트레이드 렌즈
TRADE LENS

Focus on investing.

LENS INSIGHT / No.10

Contracts, performance and cash flow in Korea’s ESS market

Korea’s ESS
Central Contract Market

Where do profits accrue?
From supply to long-term operations

DEMAND	1,180 MW / 7,080 MWh in the new tender
VALUE CAPTURE	Contract type, performance, risk and capital costs

Order volume is only the beginning.
Value remains in cash after the promise is delivered.

Separating mainland 15-year, Jeju 15-year and Jeju 25-year economics
and the different sources of company income.

Analysis date 25 October 2026

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Industry structure · Contract economics · Value capture

01 / THE CORE VIEW

Profits depend on lasting performance

Core question: when more batteries and systems are supplied, whose cash flow benefits?

THE TRADELENS VIEW

The economic dividing line is the total cost of delivering long-term performance. Residual cash is better protected when that cost is priced into the bid and allocated across supply, operating and financing contracts.

Judgement	Evidence and economic meaning
01 Start with the contract	Mainland 15-year, Jeju 15-year and Jeju 25-year contracts differ in pricing and market participation. Equal MW do not imply equal returns. [2] [3]
02 Performance affects cash	Available capacity and compliance affect settlement. Failure to meet certain non-price commitments can also reset the contract price. A higher promise creates a future cost obligation. [2]
03 Recurring income has costs	EPC and O&M fees differ from the project company's total settlement income. Repair, warranty and insurance obligations determine how much service revenue remains. [9] [10]

Who is better positioned? A combination of suppliers that can explain and deliver system performance at a credible lifetime cost has a stronger basis for negotiation. Competitive bidding can still pass cost savings into lower settlement prices, leaving less of the technical advantage with suppliers.

WHAT WOULD WEAKEN THIS VIEW

The link between demand and profits weakens if warranties and integration become standard features without a premium, or if bid prices fall faster than equipment, operating and financing costs.

02 / TENDER & TIMING

1,180 MW is a tender, not revenue

Keep power, stored energy, previous awards and the current tender on separate measurement bases.

2026 tender	Power	Stored energy	Duration
Mainland	1,100 MW	6,600 MWh	6 hours
Jeju	80 MW	480 MWh	6 hours
Total	1,180 MW	7,080 MWh	6 hours

Volumes are measured at the grid delivery point. 7,080 MWh = 7.08 GWh. Tender volume is distinct from awards, installed assets and battery-cell purchases. [2] [3]

1,196 MW refers to previous cumulative awards

The government's 1,196 MW figure covers three award rounds from 2023 to the first half of 2026. It is neither the regional split of this tender nor a measure of capacity already commissioned. [1]

Milestone	Meaning
22 September 2026	Mainland and Jeju tender notices
4 November 2026, 18:00 KST	Mainland bid-proposal deadline
11 November 2026, 15:00 KST	Tender close, including plans and supporting documents
February 2029	Commissioning deadline in the notices

Dates follow the notices. Selection, permits, grid connection, construction and acceptance are separate stages. [2] [3]

TRADELENS INTERPRETATION

The tender opens a demand pipeline. Battery and PCS orders, revenue recognition, cash collection and operating settlement occur at different times. The 7.08 GWh figure should not be converted directly into company sales or profit.

03 / THREE CONTRACT ECONOMIES

Three distinct contract economies

The 15- and 25-year terms are trading periods after commercial operation; preparation and delay adjustments are separate.

Item	Mainland: 15 years	Jeju: 15 years	Jeju: 25 years
Tender volume	1,100 MW	Jeju total: 80 MW	Assessed with 15-year bids
Contract price	100% of bid price	60% of bid price	100% of bid price
Market arbitrage	Not permitted	Permitted; sharing coefficients apply	Not permitted
Charging / discharging cash	No separate cash settlement	Electricity-market settlement	No separate cash settlement
Required annual cycle capability	At least 383	At least 395	At least 730
Lifetime cycle capability	At least 5,745	At least 5,925	At least 18,250

Cycle figures are equipment performance and warranty requirements, not observed annual operation. Sources for volumes, technical conditions and settlement: [2] [3]

Jeju's 15-year option combines contract and market settlement. Its 25-year option requires longer service and higher cycling durability. Treating them as the same financial product with a different tenor misses both performance costs and revenue variability.

60% AND 100% ARE NOT CAPITAL-RECOVERY GUARANTEES

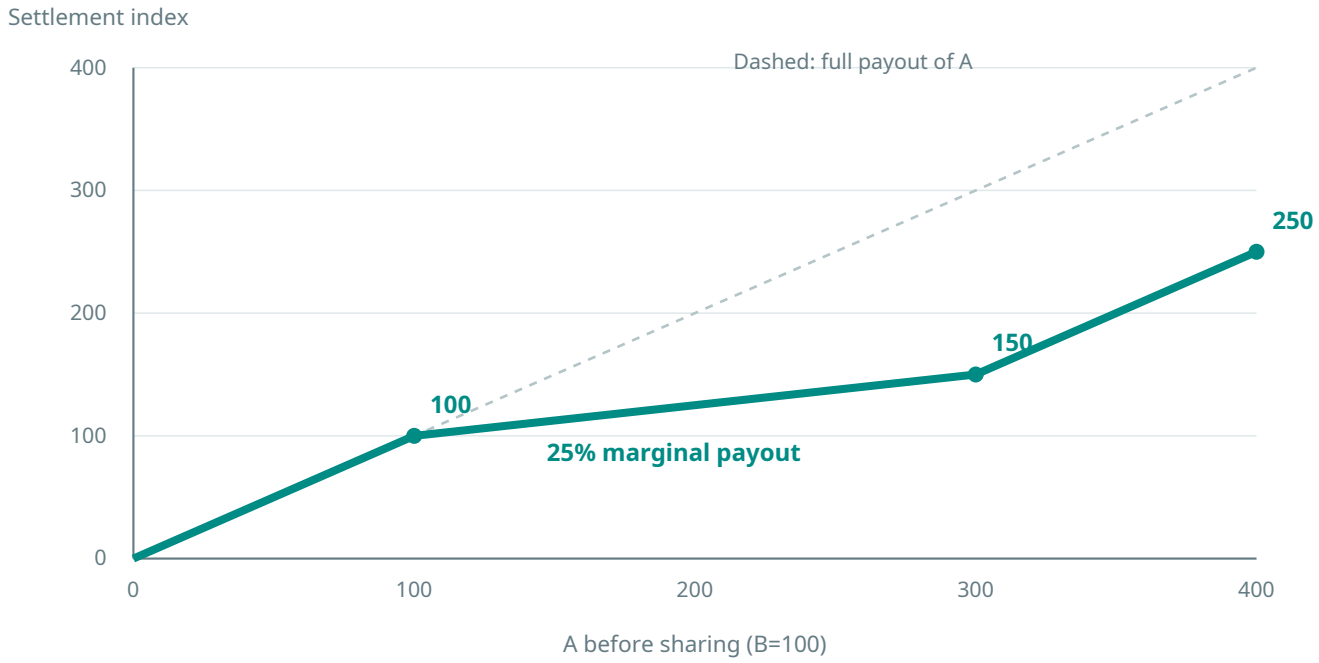
These percentages determine the contract price relative to the bid price. Available capacity, compliance, outages, maintenance and contractual price adjustments can reduce settlement. A fixed-price contract is not unconditional cash protection. [2] [3]

04 / JEJU: REVENUE SHARING

What Jeju’s 60% actually means

Separate contract-price settlement from monthly arbitrage settlement before assigning costs and risks.

A is monthly arbitrage income before sharing; **B** is a benchmark based on 40% of the bid price, awarded capacity and hours in that month. B is not a revenue floor. The chart uses **B=100 and A>=0**; separate contract-price settlement is excluded. [3] [4]



Monthly A	0	100	200	300	400
Arbitrage settlement F(A)	0	100	125	150	250

Marginal payout: 100% up to B; 25% above B through 3B; 100% above 3B. Market income derives from energy and ancillary-service settlement, not final operating profit. Zero or negative monthly arbitrage income receives no additional compensation. [3] [4]

TRADELENS INTERPRETATION

Between B and 3B, only 25 of each additional 100 of market income enters arbitrage settlement. The value of optimized dispatch therefore depends on sharing rules, incremental cycling degradation and operating costs as well as market spreads.

05 / PERFORMANCE & SETTLEMENT

Six hours is not the payment window

Capacity-based hourly settlement differs from a selling price applied to discharged energy.

MAINLAND SETTLEMENT STRUCTURE

Sum contract price × available capacity × compliance across time slots.
Daily settlement sums 24 hours. Available capacity is derived from maximum stored energy divided by six. [2]

The bid unit, **KRW/kW-h**, is an hourly fixed-cost rate for available capacity. It is not a unit selling price for energy actually discharged. An annual simplification must aggregate the time-slot factors; a six-hour system does not mean that only six hours per day are paid.

Cash-flow lever	How it operates	Question to ask
Contract price	May be adjusted when specified non-price commitments are missed	Can promised life and efficiency be sustained?
Available capacity	Reflects effective capacity in each time slot	Can the system actually supply energy on the contracted basis?
Compliance	Reflects deviation from dispatch instructions	Can controls, maintenance and restoration deliver the instructions?

Price and non-price factors each contribute 50 points. The internal 100-point non-price schedule is rescaled to 50. Contract-price adjustments follow the notice's conditions and formula. [2]

BID SCORES AND CASH FLOW MUST BE DESIGNED TOGETHER

A stronger performance promise also carries a delivery cost. Do not automatically count the same shortfall more than once: check each price, capacity and compliance condition and the time interval to which it applies.

06 / WHO EARNS WHAT

Income and risk sit in different places

These are economic roles. Actual obligations depend on supply, construction, operating and financing contracts.

Participant	Income received	Costs and obligations that shape profit
Battery / PCS supplier	Product and system sales	Price, production cost, product mix and utilization; defects, performance warranties and support
SI / EPC integrator	Design, procurement and construction fees	Interfaces, grid connection and acceptance; allocation of delay and performance risk
O&M provider	Recurring operation and maintenance fees	Staff, spares and restoration; service standards, liability limits and inflation exposure
Project company (SPC) / owner	Contract and market settlement	Operating costs, insurance, repairs, debt service, taxes and reserves before residual cash

SI: system integration. EPC: engineering, procurement and construction. O&M: operation and maintenance. SPC: special-purpose company. Role examples: [8] [9] [10]

The double-counting trap. Battery, construction and service payments made by the SPC become revenue for its suppliers. Adding those revenues to the project's settlement income can count the same economic flow twice. A supplier's warranty fee is a risk-reduction cost for the owner.

Where pricing power may sit. Standardized components face price competition. A proven combination of grid integration, system performance and restoration can reduce settlement losses and lifetime cost. Contract pricing and competition determine who retains those savings.

TRADELENS INTERPRETATION

The operator does not automatically earn the most. Identify the party receiving fees, the party funding warranty obligations and the party left with residual risk in the same contract map.

07 / BATTERY SUPPLIERS

Orders are the start of profitability

Separate existing supply, product scope and future plans from profit on an individual Korean contract.

Company / evidence	What the source establishes	How to assess value capture
Samsung SDI Earlier Korean awards	Its full-year 2025 release describes first-round Korean central-market orders and the SBB 1.7 (NCA) / 2.0 (LFP) portfolio. [6]	Evidence of domestic exposure, not of awards, share or margins in the new 1,180 MW tender.
LG Energy Solution Global strategy / contract	Cell-to-software integration strategy. Vertech's US business includes design, installation, maintenance and AEROS services. [7] [8]	A wider sales scope also requires scrutiny of integration and warranty responsibility. US contracts do not establish Korean awards.

Equal GWh can produce different profits. Selling prices, production costs, utilization, product mix and customer warranties all matter. Company-wide or battery-segment results include other products and geographies and cannot substitute for Korean central-contract margins.

INITIAL DESIGN HEADROOM AND LONG-TERM WARRANTIES

Grid-delivered contracted energy differs from nominal cell capacity. The 70% end-of-life floor does not mean that only 70% of contracted delivery is required. The cited warranty conditions also restrict adding design capacity during operation to extend guaranteed life. [2] [3]

WHAT TO OBSERVE

Prioritize confirmed supply scope, acceptance, collections and warranty costs. Factory-capacity plans and global ESS growth do not establish the cash contribution of a specific Korean project.

08 / INTEGRATION & OPERATIONS

Recurring income comes with obligations

Domestic projects illustrate roles. Older projects with different ratings are not awards from the new tender.

LS ELECTRIC | EPC AND 15-YEAR O&M

The Jeju Hallim project announced in April 2025 was awarded in 2023: 10 MW of PCS and 40 MWh of batteries. LS described EPC and future 15-year O&M roles. Its commissioning target at that time is distinct from actual completion. [9]

SK ETERNIX | DEVELOPMENT, PM, O&M AND EQUITY

The 2Q26 IR presentation shows the 40 MW / 240 MWh Gasiri Grid Park under construction, targeting early-2027 operation. Planning, project management, O&M and equity investment have different income-recognition channels. [10]

Economic stage	Cash conditions to examine
Design and construction	Advances, progress payments, acceptance balance, cost overruns, delay and performance liability
Long-term O&M	Service scope, indexation, spares, restoration duties, actual fees and delivery costs
SPC equity investment	Distributable cash after debt service, taxes and reserves

Hallim is an earlier four-hour project. [9] The new tender requires six hours. [2] [3] Gasiri's 2027 start remains a company plan. [10]

TRADELENS INTERPRETATION

Integration and operating capability can create recurring revenue. But total project settlement, service revenue, equity-accounted income and cash dividends are distinct measures of the durability of value capture.

09 / ILLUSTRATIVE CASH STRESS

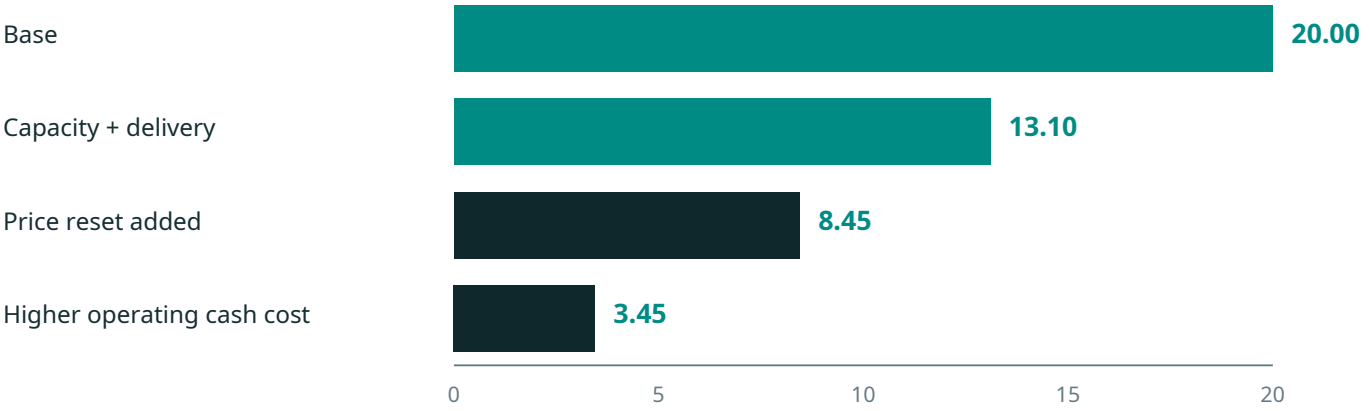
Small settlement losses squeeze cash

Illustrative assumptions: base settlement=100, with operating outflows and debt service on the same cash scale.

MODEL A | AN INDEPENDENT ILLUSTRATION, NOT A FORECAST

Settlement R = 100 × p × q × f
Simplified residual cash = R - operating outflows 30 - debt service 50
p: price factor / q: available-capacity factor / f: compliance factor

Assumption	Settlement	Operating	Debt service	Residual
p=q=f=1	100.00	30	50	20.00
q=0.95, f=0.98	93.10	30	50	13.10
Above + p=0.95	88.45	30	50	8.45
Above + operating outflows 35	88.45	35	50	3.45



Separate price, capacity and compliance conditions are assumed to apply for the whole period. This is not automatic triple counting of one cause or a reproduction of the actual adjustment formula. Taxes, additional capex, reserves and distribution restrictions are excluded; this is neither accounting profit nor distributable cash.

TRADELENS INTERPRETATION

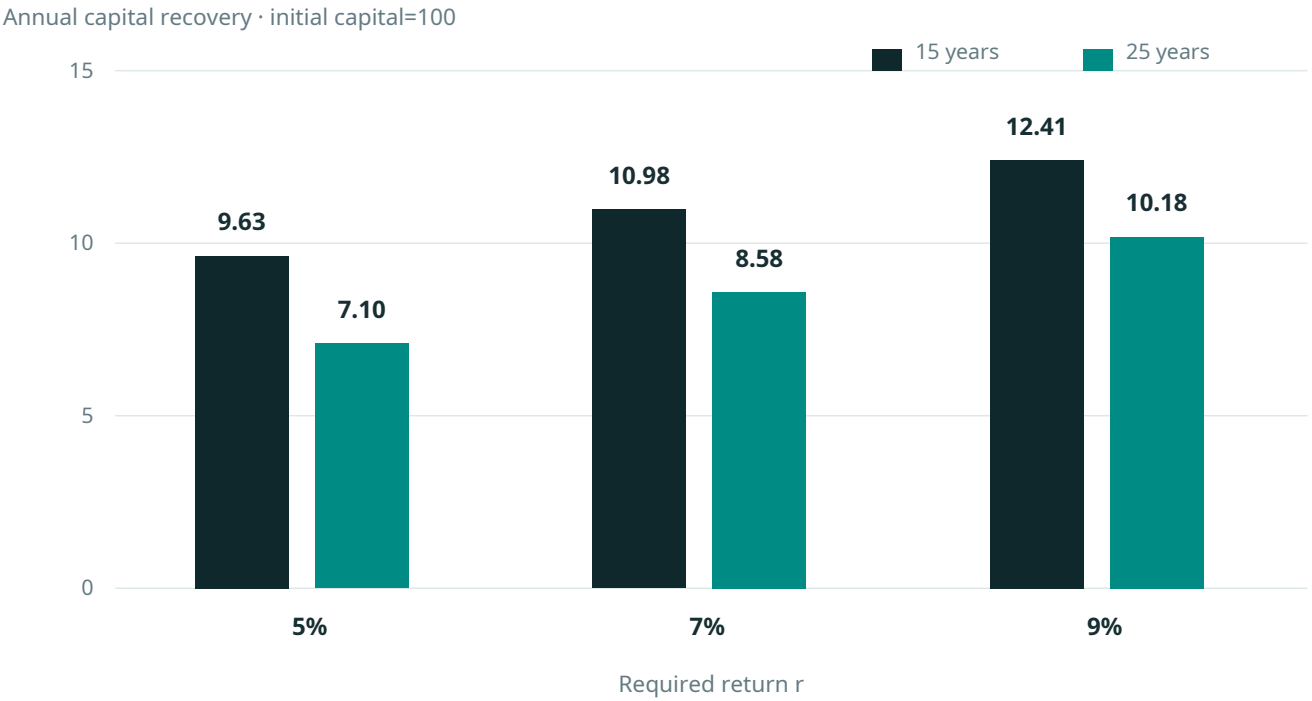
With operating outflows and debt service unchanged, the first stress reduces settlement by 6.9% and residual cash by 34.5%. Performance protection and cost flexibility can matter more to the owner's cash buffer than order volume.

10 / CAPITAL RECOVERY

When a longer contract lowers annual cost

Illustrative assumptions: initial capital=100, equal year-end recovery and zero residual value.

Model B: annual capital recovery = $100 \times r / [1 - (1+r)^{-n}]$
r is the required return on capital and n the recovery term. These are not actual borrowing rates, debt repayments or tender-evaluation discount rates.



At a 7% required return, annual recovery is **10.98** over 15 years and **8.58** over 25 years. A longer period spreads capital recovery over more years. It does not make maintenance, replacement, inflation, taxes or performance obligations equivalent.

Jeju's 25-year option requires capability for at least 730 cycles annually and 18,250 over the term. A longer tenor supports competitive pricing only if additional durability and capital costs can also be recovered. Lifetime cost extends beyond the initial equipment price. [3] [11]

TRADELENS INTERPRETATION

The benefit of time does not automatically outweigh financing and performance costs. This model isolates initial-capital recovery; do not subtract it again from, or combine it with, Model A's debt service.

11 / CONTRACT RISK ALLOCATION

Risk transfer must work in practice

The question is whether warranty coverage and cost recovery match the actual operating obligations.

Risk	Contract points to examine	What may remain with the owner
Battery aging	Temperature, cycles, operating limits, term, initial headroom and repair / replacement duties	Exclusions, replacement downtime and supplier credit risk
PCS / EMS / integration	Acceptance tests, fault attribution, response and recovery time, spares	Interface disputes and uncompensated settlement losses
Fire and safety	Design, installation and operating duties; insurance limits, deductibles and exclusions	Restoration, interruption and uninsured loss
Completion / grid connection	Permits, connection conditions, schedule, delay liability and performance security	Deferred cash receipts, financing costs and contractual penalties
Finance / inflation	Financial close, rate terms, fee adjustment and reserves	Refinancing, rising costs, distribution limits and new funding needs

TradeLens contract-analysis framework, not any company's actual warranty, insurance or financing terms. Tender requirements: [2] [3]

Risk transfer can be priced into equipment or service fees. A cheap contract with broad exclusions may leave more risk with the owner. Clear coverage and rapid restoration can instead provide economic value by stabilizing settlement.

TRADELENS INTERPRETATION

Value does not come from assuming the most risk. It comes from allocating obligations to parties able to deliver and pricing the residual risk that remains.

12 / WHAT TO WATCH

Four gates after an award

Tender volume starts the process; contract delivery and cash conversion establish company earnings.

Gate	Evidence that strengthens the view	Evidence that weakens the view
01 Award / contract	Confirmed scope, price, term and matching responsibilities	Announcements without binding scope or clear cost obligations
02 Funding / construction	Alignment of permits, connection, financing and schedule	Higher funding costs or delays erode the price buffer
03 Completion / acceptance	Measured grid-delivery performance, acceptance and collection	Remediation, warranty costs and delayed final payments
04 Operations / recovery	Stable capacity, compliance and costs; realized cash generation	Settlement cuts, restoration and reserves consume residual cash

Base judgement. New demand expands opportunities for batteries and electrical systems. The basis for differentiation shifts toward the total cost of sustaining long-term performance. Read each company's revenue together with the obligations attached to it.

Falsification. Standardization can remove integration premiums, and faster price declines than cost savings can break the link between volume and profit. Contracts that cover lifetime costs, followed by acceptance, operating performance and collection, strengthen the value-capture case.

THE DECISION RULE

Alongside "How much is supplied?", ask "What performance is promised, for how long, and who pays for it?" Profit in the ESS central contract market becomes visible in the cash remaining after that promise is delivered.

13 / SOURCE REGISTER · POLICY

Source register

Body citations, source titles and “Open source” links lead directly to the underlying material.

01. Ministry of Climate, Energy and Environment | ESS central contract market opens: 1,180 MW tender

2026-09-22 · Korean; title translated
Government release; tender volume versus cumulative awards; long-life contract rationale. Open source

02. Korea Power Exchange | 2026 ESS central contract tender: mainland

2026-09-22 · Korean; title translated
Notice 2026-05; printed pp. 1-2, 5, 13-17, 22-23 and 25-27: requirements and settlement. Open source

03. Korea Power Exchange | 2026 ESS central contract tender: Jeju

2026-09-22 · Korean; title translated
Notice 2026-06; printed pp. 1, 5, 20-21 and 24-29: contract options and monthly sharing. Open source

04. Korea Power Exchange | 2026 ESS central contract market: bidder briefing

2026-09-29 / 2026-09-30 · Korean; title translated
Posted 29 Sep; briefing 30 Sep 2026. Slides 26-29: monthly benchmark and settlement. Open source

05. Korea Power Exchange | Notice on revised tender attachment forms

2026-10-14 · Korean; title translated
Official notice: paid-in-capital formula in the Data Sheet; applicable tender basis. Open source

Company plans and outlooks refer to the date of the release. Structural conclusions and illustrative calculations are TradeLens analysis.

14 / SOURCE REGISTER · COMPANIES & METHODS

Source register

Body citations, source titles and “Open source” links lead directly to the underlying material.

06. Samsung SDI | Fourth-quarter and full-year 2025 results

2026-02-02 · Korean; title translated
Company release: earlier Korean central-market orders and SBB 1.7 / 2.0 portfolio. Open source

07. LG Energy Solution / LG | LG Energy Solution releases 2026 second-quarter results

2026-07-30 / 2026-07-31 · English
Released 30 Jul; posted 31 Jul 2026. Global ESS and cell-to-software integration strategy. Open source

08. LG Energy Solution | Vertech signs large-scale ESS supply agreement

2024-11-14 · Korean; title translated
Company release: US Terra-Gen agreement; design, installation, maintenance and AEROS. Open source

09. LS ELECTRIC / LS Group | Groundbreaking for the Jeju Hallim ESS project

2025-04-24 · Korean; title translated
Company release: 2023 award; 10 MW / 40 MWh; EPC and 15-year O&M scope. Open source

10. SK eternix | Second-quarter 2026 results presentation

2026-08-13 · Korean; title translated
Printed pp. 4, 7 and 20: ESS scope, revenue recognition, Gasiri Grid Park roles and plans. Open source

11. Pacific Northwest National Laboratory | Energy Storage Cost and Performance Database: LCOS Estimates

v2024 / as of 2026-10-25 · English
v2024 methodology, as of 25 Oct 2026: lifecycle costs; no US cost inputs used. Open source

Company plans and outlooks refer to the date of the release. Structural conclusions and illustrative calculations are TradeLens analysis.

15 / METHODOLOGY & USE

Methodology, disclaimer and use

Verified facts, company statements and plans, TradeLens analysis and illustrative assumptions are separated.

Item	Basis
Analysis date	25 October 2026. Tender notices of 22 September, official briefing material and the 14 October notice. [2] [3] [4] [5]
Scope and units	Korean ESS central contracts. MW versus MWh; tenders, awards and commissioning are distinct. The 15 / 25 years refer to trading periods.
Jeju chart · p.5	Monthly B=100, A>=0. A<=B: F=A; B<A<=3B: F=B+0.25(A-B); A>3B: F=1.5B+(A-3B). Separate contract settlement excluded.
Model A · p.10	R=100pqf; residual cash=R-operating outflows-debt service. Common cash scale and full-period effects; not earnings or distributable cash.
Model B · p.11	100r/[1-(1+r)^(-n)]. Equal recovery of capital and required return. No operating, tax, replacement, inflation or residual-value effects; do not add to A.
Companies / cash	Prior and overseas cases are separate from this tender. Unpublished volumes, prices, margins and actual financing terms are not estimated.

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