8%	Cost of Debt	8%	Charging Cost Escalation	2%
Solar Sizing (MW)	0.000	Storage O&M Cost (%)	0.6%	Equity	80%	O&M Escalation	2.5%
Full DOD Cycles Per Year	350	Storage Efficiency (% RT)	86%	Cost of Equity	12%	Regional EPC Scalar	1.09
Depth of Discharge (%)	100%	Solar Fixed O&M (\$/kW-yr.)	\$0.00	WACC	11%	Useful Life (years)	20

Source: Lazard estimates.

Note: Extended warranty costs represent coverage provided beyond the initial two-year product warranty (included in equipment capital costs); charging costs are based on real-time SP-15 price forecasts; 100% of 7-year MACRS taken in the first year; regional EPC scalars are adjustment factors for the national averages, determined by Bloomberg estimates and U.S. Department of Labor statistics.

1b Illustrative Value Snapshot—Wholesale (CAISO)

(\$ in thousands, unless otherwise noted)

California	2019	2020	2021	2022	2023	2024	2029	2034	2039
Total Revenue	-	20,011.6	19,981.6	19,986.2	19,987.0	19,984.2	19,982.5	19,986.9	19,986.0
Energy Arbitrage	-	2,850.4	2,831.7	2,827.1	2,843.3	2,838.2	2,832.3	2,843.2	2,826.9
Frequency Regulation	-	6,117.2	6,101.4	6,098.9	6,126.7	6,097.5	6,116.6	6,126.7	6,098.9
Spinning/Non-Spinning Reserves	-	3,918.9	3,923.4	3,935.1	3,892.0	3,923.5	3,908.5	3,892.1	3,935.2
Resource Adequacy	-	7,125.0	7,125.0	7,125.0	7,125.0	7,125.0	7,125.0	7,125.0	7,125.0
Distribution Deferral	-	-	-	-	-	-	-	-	-
Demand Response—Wholesale	-	-	-	-	-	-	-	-	-
Demand Response—Utility	-	-	-	-	-	-	-	-	-
Bill Management	-	-	-	-	-	-	-	-	-
Local Incentive Payments	-	-	-	-	-	-	-	-	-
Total Operating Costs	-	(5,953.9)	(6,029.7)	(7,261.3)	(7,340.6)	(7,421.7)	(7,856.1)	(8,342.4)	(8,886.8)
Storage O&M	-	(394.3)	(404.1)	(414.2)	(424.6)	(435.2)	(492.4)	(557.1)	(630.3)
Storage Warranty	-	-	-	(1,154.0)	(1,154.0)	(1,154.0)	(1,154.0)	(1,154.0)	(1,154.0)
Storage Augmentation Costs	-	(2,627.3)	(2,627.3)	(2,627.3)	(2,627.3)	(2,627.3)	(2,627.3)	(2,627.3)	(2,627.3)
Solar O&M	-	-	-	-	-	-	-	-	-
Storage Charging	-	(2,932.3)	(2,998.3)	(3,065.7)	(3,134.7)	(3,205.2)	(3,582.4)	(4,004.0)	(4,475.2)
EBITDA	-	14,057.7	13,951.9	12,724.9	12,646.4	12,562.5	12,126.4	11,644.5	11,099.2
Less: MACRS D&A	-	(70,012.6)	-	-	-	-	-	-	-
EBIT	-	(55,954.9)	13,951.9	12,724.9	12,646.4	12,562.5	12,126.4	11,644.5	11,099.2
Less: Interest Expense	-	(1,120.2)	(1,095.7)	(1,069.3)	(1,040.7)	(1,009.9)	(814.5)	(527.4)	(105.6)
Less: Cash Taxes	-	-	-	-	-	-	(4,524.7)	(4,446.8)	(4,397.4)
Tax Net Income	-	(57,075.1)	12,856.2	11,655.6	11,605.7	11,552.6	6,787.1	6,670.2	6,596.1
MACRS D&A	-	70,012.6	-	-	-	-	-	-	-
EPC	(8,066.0)	-	-	-	-	-	-	-	-
Storage Module Capital	(45,202.9)	-	-	-	-	-	-	-	-
Inverter / AC System Capital	(6,993.8)	-	-	-	-	-	-	-	-
Balance of System Capital	(9,750.0)	-	-	-	-	-	-	-	-
Solar Capital	-	-	-	-	-	-	-	-	-
ITC	-	-	-	-	-	-	-	-	-
Debt	14,002.5	-	-	-	-	-	-	-	-
Principal	-	(306.0)	(330.5)	(356.9)	(385.5)	(416.3)	(611.7)	(898.7)	(1,320.5)
After-Tax Levered Cash Flow	(56,010.1)	12,631.5	12,525.7	11,298.7	11,220.2	11,136.3	6,175.4	5,771.5	5,275.6
Levered Project IRR	18.4%								
Levered Project NPV	\$18,831,490								

Model Assumptions

Storage Size (MW)	100.000	Storage Extended Warranty (%)	1.9%	Debt	20%	Combined Tax Rate	40%
Storage Capacity (MWh)	200.000	Storage EPC Cost (%)	14.7%	Cost of Debt	8%	Charging Cost Escalation	2%
Solar Sizing (MW)	0.000	Storage O&M Cost (%)	0.6%	Equity	80%	O&M Escalation	2.5%
Full DOD Cycles Per Year	350	Storage Efficiency (% RT)	88%	Cost of Equity	12%	Regional EPC Scalar	1.09
Depth of Discharge (%)	100%	Solar Fixed O&M (\$/kW-yr.)	\$0.00	WACC	11%	Useful Life (years)	20

Source: Lazard estimates.

Note: Extended warranty costs represent coverage provided beyond the initial two-year product warranty (included in equipment capital costs); charging costs are based on real-time SP-15 price forecasts; 100% of 7-year MACRS taken in the first year; regional EPC scalars are adjustment factors for the national averages, determined by Bloomberg estimates and U.S. Department of Labor statistics.

1c

Illustrative Value Snapshot—Wholesale (CAISO)

(\$ in thousands, unless otherwise noted)

California	2019	2020	2021	2022	2023	2024	2029	2034	2039
Total Revenue	-	\$28,846.1	\$28,832.7	\$28,830.4	\$28,837.8	\$28,853.8	\$28,832.1	\$28,837.7	\$28,830.3
Energy Arbitrage	-	4,833.6	4,826.7	4,845.4	4,855.3	4,847.6	4,847.9	4,855.3	4,845.3
Frequency Regulation	-	6,459.7	6,436.9	6,417.6	6,449.4	6,438.1	6,426.4	6,449.4	6,417.6
Spinning/Non-Spinning Reserves	-	3,302.8	3,319.1	3,317.4	3,283.0	3,318.0	3,307.8	3,283.0	3,317.5
Resource Adequacy	-	14,250.0	14,250.0	14,250.0	14,250.0	14,250.0	14,250.0	14,250.0	14,250.0
Distribution Deferral	-	-	-	-	-	-	-	-	-
Demand Response—Wholesale	-	-	-	-	-	-	-	-	-
Demand Response—Utility	-	-	-	-	-	-	-	-	-
Bill Management	-	-	-	-	-	-	-	-	-
Local Incentive Payments	-	-	-	-	-	-	-	-	-
Total Operating Costs	-	\$(11,227.7)	\$(11,380.1)	\$(13,528.4)	\$(13,687.9)	\$(13,850.9)	\$(14,723.8)	\$(15,701.0)	\$(16,795.0)
Storage O&M	-	(816.9)	(837.3)	(858.3)	(879.7)	(901.7)	(1,020.2)	(1,154.3)	(1,306.0)
Storage Warranty	-	-	-	(1,992.5)	(1,992.5)	(1,992.5)	(1,992.5)	(1,992.5)	(1,992.5)
Storage Augmentation Costs	-	(4,546.2)	(4,546.2)	(4,546.2)	(4,546.2)	(4,546.2)	(4,546.2)	(4,546.2)	(4,546.2)
Solar O&M	-	-	-	-	-	-	-	-	-
Storage Charging	-	(5,864.6)	(5,996.6)	(6,131.5)	(6,269.4)	(6,410.5)	(7,164.9)	(8,008.0)	(8,950.4)
EBITDA	-	\$17,618.4	\$17,452.6	\$15,302.0	\$15,149.9	\$15,002.9	\$14,108.3	\$13,136.7	\$12,035.3
Less: MACRS D&A	-	(122,263.8)	-	-	-	-	-	-	-
EBIT	-	\$(104,645.4)	\$17,452.6	\$15,302.0	\$15,149.9	\$15,002.9	\$14,108.3	\$13,136.7	\$12,035.3
Less: Interest Expense	-	(1,956.2)	(1,913.5)	(1,867.3)	(1,817.4)	(1,763.6)	(1,422.4)	(921.1)	(184.5)
Less: Cash Taxes	-	-	-	-	-	-	(5,074.4)	(4,886.2)	(4,740.3)
Tax Net Income	-	\$(106,601.6)	\$15,539.1	\$13,434.7	\$13,332.5	\$13,239.3	\$7,611.5	\$7,329.4	\$7,110.5
MACRS D&A	-	122,263.8	-	-	-	-	-	-	-
EPC	(15,260.0)	-	-	-	-	-	-	-	-
Storage Module Capital	(80,629.5)	-	-	-	-	-	-	-	-
Inverter / AC System Capital	(7,378.7)	-	-	-	-	-	-	-	-
Balance of System Capital	(18,995.6)	-	-	-	-	-	-	-	-
Solar Capital	-	-	-	-	-	-	-	-	-
ITC	-	-	-	-	-	-	-	-	-
Debt	24,452.8	-	-	-	-	-	-	-	-
Principal	-	(534.3)	(577.1)	(623.3)	(673.1)	(727.0)	(1,068.2)	(1,569.5)	(2,306.1)
After-Tax Levered Cash Flow	\$(97,811.0)	\$15,127.8	\$14,962.0	\$12,811.4	\$12,659.3	\$12,512.3	\$6,543.4	\$5,759.9	\$4,804.4
Levered Project IRR	9.7%								
Levered Project NPV	\$(6,615,482)								

Model Assumptions

Storage Size (MW)	100.000	Storage Extended Warranty (%)	1.9%	Debt	20%	Combined Tax Rate	40%
Storage Capacity (MWh)	400.000	Storage EPC Cost (%)	15.3%	Cost of Debt	8%	Charging Cost Escalation	2%
Solar Sizing (MW)	0.000	Storage O&M Cost (%)	0.7%	Equity	80%	O&M Escalation	2.5%
Full DOD Cycles Per Year	350	Storage Efficiency (% RT)	89%	Cost of Equity	12%	Regional EPC Scalar	1.09
Depth of Discharge (%)	100%	Solar Fixed O&M (\$/kW-yr.)	\$0.00	WACC	11%	Useful Life (years)	20

Source: Lazard estimates.

Note: Extended warranty costs represent coverage provided beyond the initial two-year product warranty (included in equipment capital costs); charging costs are based on real-time SP-15 price forecasts; 100% of 7-year MACRS taken in the first year; regional EPC scalars are adjustment factors for the national averages, determined by Bloomberg estimates and U.S. Department of Labor statistics.

2

Illustrative Value Snapshot—Transmission and Distribution (ISO-NE)

(\$ in thousands, unless otherwise noted)

New Hampshire	2019	2020	2021	2022	2023	2024	2029	2034	2039
Total Revenue	\$532.5	\$1,188.7	\$1,172.0	\$1,156.6	\$1,142.4	\$1,129.5	\$1,079.7	\$1,047.7	\$1,037.7
Energy Arbitrage	-	-	-	-	-	-	-	-	-
Frequency Regulation	-	-	-	-	-	-	-	-	-
Spinning/Non-Spinning Reserves	-	-	-	-	-	-	-	-	-
Resource Adequacy	-	93.7	95.6	97.5	99.5	101.5	112.0	123.7	136.6
Distribution Deferral	532.5	889.0	861.2	834.3	808.1	782.6	661.9	542.7	425.2
Demand Response—Wholesale	-	191.3	200.2	209.5	219.3	229.5	288.2	361.9	454.4
Demand Response—Utility	-	14.7	15.0	15.3	15.6	16.0	17.6	19.4	21.5
Bill Management	-	-	-	-	-	-	-	-	-
Local Incentive Payments	-	-	-	-	-	-	-	-	-
Total Operating Costs	\$ -	\$ (79.4)	\$ (79.7)	\$ (150.0)	\$ (150.3)	\$ (150.6)	\$ (152.7)	\$ (337.0)	\$ (288.9)
Storage O&M	-	(79.4)	(79.7)	(150.0)	(150.3)	(150.6)	(152.7)	(145.8)	(150.9)
Storage Warranty	-	-	-	-	-	-	-	-	-
Storage Augmentation Costs	-	-	-	-	-	-	-	(205,249.0)	(138,010.0)
Solar O&M	-	-	-	-	-	-	-	-	-
Storage Charging	-	-	-	-	-	-	-	-	-
EBITDA	\$ 532.5	\$ 1,109.3	\$ 1,092.4	\$ 1,006.6	\$ 992.2	\$ 978.8	\$ 927.0	\$ 710.7	\$ 748.8
Less: MACRS D&A	-	-	-	-	-	-	-	-	-
EBIT	\$ 532.5	\$ 1,109.3	\$ 1,092.4	\$ 1,006.6	\$ 992.2	\$ 978.8	\$ 927.0	\$ 710.7	\$ 748.8
Less: Interest Expense	-	-	-	-	-	-	-	-	-
Less: Cash Taxes	-	-	-	-	-	-	-	-	-
Tax Net Income	\$ 532.5	\$ 1,109.3	\$ 1,092.4	\$ 1,006.6	\$ 992.2	\$ 978.8	\$ 927.0	\$ 710.7	\$ 748.8
Revenue Requirement: 12-yr Assets	(286.2)	(482.3)	(444.2)	(413.0)	(384.4)	(357.8)	(251.6)	-	-
Revenue Requirement: 25-yr Assets	(417.8)	(702.5)	(676.9)	(651.9)	(627.5)	(603.6)	(489.3)	(376.0)	(264.0)
After-Tax Levered Cash Flow	\$(171.4)	\$(75.4)	\$(28.7)	\$(58.3)	\$(19.8)	\$17.4	\$186.1	\$334.8	\$484.8
Levered Project IRR	18.5%								
Levered Project NPV	\$332,008								

Model Assumptions

Storage Size (MW)	2.000	Storage Extended Warranty (%)	1.5%	Debt	20%	Combined Tax Rate	40%
Storage Capacity (MWh)	8.000	Storage EPC Cost (%)	33.8%	Cost of Debt	8%	Charging Cost Escalation	2%
Solar Sizing (MW)	0.000	Storage O&M Cost (%)	1.5%	Equity	80%	O&M Escalation	2.5%
Full DOD Cycles Per Year	25	Storage Efficiency (% RT)	87.5%	Cost of Equity	12%	Regional EPC Scalar	1
Depth of Discharge (%)	100%	Solar Fixed O&M (\$/kW-yr.)	\$0.00	WACC	11%	Useful Life (years)	20

3

Illustrative Value Snapshot—Wholesale (PV + Storage) (ERCOT)

(\$ in thousands, unless otherwise noted)

Texas	2019	2020	2021	2022	2023	2024	2029	2034	2039
Total Revenue	-	17,483.4	17,447.4	17,466.7	17,431.0	17,506.6	17,443.5	17,431.0	17,466.7
Energy Arbitrage ⁽¹⁾	-	12,568.7	12,544.6	12,561.3	12,526.9	12,575.1	12,537.4	12,526.8	12,561.3
Frequency Regulation	-	1,227.4	1,221.9	1,223.0	1,221.5	1,243.1	1,226.9	1,221.5	1,223.0
Spinning/Non-Spinning Reserves	-	3,687.3	3,680.9	3,682.4	3,682.6	3,688.4	3,679.1	3,682.6	3,682.4
Resource Adequacy	-	-	-	-	-	-	-	-	-
Distribution Deferral	-	-	-	-	-	-	-	-	-
Demand Response—Wholesale	-	-	-	-	-	-	-	-	-
Demand Response—Utility	-	-	-	-	-	-	-	-	-
Bill Management	-	-	-	-	-	-	-	-	-
Local Incentive Payments	-	-	-	-	-	-	-	-	-
Total Operating Costs	-	(3,804.6)	(3,838.9)	(4,920.4)	(4,956.5)	(4,993.4)	(5,192.4)	(5,417.5)	(5,672.2)
Storage O&M	-	(321.8)	(329.8)	(338.1)	(346.5)	(355.2)	(401.8)	(454.6)	(514.4)
Storage Warranty	-	-	-	(1,046.4)	(1,046.4)	(1,046.4)	(1,046.4)	(1,046.4)	(1,046.4)
Storage Augmentation Costs	-	(2,432.8)	(2,432.8)	(2,432.8)	(2,432.8)	(2,432.8)	(2,432.8)	(2,432.8)	(2,432.8)
Solar O&M	-	(1,050.0)	(1,076.3)	(1,103.2)	(1,130.7)	(1,159.0)	(1,311.3)	(1,483.6)	(1,678.6)
Storage Charging	-	-	-	-	-	-	-	-	-
EBITDA	-	13,678.8	13,608.5	12,546.3	12,474.5	12,513.2	12,251.1	12,013.5	11,794.5
Less: MACRS D&A	-	(115,914.9)	-	-	-	-	-	-	-
EBIT	-	(102,236.1)	13,608.5	12,546.3	12,474.5	12,513.2	12,251.1	12,013.5	11,794.5
Less: Interest Expense	-	(2,649.5)	(2,591.6)	(2,529.1)	(2,461.5)	(2,388.6)	(1,926.5)	(1,247.5)	(249.9)
Less: Cash Taxes	-	-	-	-	-	-	-	(4,306.4)	(4,617.9)
Tax Net Income	-	(104,885.6)	11,016.9	10,017.2	10,013.0	10,124.6	10,324.7	6,459.6	6,926.8
MACRS D&A	-	115,914.9	-	-	-	-	-	-	-
EPC	(10,764.0)	-	-	-	-	-	-	-	-
Storage Module Capital	(46,094.4)	-	-	-	-	-	-	-	-
Inverter / AC System Capital	(2,509.5)	-	-	-	-	-	-	-	-
Balance of System Capital	(6,224.7)	-	-	-	-	-	-	-	-
Solar Capital	(100,000.0)	-	-	-	-	-	-	-	-
ITC	49,677.8	-	-	-	-	-	-	-	-
Debt	33,118.5	-	-	-	-	-	-	-	-
Principal	-	(723.7)	(781.6)	(844.1)	(911.7)	(984.6)	(1,446.7)	(2,125.7)	(3,123.3)
After-Tax Levered Cash Flow	\$(82,796.3)	10,305.6	10,235.3	9,173.1	9,101.3	9,140.0	8,877.9	4,333.9	3,803.5
Levered Project IRR	7.7%								
Levered Project NPV	\$(13,963.773)								

Model Assumptions							
Storage Size (MW)	50.000	Storage Extended Warranty (%)	1.9%	Debt	20%	Combined Tax Rate	40%
Storage Capacity (MWh)	200.000	Storage EPC Cost (%)	20.6%	Cost of Debt	8%	Charging Cost Escalation	0%
Solar Sizing (MW)	100.000	Storage O&M Cost (%)	0.6%	Equity	80%	O&M Escalation	2.5%
Full DOD Cycles Per Year	350	Storage Efficiency (% RT)	89%	Cost of Equity	12%	Regional EPC Scalar	0.95
Depth of Discharge (%)	100%	Solar Fixed O&M (\$/kW-yr.)	\$10.50	WACC	11%	Useful Life (years)	20

Source: Lazard estimates.

Note: Incentives include ITC (30% of capital); extended warranty costs represent coverage provided beyond the initial two-year product warranty (included in equipment capital costs); charging costs are zero with all energy self-generated by the PV portion of the system; 100% of 5-year MACRS taken in the first year; regional EPC scalars are adjustment factors for the national averages, determined by Bloomberg estimates and U.S. Department of Labor statistics.

(1) Includes revenue generated from the sale of excess solar generation to wholesale power markets.

4 Illustrative Value Snapshot—Commercial & Industrial (Standalone) (CAISO)

(\$ in thousands, unless otherwise noted)

California	2019	2020	2021	2022	2023	2024	2029	2034	2039
Total Revenue	\$400.0	\$ 289.9	\$ 305.8	\$ 309.0	\$ 293.4	\$ 295.4	\$ 230.5	\$ -	\$ -
Energy Arbitrage	-	-	-	-	-	-	-	-	-
Frequency Regulation	-	-	-	-	-	-	-	-	-
Spinning/Non-Spinning Reserves	-	-	-	-	-	-	-	-	-
Resource Adequacy	-	71.2	71.2	71.2	71.2	71.2	71.2	-	-
Distribution Deferral	-	-	-	-	-	-	-	-	-
Demand Response—Wholesale	-	-	-	-	-	-	-	-	-
Demand Response—Utility	-	29.6	29.6	29.6	29.6	29.6	29.6	-	-
Bill Management	-	109.0	124.9	128.2	112.5	114.6	129.6	-	-
Local Incentive Payments	400.0	80.0	80.0	80.0	80.0	80.0	-	-	-
Total Operating Costs	\$ -	\$ (61.6)	\$ (62.9)	\$ (83.7)	\$ (85.1)	\$ (86.5)	\$ (94.1)	\$ -	\$ -
Storage O&M	-	(8.3)	(8.5)	(8.7)	(8.9)	(9.1)	(10.3)	-	-
Storage Warranty	-	-	-	(19.4)	(19.4)	(19.4)	(19.4)	-	-
Storage Augmentation Costs	-	-	-	-	-	-	-	-	-
Solar O&M	-	-	-	-	-	-	-	-	-
Storage Charging	-	(53.3)	(54.4)	(55.6)	(56.7)	(57.9)	(64.3)	-	-
EBITDA	\$ 400.0	\$ 228.3	\$ 242.9	\$ 225.4	\$ 208.3	\$ 209.0	\$ 136.4	\$ -	\$ -
Less: MACRS D&A	-	(1,505.7)	-	-	-	-	-	-	-
EBIT	\$ 400.0	\$ (1,277.4)	\$ 242.9	\$ 225.4	\$ 208.3	\$ 209.0	\$ 136.4	\$ -	\$ -
Less: Interest Expense	-	(24.1)	(22.4)	(20.6)	(18.7)	(16.6)	(3.3)	-	-
Less: Cash Taxes	(160.0)	-	-	-	-	-	(53.2)	-	-
Tax Net Income	\$ 240.0	\$ (1,301.5)	\$ 220.4	\$ 204.7	\$ 189.6	\$ 192.4	\$ 79.9	\$ -	\$ -
MACRS D&A	-	1,505.7	-	-	-	-	-	-	-
EPC	(492.7)	-	-	-	-	-	-	-	-
Storage Module Capital	(600.0)	-	-	-	-	-	-	-	-
Inverter / AC System Capital	(205.0)	-	-	-	-	-	-	-	-
Balance of System Capital	(208.0)	-	-	-	-	-	-	-	-
Solar Capital	-	-	-	-	-	-	-	-	-
ITC	-	-	-	-	-	-	-	-	-
Debt	301.1	-	-	-	-	-	-	-	-
Principal	-	(20.8)	(22.5)	(24.2)	(26.2)	(28.3)	(41.6)	-	-
After-Tax Levered Cash Flow	\$ (964.5)	\$ 183.4	\$ 198.0	\$ 180.5	\$ 163.4	\$ 164.1	\$ 38.3	\$ -	\$ -
Levered Project IRR	8.6%								
Levered Project NPV	\$(73,313)								

Model Assumptions							
Storage Size (MW)	1.000	Storage Extended Warranty (%)	1.9%	Debt	20%	Combined Tax Rate	40%
Storage Capacity (MWh)	2.000	Storage EPC Cost (%)	51%	Cost of Debt	8%	Charging Cost Escalation	2%
Solar Sizing (MW)	0.000	Storage O&M Cost (%)	0.8%	Equity	80%	O&M Escalation	2.5%
Full DOD Cycles Per Year	250	Storage Efficiency (% RT)	90%	Cost of Equity	12%	Regional EPC Scalar	1.09
Depth of Discharge (%)	100%	Solar Fixed O&M (\$/kW-yr.)	\$0.00	WACC	11%	Useful Life (years)	10

Source: Lazard estimates.

Note: Incentives include California's Self-Generation Incentive Program; extended warranty costs represent coverage provided beyond the initial two-year product warranty (included in equipment capital costs); charging cost is based on retail energy charge for PG&E's E-20 Tariff; 100% of 7-year MACRS taken in the first year; regional EPC scalars are adjustment factors for the national averages, determined by Bloomberg estimates and U.S. Department of Labor statistics.

5

Illustrative Value Snapshot—Commercial & Industrial (PV + Storage) (CAISO)

(\$ in thousands, unless otherwise noted)

California	2019	2020	2021	2022	2023	2024	2029	2034	2039
Total Revenue	\$300.0	\$640.8	\$668.2	\$691.2	\$689.1	\$688.2	\$708.7	\$793.9	\$907.8
Energy Arbitrage	-	-	-	-	-	-	-	-	-
Frequency Regulation	-	-	-	-	-	-	-	-	-
Spinning/Non-Spinning Reserves	-	-	-	-	-	-	-	-	-
Resource Adequacy	-	71.2	71.2	71.2	71.2	71.2	71.2	71.2	71.2
Distribution Deferral	-	-	-	-	-	-	-	-	-
Demand Response—Wholesale	-	-	-	-	-	-	-	-	-
Demand Response—Utility	-	29.6	29.6	29.6	29.6	29.6	29.6	29.6	29.6
Bill Management ⁽¹⁾	-	479.9	507.3	530.3	528.2	527.3	607.8	693.0	806.9
Local Incentive Payments	300.0	60.0	60.0	60.0	60.0	60.0	-	-	-
Total Operating Costs	-	\$(78.4)	\$(79.2)	\$(100.1)	\$(100.9)	\$(101.8)	\$(106.5)	\$(111.9)	\$(117.9)
Storage O&M	-	(15.0)	(15.3)	(15.7)	(16.1)	(16.5)	(18.7)	(21.1)	(23.9)
Storage Warranty	-	-	-	(20.1)	(20.1)	(20.1)	(20.1)	(20.1)	(20.1)
Storage Augmentation Costs	-	(45.9)	(45.9)	(45.9)	(45.9)	(45.9)	(45.9)	(45.9)	(45.9)
Solar O&M	-	(17.5)	(17.9)	(18.4)	(18.8)	(19.3)	(21.9)	(24.7)	(28.0)
Storage Charging	-	-	-	-	-	-	-	-	-
EBITDA	\$300.0	\$562.4	\$589.0	\$591.1	\$588.1	\$586.4	\$602.2	\$682.0	\$789.9
Less: MACRS D&A	-	(3,081.5)	-	-	-	-	-	-	-
EBIT	\$300.0	\$(2,519.1)	\$589.0	\$591.1	\$588.1	\$586.4	\$602.2	\$682.0	\$789.9
Less: Interest Expense	-	(60.6)	(59.3)	(57.8)	(56.3)	(54.6)	(44.1)	(28.5)	(5.7)
Less: Cash Taxes	(120.0)	-	-	-	-	-	(223.2)	(261.4)	(313.7)
Tax Net Income	\$180.0	\$(2,579.7)	\$529.8	\$533.3	\$531.8	\$531.7	\$334.9	\$392.1	\$470.5
MACRS D&A	-	3,081.5	-	-	-	-	-	-	-
EPC	(394.6)	-	-	-	-	-	-	-	-
Storage Module Capital	(680.0)	-	-	-	-	-	-	-	-
Inverter / AC System Capital	(129.9)	-	-	-	-	-	-	-	-
Balance of System Capital	(232.0)	-	-	-	-	-	-	-	-
Solar Capital	(2,350.0)	-	-	-	-	-	-	-	-
ITC	705.0	-	-	-	-	-	-	-	-
Debt	757.3	-	-	-	-	-	-	-	-
Principal	-	(16.5)	(17.9)	(19.3)	(20.8)	(22.5)	(33.1)	(48.6)	(71.4)
After-Tax Levered Cash Flow	\$(2,144.2)	\$485.3	\$511.9	\$514.0	\$511.0	\$509.2	\$301.8	\$343.5	\$399.1
Levered Project IRR	22.7%								
Levered Project NPV	\$1,303.959								

Model Assumptions							
Storage Size (MW)	0.500	Storage Extended Warranty (%)	1.9%	Debt	20%	Combined Tax Rate	40%
Storage Capacity (MWh)	2.000	Storage EPC Cost (%)	43.3%	Cost of Debt	8%	Charging Cost Escalation	0%
Solar Sizing (MW)	1.000	Storage O&M Cost (%)	1.4%	Equity	80%	O&M Escalation	2.5%
Full DOD Cycles Per Year	350	Storage Efficiency (% RT)	90%	Cost of Equity	12%	Regional EPC Scalar	1.09
Depth of Discharge (%)	100%	Solar Fixed O&M (\$/kW-yr.)	\$17.50	WACC	11%	Useful Life (years)	20

Source: Lazard estimates.

Note: Incentives include ITC and California's SGIP; extended warranty costs represent coverage provided beyond the initial two-year product warranty (included in equipment capital costs); charging costs are zero with all energy self-generated by the PV portion of the system; 100% of 5-year MACRS taken in the first year; regional EPC scalars are adjustment factors for the national averages, determined by Bloomberg estimates and U.S. Department of Labor statistics.

(1) Includes revenue generated from the monetization of excess solar generation based on relevant parameters of the project and use case.

6

Illustrative Value Snapshot—Residential (PV + Storage) (HI)

(\$ in thousands, unless otherwise noted)

Hawaii	2019	2020	2021	2022	2023	2024	2029	2034	2039
Total Revenue	-	\$5.4	\$5.5	\$5.6	\$5.7	\$5.9	\$6.5	\$7.3	\$8.2
Energy Arbitrage	-	-	-	-	-	-	-	-	-
Frequency Regulation	-	-	-	-	-	-	-	-	-
Spinning/Non-Spinning Reserves	-	-	-	-	-	-	-	-	-
Resource Adequacy	-	-	-	-	-	-	-	-	-
Distribution Deferral	-	-	-	-	-	-	-	-	-
Demand Response—Wholesale	-	-	-	-	-	-	-	-	-
Demand Response—Utility	-	-	-	-	-	-	-	-	-
Bill Management ⁽¹⁾	-	5.4	5.5	5.6	5.7	5.9	6.5	7.3	8.2
Local Incentive Payments	-	-	-	-	-	-	-	-	-
Total Operating Costs	-	\$(0.5)	\$(0.6)	\$(0.8)	\$(0.9)	\$(0.9)	\$(1.0)	\$(1.0)	\$(1.1)
Storage O&M	-	(0.3)	(0.4)	(0.4)	(0.4)	(0.4)	(0.4)	(0.5)	(0.5)
Storage Warranty	-	-	-	(0.3)	(0.3)	(0.3)	(0.3)	(0.3)	(0.3)
Storage Augmentation Costs	-	-	-	-	-	-	-	-	-
Solar O&M	-	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.3)	(0.3)
Storage Charging	-	-	-	-	-	-	-	-	-
EBITDA	-	\$4.9	\$5.0	\$4.8	\$4.9	\$5.0	\$5.6	\$6.3	\$7.0
Less: MACRS D&A	-	(35.7)	-	-	-	-	-	-	-
EBIT	-	\$(30.9)	\$5.0	\$4.8	\$4.9	\$5.0	\$5.6	\$6.3	\$7.0
Less: Interest Expense	-	(0.8)	(0.8)	(0.8)	(0.8)	(0.7)	(0.6)	(0.4)	(0.1)
Less: Cash Taxes	-	-	-	-	-	-	(2.0)	(2.4)	(2.8)
Tax Net Income	-	\$(31.7)	\$4.2	\$4.0	\$4.1	\$4.3	\$3.0	\$3.5	\$4.2
MACRS D&A	-	35.7	-	-	-	-	-	-	-
EPC	(3.3)	-	-	-	-	-	-	-	-
Storage Module Capital	(14.3)	-	-	-	-	-	-	-	-
Inverter / AC System Capital	(1.4)	-	-	-	-	-	-	-	-
Balance of System Capital	(3.3)	-	-	-	-	-	-	-	-
Solar Capital	(28.8)	-	-	-	-	-	-	-	-
ITC	15.3	-	-	-	-	-	-	-	-
Debt	10.2	-	-	-	-	-	-	-	-
Principal	-	(0.2)	(0.2)	(0.3)	(0.3)	(0.3)	(0.4)	(0.7)	(1.0)
After-Tax Levered Cash Flow	\$(25.5)	\$3.8	\$3.9	\$3.7	\$3.8	\$4.0	\$2.6	\$2.9	\$3.2
Levered Project IRR	14.0%								
Levered Project NPV	\$3,990								

Model Assumptions							
Storage Size (MW)	0.006	Storage Extended Warranty (%)	1.5%	Debt	20%	Combined Tax Rate	40%
Storage Capacity (MWh)	0.025	Storage EPC Cost (%)	18.8%	Cost of Debt	8%	Charging Cost Escalation	0%
Solar Sizing (MW)	0.010	Storage O&M Cost (%)	1.8%	Equity	80%	O&M Escalation	2.5%
Full DOD Cycles Per Year	350	Storage Efficiency (% RT)	90%	Cost of Equity	12%	Regional EPC Scalar	1.32
Depth of Discharge (%)	100%	Solar Fixed O&M (\$/kW-yr.)	\$19.78	WACC	11%	Useful Life (years)	20

Source: Lazard estimates.

Note: Incentives include the ITC; extended warranty costs represent coverage provided beyond the initial two-year product warranty (included in equipment capital costs); charging costs are zero with all energy self-generated by the PV portion of the system; 100% of 5-year MACRS taken in the first year; regional EPC scalars are adjustment factors for the national averages, determined by Bloomberg estimates and U.S. Department of Labor statistics.

(1) Includes revenue generated from the monetization of excess solar generation based on relevant parameters of the project and use case.

1 Illustrative Value Snapshot—Wholesale (U.K.)

(\$ in thousands, unless otherwise noted)

United Kingdom	2019	2020	2021	2022	2023	2024	2029	2034	2039
Total Revenue	-	\$ 13,484.9	\$ 11,958.9	\$ 13,444.6	\$ 11,907.5	\$ 12,925.6	\$ 19,670.4	\$ 30,350.3	\$ 47,338.8
Energy Arbitrage	-	-	-	-	9,440.9	10,385.0	16,725.1	26,936.0	43,380.6
Frequency Regulation	-	11,049.8	11,049.8	11,049.8	-	-	-	-	-
Spinning/Non-Spinning Reserves	-	-	-	-	-	-	-	-	-
Resource Adequacy	-	2,435.1	909.1	2,394.8	2,466.6	2,540.6	2,945.3	3,414.4	3,958.2
Distribution Deferral	-	-	-	-	-	-	-	-	-
Demand Response—Wholesale	-	-	-	-	-	-	-	-	-
Demand Response—Utility	-	-	-	-	-	-	-	-	-
Bill Management	-	-	-	-	-	-	-	-	-
Local Incentive Payments	-	-	-	-	-	-	-	-	-
Total Operating Costs	-	\$ (5,582.6)	\$ (5,649.7)	\$ (7,711.2)	\$ (12,210.1)	\$ (12,416.0)	\$ (13,539.7)	\$ (14,839.2)	\$ (16,341.9)
Storage O&M	-	(816.9)	(837.3)	(858.3)	(879.7)	(901.7)	(1,020.2)	(1,154.3)	(1,306.0)
Storage Warranty	-	-	-	(1,992.5)	(1,992.5)	(1,992.5)	(1,992.5)	(1,992.5)	(1,992.5)
Storage Augmentation Costs	-	(3,210.1)	(3,210.1)	(3,210.1)	(3,210.1)	(3,210.1)	(3,210.1)	(3,210.1)	(3,210.1)
Solar O&M	-	-	-	-	-	-	-	-	-
Storage Charging	-	(1,555.6)	(1,602.2)	(1,650.3)	(6,127.8)	(6,311.6)	(7,316.9)	(8,482.3)	(9,833.3)
EBITDA	-	\$ 7,902.3	\$ 6,309.2	\$ 5,733.4	\$ (302.6)	\$ 509.6	\$ 6,130.7	\$ 15,511.2	\$ 30,997.0
Less: MACRS D&A	-	(17,291.4)	(29,633.8)	(21,163.6)	(15,113.4)	(10,805.6)	-	-	-
EBIT	-	\$ (9,389.2)	\$ (23,324.6)	\$ (15,430.2)	\$ (15,416.0)	\$ (10,296.0)	\$ 6,130.7	\$ 15,511.2	\$ 30,997.0
Less: Interest Expense	-	(1,936.1)	(1,893.8)	(1,848.1)	(1,798.7)	(1,745.4)	(1,407.7)	(911.6)	(182.6)
Less: Cash Taxes	-	-	-	-	-	-	-	-	(12,325.8)
Tax Net Income	-	\$ (11,325.2)	\$ (25,218.4)	\$ (17,278.2)	\$ (17,214.7)	\$ (12,041.4)	\$ 4,722.9	\$ 14,599.6	\$ 18,488.6
MACRS D&A	-	17,291.4	29,633.8	21,163.6	15,113.4	10,805.6	-	-	-
EPC	(14,000.0)	-	-	-	-	-	-	-	-
Storage Module Capital	(80,629.5)	-	-	-	-	-	-	-	-
Inverter / AC System Capital	(7,378.7)	-	-	-	-	-	-	-	-
Balance of System Capital	(18,995.6)	-	-	-	-	-	-	-	-
Solar Capital	-	-	-	-	-	-	-	-	-
ITC	-	-	-	-	-	-	-	-	-
Debt	24,200.8	-	-	-	-	-	-	-	-
Principal	-	(528.8)	(571.1)	(616.8)	(666.2)	(719.5)	(1,057.2)	(1,553.3)	(2,282.3)
After-Tax Levered Cash Flow	\$ (96,803.0)	\$ 5,437.4	\$ 3,844.3	\$ 3,268.5	\$ (2,767.5)	\$ (1,955.3)	\$ 3,665.8	\$ 13,046.3	\$ 16,206.3
Levered Project IRR	2.5%								
Levered Project NPV	(62,701.156)								

Model Assumptions							
Storage Size (MW)	100.000	Storage Extended Warranty (%)	2.0%	Debt	20%	Combined Tax Rate	40%
Storage Capacity (MWh)	400.000	Storage EPC Cost (%)	13%	Cost of Debt	8%	Charging Cost Escalation	3%
Solar Sizing (MW)	0.000	Storage O&M Cost (%)	1.0%	Equity	80%	O&M Escalation	2.5%
Full DOD Cycles Per Year	61	Storage Efficiency (% RT)	89%	Cost of Equity	12%	Regional EPC Scalar	1
Depth of Discharge (%)	100%	Solar Fixed O&M (\$/kW-yr.)	0.00	WACC	11%	Useful Life (years)	20

Source: Lazard estimates.

Note: Extended warranty costs represent coverage provided beyond the initial two-year product warranty (included in equipment capital costs); charging costs are based on forward estimates of day-ahead baseload contracts; 7-year MACRS; all figures presented in USD using the following exchange rate: USD/GBP 0.77.

3

Illustrative Value Snapshot—Utility-Scale (PV + Storage) (Australia)

(\$ in thousands, unless otherwise noted)

Australia	2019	2020	2021	2022	2023	2024	2029	2034	2039
Total Revenue	-	\$ 24,495.5	\$ 25,173.8	\$ 25,903.1	\$ 26,656.7	\$ 27,435.6	\$ 31,740.4	\$ 36,826.2	\$ 42,845.4
Energy Arbitrage ⁽¹⁾	-	14,681.5	15,133.7	15,600.7	16,082.8	16,580.7	19,325.8	22,554.3	26,356.3
Frequency Regulation	-	5,191.7	5,399.4	5,615.3	5,840.0	6,073.6	7,389.4	8,990.3	10,938.1
Spinning/Non-Spinning Reserves	-	-	-	-	-	-	-	-	-
Resource Adequacy	-	4,622.3	4,640.7	4,687.1	4,734.0	4,781.3	5,025.2	5,281.6	5,551.0
Distribution Deferral	-	-	-	-	-	-	-	-	-
Demand Response—Wholesale	-	-	-	-	-	-	-	-	-
Demand Response—Utility	-	-	-	-	-	-	-	-	-
Bill Management	-	-	-	-	-	-	-	-	-
Local Incentive Payments	-	-	-	-	-	-	-	-	-
Total Operating Costs	-	\$ (4,560.4)	\$ (4,593.7)	\$ (6,221.0)	\$ (6,256.0)	\$ (6,291.9)	\$ (6,485.0)	\$ (6,703.6)	\$ (6,950.9)
Storage O&M	-	(1,314.3)	(1,347.2)	(1,380.9)	(1,415.4)	(1,450.8)	(1,641.4)	(1,857.1)	(2,101.1)
Storage Warranty	-	-	-	(1,593.2)	(1,593.2)	(1,593.2)	(1,593.2)	(1,593.2)	(1,593.2)
Storage Augmentation Costs	-	(3,228.6)	(3,228.6)	(3,228.6)	(3,228.6)	(3,228.6)	(3,228.6)	(3,228.6)	(3,228.6)
Solar O&M	-	(17.5)	(17.9)	(18.4)	(18.8)	(19.3)	(21.9)	(24.7)	(28.0)
Storage Charging	-	-	-	-	-	-	-	-	-
EBITDA	-	\$ 19,935.1	\$ 20,580.1	\$ 19,682.1	\$ 20,400.8	\$ 21,143.7	\$ 25,255.4	\$ 30,122.6	\$ 35,894.5
Less: MACRS D&A	-	(20,209.5)	(32,335.2)	(19,401.1)	(11,640.7)	(11,640.7)	-	-	-
EBIT	-	\$ (274.4)	\$ (11,755.0)	\$ 281.0	\$ 8,760.1	\$ 9,503.1	\$ 25,255.4	\$ 30,122.6	\$ 35,894.5
Less: Interest Expense	-	(1,616.8)	(1,581.4)	(1,543.3)	(1,502.1)	(1,457.6)	(1,175.6)	(761.3)	(152.5)
Less: Cash Taxes	-	-	-	-	-	-	(9,631.9)	(11,744.5)	(14,296.8)
Tax Net Income	-	\$ (1,891.1)	\$ (13,336.5)	\$ (1,262.3)	\$ 7,258.0	\$ 8,045.5	\$ 14,447.9	\$ 17,616.8	\$ 21,445.2
MACRS D&A	-	20,209.5	32,335.2	19,401.1	11,640.7	11,640.7	-	-	-
EPC	(25,448.6)	-	-	-	-	-	-	-	-
Storage Module Capital	(47,803.9)	-	-	-	-	-	-	-	-
Inverter / AC System Capital	(9,135.3)	-	-	-	-	-	-	-	-
Balance of System Capital	(16,309.6)	-	-	-	-	-	-	-	-
Solar Capital	(2,350.0)	-	-	-	-	-	-	-	-
ITC	-	-	-	-	-	-	-	-	-
Debt	20,209.5	-	-	-	-	-	-	-	-
Principal	-	(441.6)	(477.0)	(515.1)	(556.3)	(600.8)	(882.8)	(1,297.1)	(1,905.9)
After-Tax Levered Cash Flow	\$ (80,837.9)	\$ 17,876.7	\$ 18,521.8	\$ 17,623.7	\$ 18,342.4	\$ 19,085.3	\$ 13,565.1	\$ 16,319.7	\$ 19,539.3
Levered Project IRR	22.5%								
Levered Project NPV	54,407,341								

Model Assumptions

Storage Size (MW)	50.000	Storage Extended Warranty (%)	2.0%	Debt	20%	Combined Tax Rate	40%
Storage Capacity (MWh)	200.000	Storage EPC Cost (%)	21%	Cost of Debt	8%	Charging Cost Escalation	0%
Solar Sizing (MW)	100.000	Storage O&M Cost (%)	1.5%	Equity	80%	O&M Escalation	2.5%
Full DOD Cycles Per Year	350	Storage Efficiency (% RT)	89%	Cost of Equity	12%	Regional EPC Scalar	1
Depth of Discharge (%)	100%	Solar Fixed O&M (\$/kW-yr.)	10.50	WACC	11%	Useful Life (years)	20

Source: Lazard estimates.

Note: Extended warranty costs represent coverage provided beyond the initial two-year product warranty (included in equipment capital costs); charging costs are zero with all energy self-generated by the PV portion of the system; 5-year MACRS; all figures presented in USD using the following exchange rate: USD/AUD 1.39.

(1) Includes revenue generated from the sale of excess solar generation to wholesale power markets.

4

Illustrative Value Snapshot—Commercial & Industrial (Standalone) (Ontario)

(\$ in thousands, unless otherwise noted)

Ontario	2019	2020	2021	2022	2023	2024	2029	2034	2039
Total Revenue	-	\$ 424.2	\$ 441.2	\$ 458.8	\$ 477.2	\$ 496.2	\$ 603.8	\$ -	\$ -
Energy Arbitrage	-	-	-	-	-	-	-	-	-
Frequency Regulation	-	-	-	-	-	-	-	-	-
Spinning/Non-Spinning Reserves	-	-	-	-	-	-	-	-	-
Resource Adequacy	-	-	-	-	-	-	-	-	-
Distribution Deferral	-	-	-	-	-	-	-	-	-
Demand Response—Wholesale	-	-	-	-	-	-	-	-	-
Demand Response—Utility	-	-	-	-	-	-	-	-	-
Bill Management	-	424.2	441.2	458.8	477.2	496.2	603.8	-	-
Local Incentive Payments	-	-	-	-	-	-	-	-	-
Total Operating Costs	-	\$ (77.9)	\$ (78.3)	\$ (98.4)	\$ (98.8)	\$ (99.2)	\$ (101.2)	-	-
Storage O&M	-	(14.0)	(14.3)	(14.7)	(15.1)	(15.4)	(17.5)	-	-
Storage Warranty	-	-	-	(19.8)	(19.8)	(19.8)	(19.8)	-	-
Storage Augmentation Costs	-	(39.3)	(39.3)	(39.3)	(39.3)	(39.3)	(39.3)	-	-
Solar O&M	-	-	-	-	-	-	-	-	-
Storage Charging	-	(24.6)	(24.6)	(24.6)	(24.6)	(24.6)	(24.6)	-	-
EBITDA	-	\$ 346.3	\$ 362.9	\$ 360.4	\$ 378.3	\$ 397.1	\$ 502.5	-	-
Less: MACRS D&A	-	(176.6)	(302.7)	(216.2)	(154.4)	(110.4)	-	-	-
EBIT	-	\$ 169.6	\$ 60.2	\$ 144.2	\$ 224.0	\$ 286.7	\$ 502.5	-	-
Less: Interest Expense	-	(19.8)	(18.4)	(16.9)	(15.3)	(13.6)	(2.7)	-	-
Less: Cash Taxes	-	(59.9)	(16.7)	(50.9)	(83.4)	(109.2)	(199.9)	-	-
Tax Net Income	-	\$ 89.9	\$ 25.1	\$ 76.3	\$ 125.2	\$ 163.8	\$ 299.9	-	-
MACRS D&A	-	176.6	302.7	216.2	154.4	110.4	-	-	-
EPC	(381.4)	-	-	-	-	-	-	-	-
Storage Module Capital	(506.3)	-	-	-	-	-	-	-	-
Inverter / AC System Capital	(173.0)	-	-	-	-	-	-	-	-
Balance of System Capital	(175.5)	-	-	-	-	-	-	-	-
Solar Capital	-	-	-	-	-	-	-	-	-
ITC	-	-	-	-	-	-	-	-	-
Debt	247.2	-	-	-	-	-	-	-	-
Principal	-	(17.1)	(18.4)	(19.9)	(21.5)	(23.2)	(34.1)	-	-
After-Tax Levered Cash Flow	\$ (988.9)	\$ 249.5	\$ 309.3	\$ 272.6	\$ 258.1	\$ 251.0	\$ 265.8	\$ -	\$ -
Levered Project IRR	28.2%								
Levered Project NPV	655,531								

Model Assumptions

Storage Size (MW)	1.000	Storage Extended Warranty (%)	2.3%	Debt	20%	Combined Tax Rate	40%
Storage Capacity (MWh)	2.000	Storage EPC Cost (%)	45%	Cost of Debt	8%	Charging Cost Escalation	0%
Solar Sizing (MW)	0.000	Storage O&M Cost (%)	2.0%	Equity	80%	O&M Escalation	2.5%
Full DOD Cycles Per Year	250	Storage Efficiency (% RT)	90%	Cost of Equity	12%	Regional EPC Scalar	1
Depth of Discharge (%)	100%	Solar Fixed O&M (\$/kW-yr.)	0.00	WACC	11%	Useful Life (years)	10

Source: Lazard estimates.

Note: Extended warranty costs represent coverage provided beyond the initial two-year product warranty (included in equipment capital costs); charging costs are based on Ontario Power Authority commercial rates; 7-year MACRS; all figures presented in USD using the following exchange rate: USD/CAD 1.32.

5 Illustrative Value Snapshot—Commercial & Industrial (PV + Storage) (Australia)

(\$ in thousands, unless otherwise noted)

Australia	2019	2020	2021	2022	2023	2024	2029	2034	2039
Total Revenue	-	\$ 704.5	\$ 727.5	\$ 751.5	\$ 776.5	\$ 802.5	\$ 950.4	\$ 1,133.0	\$ 258.2
Energy Arbitrage	-	-	-	-	-	-	-	-	-
Frequency Regulation	-	-	-	-	-	-	-	-	-
Spinning/Non-Spinning Reserves	-	-	-	-	-	-	-	-	-
Resource Adequacy	-	-	-	-	-	-	-	-	-
Distribution Deferral	-	-	-	-	-	-	-	-	-
Demand Response—Wholesale	-	-	-	-	-	-	-	-	-
Demand Response—Utility	-	-	-	-	-	-	-	-	-
Bill Management ⁽¹⁾	-	704.5	727.5	751.5	776.5	802.5	950.4	1,133.0	258.2
Local Incentive Payments	-	-	-	-	-	-	-	-	-
Total Operating Costs	-	\$ (62.9)	\$ (63.7)	\$ (80.4)	\$ (81.2)	\$ (82.0)	\$ (86.5)	\$ (91.5)	\$ (97.2)
Storage O&M	-	(13.1)	(13.5)	(13.8)	(14.2)	(14.5)	(16.4)	(18.6)	(21.0)
Storage Warranty	-	-	-	(15.9)	(15.9)	(15.9)	(15.9)	(15.9)	(15.9)
Storage Augmentation Costs	-	(32.3)	(32.3)	(32.3)	(32.3)	(32.3)	(32.3)	(32.3)	(32.3)
Solar O&M	-	(17.5)	(17.9)	(18.4)	(18.8)	(19.3)	(21.9)	(24.7)	(28.0)
Storage Charging	-	-	-	-	-	-	-	-	-
EBITDA	-	\$ 641.6	\$ 663.8	\$ 671.1	\$ 695.3	\$ 720.5	\$ 863.9	\$ 1,041.5	\$ 161.0
Less: MACRS D&A	-	(667.4)	(1,067.8)	(640.7)	(384.4)	(384.4)	-	-	-
EBIT	-	\$ (25.8)	\$ (404.0)	\$ 30.4	\$ 310.8	\$ 336.1	\$ 863.9	\$ 1,041.5	\$ 161.0
Less: Interest Expense	-	(53.4)	(52.2)	(51.0)	(49.6)	(48.1)	(38.8)	(25.1)	(5.0)
Less: Cash Taxes	-	-	-	-	-	-	(330.0)	(406.5)	(62.4)
Tax Net Income	-	\$ (79.2)	\$ (456.2)	\$ (20.6)	\$ 261.2	\$ 287.9	\$ 495.1	\$ 609.8	\$ 93.6
MACRS D&A	-	667.4	1,067.8	640.7	384.4	384.4	-	-	-
EPC	(254.5)	-	-	-	-	-	-	-	-
Storage Module Capital	(478.0)	-	-	-	-	-	-	-	-
Inverter / AC System Capital	(91.4)	-	-	-	-	-	-	-	-
Balance of System Capital	(163.1)	-	-	-	-	-	-	-	-
Solar Capital	(2,350.0)	-	-	-	-	-	-	-	-
ITC	-	-	-	-	-	-	-	-	-
Debt	667.4	-	-	-	-	-	-	-	-
Principal	-	(14.6)	(15.8)	(17.0)	(18.4)	(19.8)	(29.2)	(42.8)	(62.9)
After-Tax Levered Cash Flow	\$ (2,669.6)	\$ 573.6	\$ 595.8	\$ 603.1	\$ 627.3	\$ 652.5	\$ 465.9	\$ 567.0	\$ 30.6
Levered Project IRR	22.8%								
Levered Project NPV	1,817,323								

Model Assumptions

Storage Size (MW)	0.500	Storage Extended Warranty (%)	2.2%	Debt	20%	Combined Tax Rate	40%
Storage Capacity (MWh)	2.000	Storage EPC Cost (%)	35%	Cost of Debt	8%	Charging Cost Escalation	0%
Solar Sizing (MW)	1.000	Storage O&M Cost (%)	2.0%	Equity	80%	O&M Escalation	2.5%
Full DOD Cycles Per Year	350	Storage Efficiency (% RT)	90%	Cost of Equity	12%	Regional EPC Scalar	1
Depth of Discharge (%)	100%	Solar Fixed O&M (\$/kW-yr.)	17.50	WACC	11%	Useful Life (years)	20

Source: Lazard estimates.

Note: Extended warranty costs represent coverage provided beyond the initial two-year product warranty (included in equipment capital costs); charging costs are zero with all energy self-generated by the PV portion of the system; 5-year MACRS; all figures presented in USD using the following exchange rate: USD/AUD 1.39.

(1) Includes revenue generated from the monetization of excess solar generation based on relevant parameters of the project and use case.

6 Illustrative Value Snapshot—Residential (PV + Storage) (Germany)

(\$ in thousands, unless otherwise noted)

Germany	2019	2020	2021	2022	2023	2024	2029	2034	2039
Total Revenue	-	\$ 6.3	\$ 3.0	\$ 3.1	\$ 3.2	\$ 3.3	\$ 3.9	\$ 4.6	\$ 5.5
Energy Arbitrage	-	-	-	-	-	-	-	-	-
Frequency Regulation	-	-	-	-	-	-	-	-	-
Spinning/Non-Spinning Reserves	-	-	-	-	-	-	-	-	-
Resource Adequacy	-	-	-	-	-	-	-	-	-
Distribution Deferral	-	-	-	-	-	-	-	-	-
Demand Response—Wholesale	-	-	-	-	-	-	-	-	-
Demand Response—Utility	-	-	-	-	-	-	-	-	-
Bill Management ⁽¹⁾	-	2.9	3.0	3.1	3.2	3.3	3.9	4.6	5.5
Local Incentive Payments	-	3.4	-	-	-	-	-	-	-
Total Operating Costs	-	\$ (0.5)	\$ (0.5)	\$ (0.5)	\$ (0.5)	\$ (0.5)	\$ (0.6)	\$ (0.7)	\$ (0.8)
Storage O&M	-	(0.3)	(0.3)	(0.3)	(0.3)	(0.3)	(0.3)	(0.4)	(0.4)
Storage Warranty	-	-	-	-	-	-	-	-	-
Storage Augmentation Costs	-	-	-	-	-	-	-	-	-
Solar O&M	-	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.3)	(0.3)
Storage Charging	-	-	-	-	-	-	-	-	-
EBITDA	-	\$ 5.8	\$ 2.5	\$ 2.6	\$ 2.7	\$ 2.8	\$ 3.3	\$ 3.9	\$ 4.7
Less: MACRS D&A	-	(9.1)	(14.5)	(8.7)	(5.2)	(5.2)	-	-	-
EBIT	-	\$ (3.2)	\$ (12.0)	\$ (6.1)	\$ (2.6)	\$ (2.5)	\$ 3.3	\$ 3.9	\$ 4.7
Less: Interest Expense	-	(0.7)	(0.7)	(0.7)	(0.7)	(0.7)	(0.5)	(0.3)	(0.1)
Less: Cash Taxes	-	-	-	-	-	-	-	-	(1.9)
Tax Net Income	-	\$ (4.0)	\$ (12.7)	\$ (6.8)	\$ (3.2)	\$ (3.1)	\$ 2.8	\$ 3.6	\$ 2.8
MACRS D&A	-	9.1	14.5	8.7	5.2	5.2	-	-	-
EPC	(1.9)	-	-	-	-	-	-	-	-
Storage Module Capital	(11.0)	-	-	-	-	-	-	-	-
Inverter / AC System Capital	(1.1)	-	-	-	-	-	-	-	-
Balance of System Capital	(2.6)	-	-	-	-	-	-	-	-
Solar Capital	(28.8)	-	-	-	-	-	-	-	-
ITC	-	-	-	-	-	-	-	-	-
Debt	9.1	-	-	-	-	-	-	-	-
Principal	-	(0.2)	(0.2)	(0.2)	(0.2)	(0.3)	(0.4)	(0.6)	(0.9)
After-Tax Levered Cash Flow	\$ (36.3)	\$ 4.9	\$ 1.6	\$ 1.6	\$ 1.7	\$ 1.8	\$ 2.4	\$ 3.0	\$ 1.9
Levered Project IRR	2.7%								
Levered Project NPV	\$(16,509)								

Model Assumptions							
Storage Size (MW)	0.006	Storage Extended Warranty (%)	0.0%	Debt	20%	Combined Tax Rate	40%
Storage Capacity (MWh)	0.025	Storage EPC Cost (%)	13%	Cost of Debt	8%	Charging Cost Escalation	0%
Solar Sizing (MW)	0.010	Storage O&M Cost (%)	2.0%	Equity	80%	O&M Escalation	2.5%
Full DOD Cycles Per Year	350	Storage Efficiency (% RT)	95%	Cost of Equity	12%	Regional EPC Scalar	1
Depth of Discharge (%)	100%	Solar Fixed O&M (\$/kW-yr.)	19.50	WACC	11%	Useful Life (years)	20

Source: Lazard estimates.

Note: 13% German Development Bank, KfW incentive for renewable/DER technologies; extended warranty costs represent coverage provided beyond the initial two-year product warranty (included in equipment capital costs); charging costs are zero with all energy self-generated by the PV portion of the system; 5-year MACRS; all figures presented in USD using the following exchange rate: USD/EUR 0.87.

(1) Includes revenue generated from the monetization of excess solar generation based on relevant parameters of the project and use case.