RMI | Global Energy Alliance *for people and planet*

Making BESS Investable

How policy, procurement, and market design translate project pipelines into operational battery energy storage system fleets and sustained deployment

Report / August 2026

About This Work

This report was developed by RMI as part of the Global BESS Consortium in partnership with the Global Energy Alliance for People and Planet. The Consortium supports countries in accelerating battery energy storage deployment through targeted technical assistance, regulatory support, implementation guidance, peer learning, and knowledge exchange. It also provides participating organizations with access to global best practices, technical resources, and engagement with industry through private sector platforms. The recommendations presented in this report draw on RMI's experience supporting policymakers, regulators, utilities, and system operators across Asia, Africa, and Latin America to strengthen grid flexibility, enable energy storage deployment, and advance reliable, affordable, and resilient power systems. Beyond this publication, RMI and the Global Energy Alliance continue to support governments in translating these concepts into implementation through activities such as battery energy storage system (BESS) roadmaps, economic viability assessments, procurement and market design, regulatory reform, and project deployment resources.

Organizations interested in strengthening grid flexibility or advancing battery energy storage deployment are encouraged to connect with RMI and the Global Energy Alliance to discuss opportunities for collaboration, including participation in the **Global BESS Consortium**, the **Regulatory Energy Transition Accelerator**, and other complementary initiatives.

About RMI

Rocky Mountain Institute (RMI) is an independent, nonpartisan nonprofit founded in 1982 that transforms global energy systems through market-driven solutions to secure a prosperous, resilient, clean energy future for all. In collaboration with businesses, policymakers, funders, communities, and other partners, RMI drives investment to scale clean energy solutions, reduce energy waste, and boost access to affordable clean energy in ways that enhance security, strengthen the economy, and improve people's livelihoods. RMI is active in over 50 countries.

About Global Energy Alliance

Global Energy Alliance for People and Planet is a global nonprofit that builds public, private and philanthropic partnerships to accelerate clean energy and economic opportunity. Founded in 2021 by The Rockefeller Foundation, IKEA Foundation and Bezos Earth Fund, we build the technical, financial and institutional foundations that make clean energy investable and scalable across emerging economies. Our work is anchored in two mutually reinforcing global pillars that together address the market fragmentation that has historically slowed down progress on energy access and economic development. Grids of the Future strengthens energy supply through AI-enabled, renewables-ready power grids. Powering Opportunity builds demand, helping people harness clean energy to power businesses, create jobs and drive economic growth. Together, these pillars create a reinforcing cycle of abundant energy and economic opportunity. With 130 projects across Africa, Asia and Latin America and the Caribbean, we are on track to reach 91 million people with clean energy, create or improve more than 3 million jobs and prevent nearly 300 million tons of carbon emissions. For more information, please visit **www.energyalliance.org** and follow us on LinkedIn.

Authors and Acknowledgments

Authors

Drew Beyer
Tony Chen
Genevieve Lillis
James Sherwood

Authors listed alphabetically. All authors from RMI unless otherwise noted.

Contacts

Genevieve Lillis, genlillis@rmi.org
James Sherwood, jsherwood@rmi.org

Copyrights and Citation

Genevieve Lillis, James Sherwood, Drew Beyer, and Tony Chen, *Making BESS Investable: How policy, procurement, and market design translate project pipelines into operational battery energy storage system fleets and sustained deployment,* RMI, 2026, **https://rmi.org/resources/procuring-grid-flexibility**.

Acknowledgments

The authors would like to extend special acknowledgment to the following individuals for their contributions to the development of this report:

Daniel Casas Bautista, Inter-American Development Bank
Benny Bertagnini, RMI
Janela Cantre, RMI
Elijah Cohen, California Public Utilities Commission
Julian Eduardo Gonzalez, IDB Invest
Eshan Gupta, RMI
Diego Angel Hakim, RMI
Dave Maggio, E3
Damola Omole, Global Energy Alliance for People and Planet
Atsumasa Sakai, Asian Development Bank
Nirmal Shaju, Global Energy Alliance for People and Planet
Anamika Singh, California Public Utilities Commission
Kriti Singh, RMI
Deepthi Valsan, Global Energy Alliance for People and Planet
Brandt Vermillion, Modo Energy

Table of Contents

About the cover

South Asia's first stand-alone utility-scale BESS project in Kilokari, India.

Introduction

Power systems are evolving rapidly, and flexibility is increasingly critical to maintain reliable and affordable service. This report provides decision makers with a simple framework and specific actions that can enable development of new, flexible resources to meet these goals.

Battery energy storage systems (BESS) are emerging as one of the most versatile and cost-effective technologies for providing that flexibility, given their ability to support resource adequacy, system balancing, and system stability across multiple timescales.

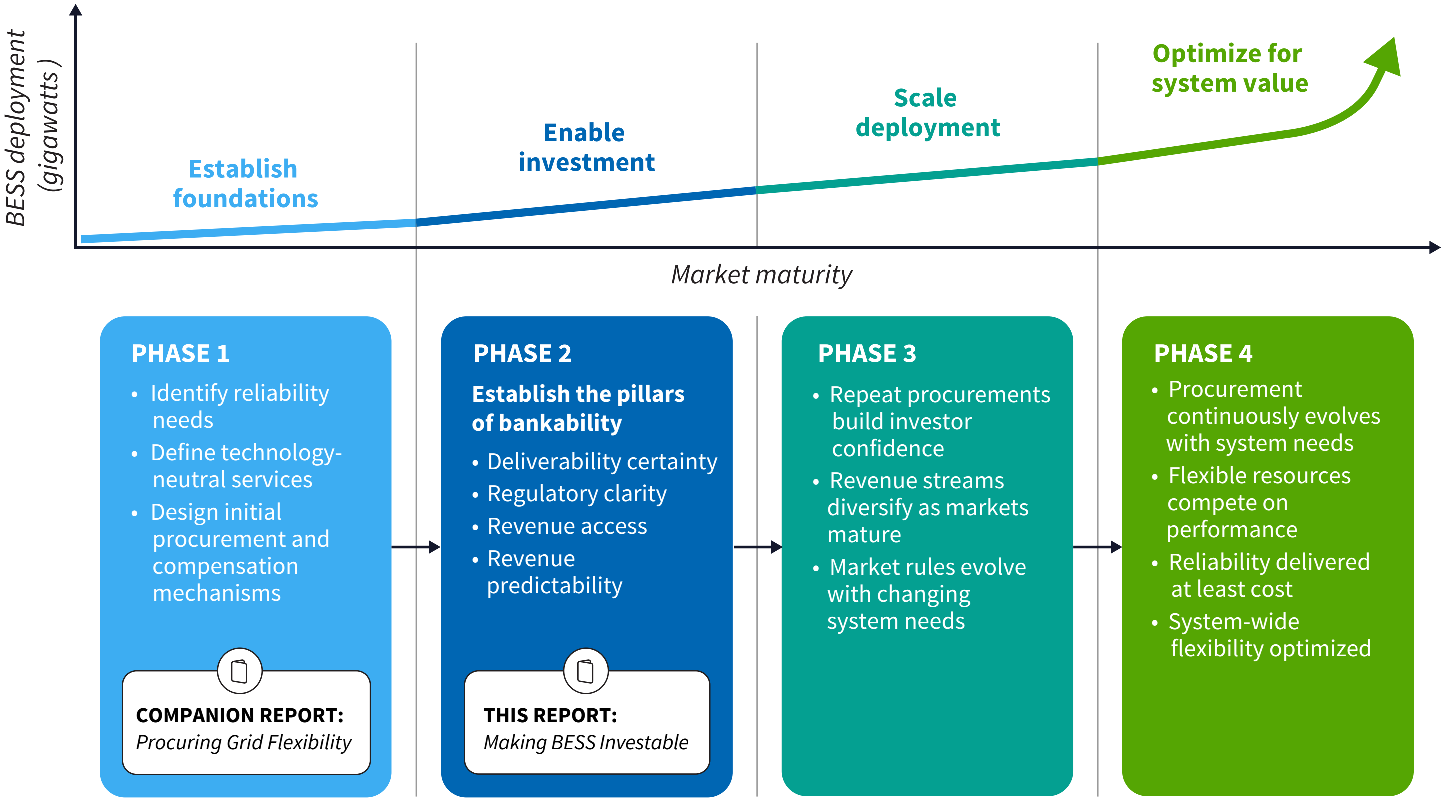
In response, many countries have begun building the technical and regulatory foundations needed to enable BESS deployment. Policymakers and regulators are defining flexibility services, updating market rules and grid codes, and launching pilots. These reforms are successfully stimulating project pipeline and investor interest. The next challenge is creating the conditions for projects to consistently reach commercial operation.

Although technical pathways are increasingly well established, projects often still lack the combination of delivery certainty, revenue opportunities, and long-term revenue confidence to attract investment and achieve financial close. These challenges manifest differently across market structures and institutional contexts, but they ultimately delay financial close, increase financing costs, and slow deployment. International experience shows that BESS deployment does not scale in response to a single policy or procurement. Successive regulatory, commercial, and financing reforms strengthen investor confidence by improving project delivery certainty, expanding revenue opportunities, and increasing confidence that projects can generate durable revenues over their lifetime.[1] As these conditions strengthen, more projects reach financial close and commercial operation, which creates a positive reinforcement cycle wherein successful deployment builds investor confidence, informs future reforms, and enables the next wave of investment.

The challenges outlined above can be mitigated through a structured approach to BESS market development through four phases (Exhibit 1). Early reforms establish the technical and market foundations needed for BESS participation, while subsequent reforms strengthen the regulatory, commercial, and financing conditions required for bankable projects and sustained deployment.

Exhibit 1 **Phases of BESS market development and associated publications**

Market development follows a progression, with procurement and commercial reforms reinforcing one another as deployment expands.



RMI Graphic. Source: RMI; Clean Air Task Force

This report focuses on **Phase 2** by examining the regulatory, commercial, and financing conditions needed for projects to reach financial close and deployment at scale. It assumes that priority flexibility needs have been identified through system planning and reliability assessments. Lessons from markets around the world illustrate how the conditions described evolve over time and enable subsequent phases of market development.

Questions such as how much storage is needed, where it should be located, and what duration is required should be addressed in Phase 1. For details on **Phase 1**, see the complementary report *Procuring Grid Flexibility*, which focuses on identifying flexibility needs, defining grid services, and establishing the technical and regulatory foundations for BESS participation.[2]

Phases of BESS Market Development

Building on the framework presented in *Powering Flexibility in Transitioning Grids*, countries can be viewed as progressing through four broad phases of BESS market development (see Exhibit 1). Although a small number of jurisdictions have reached sustained, market-driven deployment, most countries (including many advanced economies) remain focused on establishing the foundations for deployment and creating the conditions for investable projects.

During Phase 1, policymakers establish the foundation for BESS deployment by defining priority system needs, translating those into grid services, and creating initial procurement and compensation pathways like pilots and regulatory sandbox environments to launch early projects and build operational experience.

Phase 2 builds on these foundations by strengthening four pillars of bankability — **delivery certainty, regulatory clarity, revenue access, and revenue predictability** — to create the conditions needed for projects to reach financial close and be deployed at scale. Case studies from the Philippines and India demonstrate how progress across these four pillars is moving projects closer to bankability.

Case Study: Philippines

In 2024, the Philippines established a spot market for ancillary service reserve products, improving procurement efficiency and expanding revenue opportunities for BESS.[3] These reforms have helped build a pipeline of more than 5.7 gigawatts (GW) of integrated renewable energy and storage systems.[4] Approximately 2.7 GW of this pipeline remains at early stages of deployment, not yet reaching financial close. Stakeholders have identified constraints including delays in planned ancillary service procurement, grid infrastructure limitations, and limited revenue opportunities beyond reserve services. A forthcoming Philippines Energy Storage System (ESS) Roadmap is expected to clarify expanded participation pathways and strengthen investment conditions.

Case Study: India

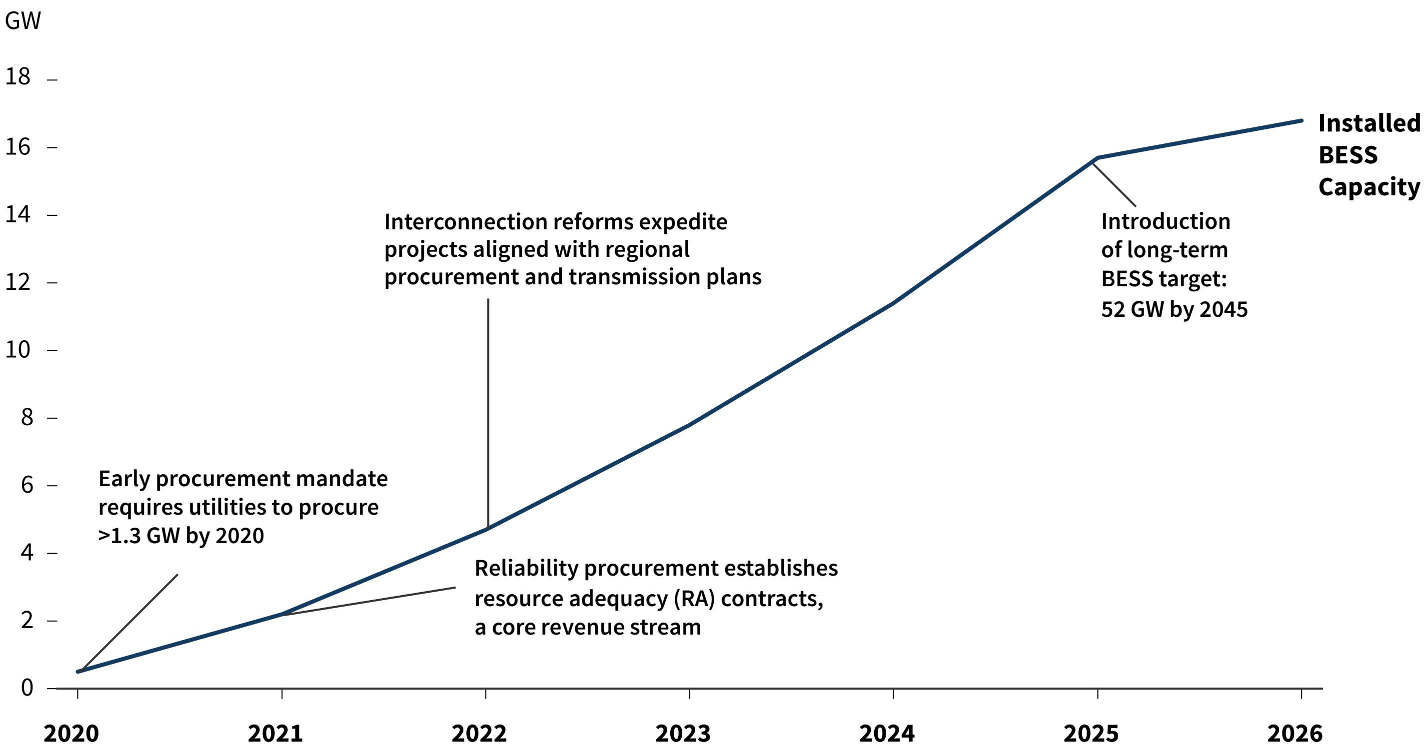
The bulk of recent capacity additions on India's grid are solar, which is creating a "duck curve" effect — midday oversupply and sharp evening ramping. India's 2023 National Framework for Promoting Energy Storage Systems and inclusion of BESS in the Harmonized Master List of Infrastructure have established a clear regulatory foundation for investment.[5] Cumulative installed battery storage capacity reached 5.9 gigawatt-hours (GWh) by March 2026.[6] Despite significant procurement activity, financing, implementation, and delivery risks have constrained projects or prevented them from reaching financial close. The Central Electricity Authority is now developing the next phase of India's energy storage roadmap, informed by the National Workshops in spring 2026, to strengthen investment conditions and support sustained deployment.[7]

With bankable conditions in place, sustained deployment in **Phase 3** reinforces investor confidence, improves delivery efficiency, and sustains market growth. As markets mature, diversified revenue streams help maintain project bankability, while policymakers adapt market rules and operational frameworks to reflect new system conditions. Case studies from US states California and Texas illustrate different pathways to scale across distinct market contexts. Rather than a fixed sequence, these examples illustrate that successful market development is iterative as institutional capabilities advance.

Case Study: California

The California Independent System Operator (CAISO) has added over 16 GW of BESS since 2020, as shown in Exhibit 2.[8] Enabling and expanding BESS revenue streams through energy and ancillary service co-optimization in Phase 2 created conditions for revenue sufficiency that mobilized early investors. It also enabled long-term resource adequacy contracts under mandatory state procurement orders, interconnection reforms, and state-level decarbonization targets to provide continued demand certainty, which helped scale investments.[9]

Exhibit 2 **BESS growth in California is enabled by policies and targets**

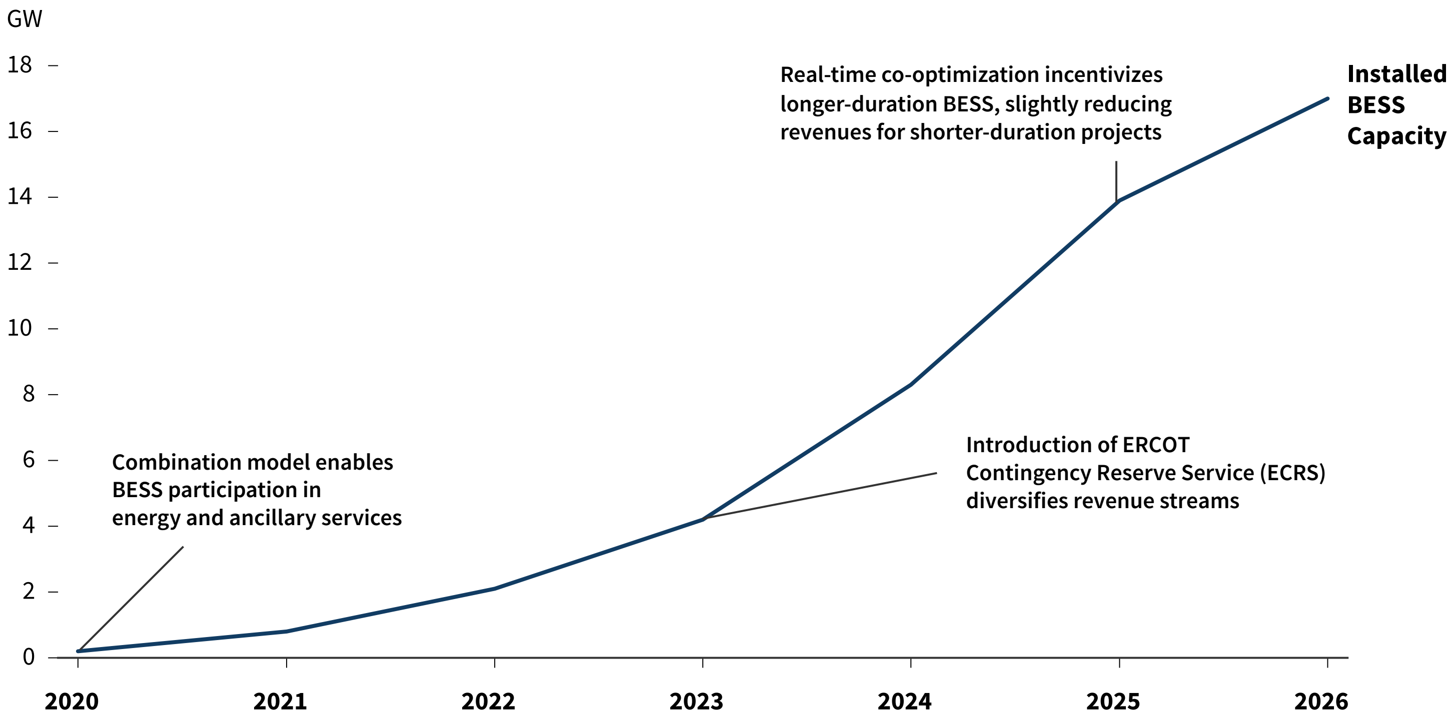


RMI Graphic. Source: U.S. Energy Information Administration (EIA), RMI analysis

Case Study: Texas

Exhibit 3 shows that during the same timeframe the Electric Reliability Council of Texas (ERCOT) integrated 17 GW of BESS.[10] ERCOT's competitive price signals and robust interconnection processes created conditions for project bankability. Expanded market opportunities in contingency reserve and real-time co-optimization better integrated storage into real-time system operations, sustaining BESS deployment at scale without a state-imposed mandate.[11]

Exhibit 3 BESS growth in Texas is driven by market design reforms

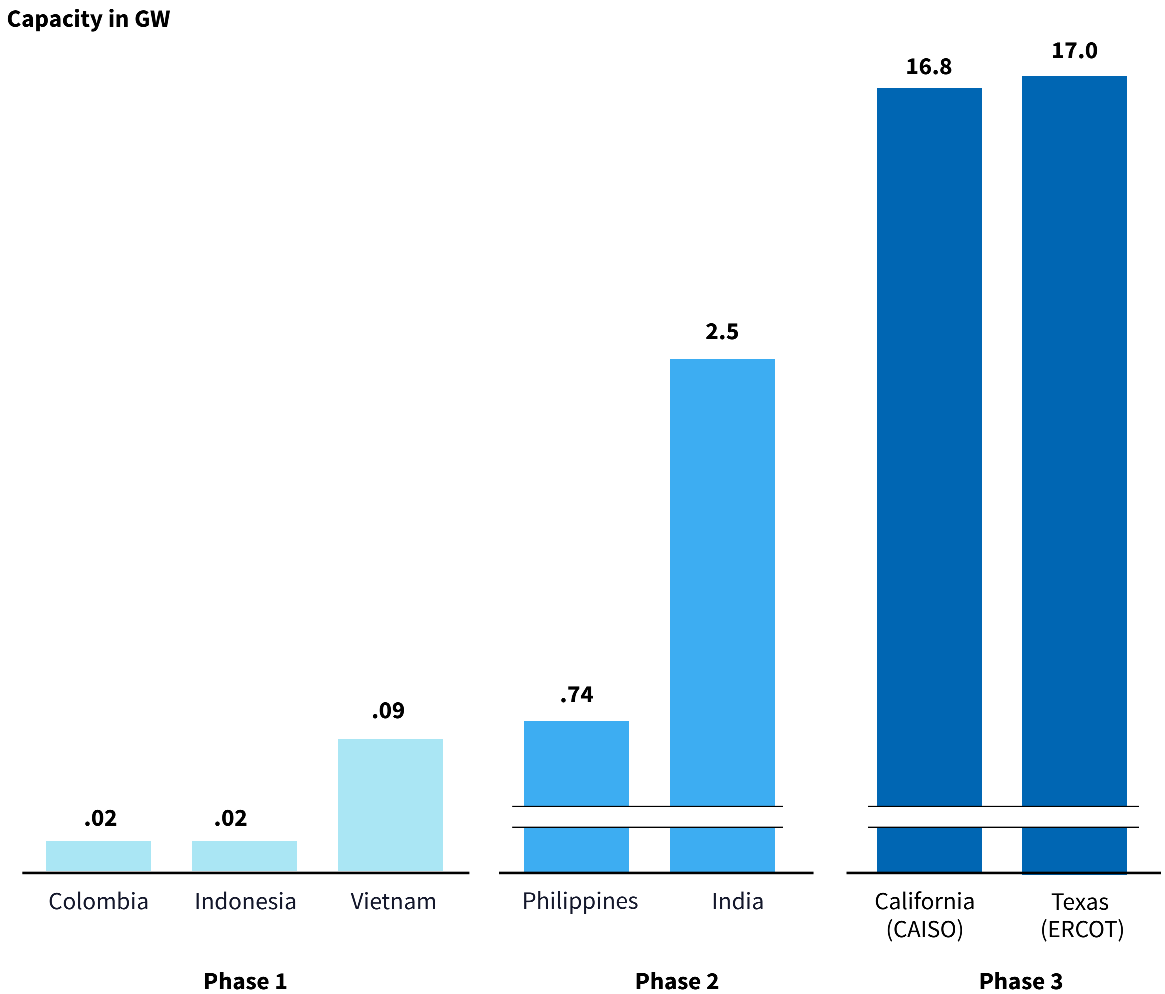


RMI Graphic. Source: U.S. Energy Information Administration (EIA), RMI analysis

---

Few, if any, markets have reached **Phase 4** where BESS is fully integrated into system and market operations. Rather than a distinct end state, this phase reflects the continued evolution of market rules, planning processes, and operational frameworks as system needs continue to change. Exhibit 4 illustrates this market development pathway and representative jurisdictions at each stage.

Exhibit 4 Operating BESS capacity by country and phase (2026)



Note: Indonesia = 35 megawatt-hours published, assumed two-hour duration for 17.5-megawatt capacity; India = 8.7 GWh published, assume 3.5 hour average duration for 2.5 GW installed capacity. Colombia: Formal reporting does not yet exist in this nascent BESS market. Recent research estimates installed BESS capacity between 15 and 20 megawatts (MW). Vietnam: Published estimates of BESS deployment are under 100 MW. Philippines: Installed battery storage capacity deduced from maximum wholesale electricity spot market (WESM) commitment by resource.

RMI Graphic. Source: **Mediavilla et al**, **Vietnam News**, **Institute for Essential Services Reform**, **Mercom India**, **Independent Market Operator of the WESM**, **ERCOT**, **California Energy Commission**, RMI analysis

Getting to Phase 2: Enabling Investment and Project Bankability

Gas-insulated switchgear at the BESS facility in Kanengo, Lilongwe, Malawi.

Four pillars of bankability

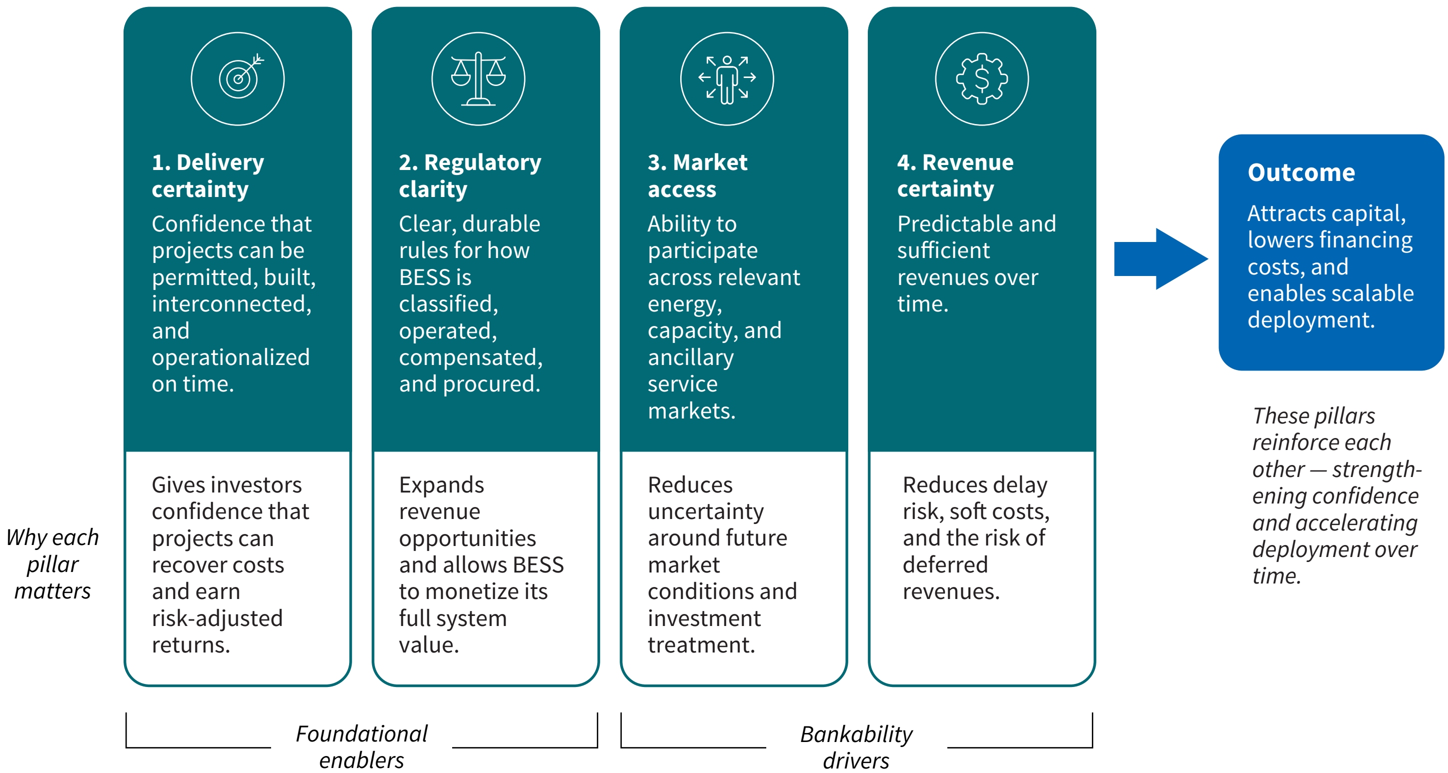
Two factors are key to determining whether a project ultimately gets built. The first is **economic viability** — whether expected revenues are enough to recover a project's costs and deliver an acceptable return. The second is **bankability** — whether investors and lenders are confident enough that the project can be built, connected, and operated as planned, and that those revenues will materialize.

A project can be economically viable yet still fail to reach financial close if investors and lenders lack confidence that revenues will be realized. This is particularly common where projects rely on merchant revenues, which lenders typically discount because of the uncertainty of those revenues. Economic viability and bankability are closely connected through the cost of capital. Projects perceived as less risky can access financing on more favorable terms, reducing the revenues required to recover investment.
In many emerging economies, broader investment conditions, including offtaker creditworthiness, foreign exchange risk, and limited access to affordable capital, can constrain investment even where market rules are sound. Complementary financing instruments that address these challenges are discussed later in this report (see page 20).

The framework presented in Exhibit 5 organizes these considerations into four interrelated pillars of bankability — delivery certainty, regulatory clarity, revenue access, and revenue predictability. Together, these pillars influence the risks investors and lenders price into a project, which affects financing costs, access to capital, and therefore the pace and scale of BESS deployment. Because BESS is capital-intensive, with most costs incurred upfront, even modest reductions in perceived risk can materially improve economics.

Exhibit 5 **The four pillars of bankable BESS investment**

Four reinforcing conditions that build investor confidence, lower risk, and enable scalable BESS deployment.



RMI Graphic. Source: Clean Air Task Force, RMI Analysis

Although presented separately, the four pillars of bankability reinforce one another: Gaps or weaknesses in one area can constrain investment even where other enabling conditions may appear relatively mature. For example, a market with strong revenue potential may still fail to attract capital if interconnection is unreliable. Similarly, efficient project delivery cannot compensate for unclear remuneration, narrow market access, or unstable regulatory treatment.

In competitive markets, bankability often hinges on whether private developers can secure firm revenues and broad market access. In vertically integrated and single-buyer systems, bankability depends on whether procurement arrangements and cost-recovery mechanisms provide sufficient confidence for utilities, independent power producers (IPPs), and lenders to finance projects. Prioritizing foundational pillars such as delivery certainty and regulatory clarity can help establish the conditions for early-stage market growth, with additional reforms introduced as markets mature.

Key stakeholders welcome Malawi's Minister of Energy, Hon. Dr. Jean Mathanga, at the commissioning of the BESS facility in Kanengo, Lilongwe.

Common bankability risks and policy solutions

The specific constraints differ across competitive, vertically integrated, and hybrid power systems. A practical first step is to identify the local policy, regulatory, and market conditions that present the greatest barriers to deployment. The questions below provide a starting point:

- **Delivery certainty:** Are the permitting, interconnection, supply chain, and workforce conditions in place to enable BESS projects to be delivered on time and at scale?
- **Regulatory clarity:** Are the rules governing BESS classification, ownership, charging, cost recovery, and participation clear and durable?
- **Revenue access:** Can BESS provide and be compensated for the services the power system needs most, through competitive markets, regulated procurement, or utility contracting arrangements?
- **Revenue predictability:** Do existing market and procurement arrangements provide sufficient, predictable, and durable revenues — including through creditworthy counterparts and long-term arrangements — to support investment?

  The following section examines each pillar. We summarize the underlying investment challenge, and outline policy and market design considerations that can strengthen project bankability. The solutions presented are not intended to be exhaustive or sequential, but rather illustrative of the types of reforms that can be prioritized based on local market conditions and institutional capacity.

Delivery certainty

Confidence that developers can secure permits, build projects, connect them to the grid, and bring them into operation on time mitigates risk of deferred revenues and lowers soft costs. Exhibit 6 highlights key sources of delivery risk and actions that can improve the predictability and efficiency of project delivery.

Exhibit 6 **Decision support for delivery certainty: Risk assessment and solutions**

Issue	Assessment	Solution
Permitting process	Are permitting processes clear, predictable, and efficient so that approvals do not delay construction?	Design permitting processes with clear agency responsibilities, predictable permitting decision timelines, standardized safety review processes, and streamlined review for projects located in priority grid locations.
Interconnection process	Are interconnection processes sufficiently clear, efficient, and predictable for projects to reach commercial operation within expected timelines?	Use reforms such as batch studies, transparent interconnection and project approval processes, published hosting capacity data, prioritization mechanisms for projects that address identified system needs, and enforceable study timelines to address interconnection backlogs.
Technical integration	Are developers able to efficiently satisfy the technical requirements needed for safe grid integration and market participation?	Standardize grid code requirements and processes like telemetry, dispatch, settlement, metering, commissioning, performance testing, and state-of-charge management to improve safety, reduce uncertainty, and improve deployment efficiency. Create support resources for new developers like technical standards and engineering guides to navigate complex integration processes.
Supply chain efficiency	Are contractors and skilled labor available and able to deliver projects on schedule? Are project components sourced within reliable timeframes and cost expectations?	Invest in transmission and distribution planning, development of a skilled labor force, and policies that provide stability and predictability to import tariffs or domestic content requirements to alleviate labor and technical delivery risk in both competitive and single-buyer markets.
Administrative standardization	Do procurement and contracting processes create unnecessary delays because documentation and commercial terms are developed on a project-by-project basis?	Use tender document standardization, model contracts, and dedicated transaction support to accelerate administrative processes and shorten the time from tender launch to financial close.

RMI Graphic. Source: RMI analysis

Case Study: Great Britain

Great Britain demonstrates how interconnection reforms can improve delivery certainty by prioritizing projects that are both development-ready and aligned with system need. Between 2022 and 2024, the National Energy System Operator's (NESO) interconnection queue grew from 10 GW to 50 GW, with speculative projects delaying viable projects into the late 2030s.[12] In 2025, the national energy regulator, Ofgem, approved NESO's Target Model Option 4+ reforms, replacing the "first-come, first-served" approach with a "first ready and needed, first connected" framework. Projects are now assessed based on their development readiness — including land rights and planning progress — and their contribution to future system needs, as determined by NESO's forecast.[13] The reforms reduced the volume of BESS projects progressing through the queue by approximately 45%, improved delivery certainty, and reduced financing risk.[14]

Regulatory clarity

Clear, durable rules for how BESS is classified, owned, operated, compensated, and procured reduce uncertainty around future market conditions and investment treatment. Exhibit 7 provides a framework for assessing key sources of regulatory uncertainty and identifying actions to address them.

Exhibit 7 Decision support for regulatory clarity: Risk assessment and solutions

Issue	Assessment	Solution
Tariff clarity	Is the regulatory treatment of storage as a load, generator, or other class of resource clearly defined?	Establish explicit rules governing charging, discharging, network fees, and operational classification to improve cost and revenue transparency.
Demand signals	Do policy and regulatory signals provide sufficient confidence that demand for BESS will persist over time?	Publish procurement roadmaps, recurring procurement mechanisms, and long-term flexibility targets, and formally integrate BESS into generation, transmission, and flexibility planning to find least-cost solutions and send durable demand signals to the market.
Accreditation	Do accreditation methodologies reflect BESS technical capabilities and power system reliability needs?	Develop accreditation rules that recognize storage duration, availability, state-of-charge management, and performance during system stress events to align incentives with system need.
Ownership and cost recovery	Are ownership models and cost-recovery pathways for BESS clearly defined and understood by utilities and developers?	Clarify ownership structures, preserve preexisting protections for bilateral contracts where appropriate, and establish transparent cost-recovery mechanisms to support investment in both competitive markets and single-buyer systems.
Market participation	Are current and evolving market participation rules for flexibility resources clearly defined?	Define eligibility criteria and participation rules for each market product. Publish pathways and timelines for expanding procurement of new flexibility products.
Data transparency	Do developers have access to the system, market, and planning data needed to evaluate project opportunities and model revenues reliably?	Publish historical system and market data to ensure visibility into grid conditions — including system balancing (e.g., frequency deviations, reserves), congestion and network constraints, curtailment and dispatch, market activity, demand-supply dynamics, and asset outages. Together with transmission and generation planning information, this improves project siting and revenue assessments.
Institutional coordination	Do institutions have structured processes to coordinate planning and decision-making internally and across organizations?	Establish dedicated task forces or regulatory working groups that bring together technical experts and decision makers to identify and resolve implementation challenges, coordinate reforms, and improve transparency for market participants.

RMI Graphic. Source: RMI analysis

Case Study: Chile

Chile demonstrates how regulatory clarity is built through successive reforms. Legal recognition established an important foundation while continued refinement of market rules and technical regulations provided certainty for larger-scale investment.

Chile is now one of Latin America's leading BESS markets with more than 1 GW of storage either operational or under construction. Since 2016, Chile has progressively integrated storage into its electricity framework by enabling participation in system operations and ancillary services, incorporating storage into transmission planning, and recognizing its contribution to capacity adequacy. In 2022, Chile established clear rules for energy and capacity market participation, operational requirements for interconnection, and charging rules. Supreme Decree (DS) 70, adopted in 2024, further clarified storage participation in capacity markets and charging treatment.[15] Ongoing reforms continue to refine operational rules, transparency of arbitrage valuation, interconnection procedures, congestion management, and network service treatment.[16]

Case Study: India

India demonstrates how classification, procurement, and financing reforms can be layered to build regulatory clarity in a predominantly single-buyer market.

Beginning in 2022, India's Ministry of Power introduced standardized procurement guidelines, including model Battery Energy Storage Purchase Agreements (BESPAs) and a risk-sharing framework for utility procurements. BESPAs enabled an array of contract structures including tolling arrangements, renewables-plus-storage power purchase contracts, and market-based ancillary service contracts.[17] Later that year, new electricity rules formally recognized BESS as a distinct power system asset, while the Harmonized Master List of Infrastructure improved access to institutional credit and concessional financing that lowered borrowing costs.[18] In 2023, these reforms were consolidated under the National Framework for Promoting Energy Storage Systems, which provided greater clarity to investors.[19]

Revenue access

Enabling BESS to provide, and be compensated for, the full range of services it is technically capable of delivering (including energy, capacity, and ancillary services) expands revenue opportunities and allows BESS to monetize its full system value. Exhibit 8 provides a framework for assessing barriers to revenue access and identifying actions to address them.

Exhibit 8 **Decision support for revenue access: Risk assessment and solutions**

Issue	Assessment	Solution
Revenue stacking	Can BESS provide and be compensated for multiple complementary services without conflicting operational or contractual obligations?	Implement procurement and market rules that enable BESS to revenue stack across energy, ancillary, and capacity markets where operationally feasible while avoiding double counting the same capacity or service obligation.
Product definitions	Do product definitions, qualification criteria, and accreditation methods reflect the operational capabilities of flexibility resources, including BESS?	Align product definitions, qualification requirements, and accreditation methods with flexible resource capabilities including ramp speed, duration, and availability.
Technical standards	Do technical standards recognize and value inverter-based services, including ancillary services, where they are needed?	Update technical standards and procurement frameworks to incentivize inverter-based resources to provide grid services (e.g., frequency response, fast frequency response, reactive power support).
Non-competitive markets	Do bilateral procurement contracts recognize the full range of BESS operational capabilities?	Design procurement frameworks and contracts that value reliability services being procured, even when competitive energy or ancillary markets do not exist.

RMI Graphic. Source: Renewable Energy Focus, RMI analysis

Case Study: Taiwan

Taiwan demonstrates how ancillary service markets can catalyze an initial wave of BESS deployment, but also how rapid market saturation can undermine investment if additional revenue pathways are not developed in parallel.

Taiwan's island grid is not interconnected with other power systems and faces growing frequency management needs associated with increasing renewable penetration. In response, the Ministry of Economic Affairs and Taiwan Power Company (Taipower) launched an Energy Trading Platform in 2021, opening day-ahead fast frequency regulation markets to batteries. In 2022, Taipower introduced enhanced dynamic regulation, which compensated BESS operators for both frequency management and load shifting.[20] The new ancillary service products catalyzed rapid BESS deployment but the market quickly became saturated, which compressed revenues and weakened project economics.[21] To meet its 5.5 GW storage capacity target by 2030, Taiwan may need to expand revenue opportunities to maximize asset utilization and drive additional investment.[22]

Revenue stacking

Enabling BESS to earn revenues from multiple services is foundational to both economic viability and bankability. Few stand-alone projects are economically viable on a single revenue stream alone. Implementing revenue stacking requires market rules that allow asset owners to optimize across multiple revenue streams while ensuring system operators can still rely on contracted services, where applicable. As countries introduce revenue stacking, regulators and system operators typically address four design questions that establish (1) **service eligibility**, (2) **service prioritization**, (3) **capacity reservation**, (4) **service attribution and verification**.

As shown in Exhibit 9, Great Britain's NESO provides one example of how these design questions can be translated into operational rules for revenue stacking.[23]

Exhibit 9

NESO case study: Translating revenue stacking design questions into operational rules

Design questions	NESO example
1. Service eligibility: Which services can be provided by the same asset without compromising reliability? Multiple services may be stacked either *sequentially*, where an asset switches between services over time but is remunerated for only one service in each settlement interval, or in *parallel*, where an asset may simultaneously provide multiple compatible services and be remunerated within the same settlement interval.	NESO allows frequency response services (including dynamic containment, dynamic moderation, dynamic regulation, and static firm frequency response), balancing/energy services, and inertia or stability services to be stacked in parallel where the provider can demonstrate independent deliverability, measurement, and settlement of each service without double counting.
2. Service prioritization: When a resource can provide multiple services, how should market rules determine service priorities, and how should those priorities be reflected in dispatch instructions, contractual obligations, and settlements?	Contracted obligations for frequency response take priority over balancing mechanism bids and offers. Absent a contracted obligation, relative product pricing can determine which services a BESS dispatches to.
3. Capacity reservation: How should market rules ensure sufficient capacity is reserved to meet contracted obligations while allowing remaining capacity to participate in other services? What mechanisms (such as capacity reservation requirements, availability requirements, penalties for non-performance, accreditation methodologies and dispatch rights) are needed to ensure contracted services are delivered?	Providers use maximum export and minimum import limits to protect committed capacity. Pricing mechanisms ("price offer bands") are also used to reserve capacity from balancing mechanism dispatch.*
4. Service attribution and verification: How should market rules distinguish and allocate services to ensure the same capacity or capability is not committed or compensated more than once? How should delivery of contracted services be verified? What monitoring, metering, and software capabilities are required?	NESO adjusts performance baselines and service-specific measurement methodologies (e.g., inertia calculation methodology) to distinguish the contribution of different services to BESS output and verify that each has been delivered.

*Offer price bands can be used to distinguish capacity available for balancing mechanism actions from capacity reserved to maintain delivery of contracted response services.

RMI Graphic. Source: RMI analysis

Several countries in Phase 1 or Phase 2 of their market development, including the Philippines and Colombia, have introduced regulatory frameworks that permit stacking multiple revenue streams and regulators are working closely with system operators to operationalize these frameworks. Australia, Texas, California, and Great Britain have operationalized frameworks that enable revenue stacking and continue to refine market rules as storage deployment grows.

Revenue predictability

Revenue predictability and sufficiency over time increase investor confidence that projects can recover costs and satisfy risk-adjusted return requirements. Exhibit 10 provides a framework for assessing key sources of revenue uncertainty and identifying actions to improve long-term revenue predictability.

Exhibit 10 Decision support for revenue predictability: Risk assessment and solutions

Issue	Assessment	Solution
Long-term contracts	When available, do firm contracts provide sufficient revenue predictability and contract duration to support project financing?	Use long-term, firm contracts to improve revenue visibility, reduce exposure to merchant volatility and lower financing costs. Where market saturation is a risk, contracted revenues can provide a durable foundation for project bankability. Examples include availability payments for tolling, ancillary services or capacity, and power purchase agreements or contracts for differences.*
Merchant risk	Are merchant revenue streams sufficiently predictable or supported by appropriate risk-allocation mechanisms to enable project financing?	Establish transparent price caps and floors when needed to preserve affordability and reliability based on publicly available market data. Use supplementary payments, and minimum revenue guarantees to improve revenue predictability as needed to allocate risk between developers and offtakers while preserving efficient market price signals.
Offtaker demand	Is long-term demand for BESS uncertain or insufficient to support investment?	Aggregate demand through auctions or tenders, and apply the credit risk mitigation tools above to support first-mover contracts, which can increase confidence that projects will secure reliable offtake.
Cost recovery	Where utilities own BESS, are cost recovery and remuneration arrangements sufficient?	Establish transparent cost-recovery mechanisms and utility financing arrangements to support investment and ensure utilities are compensated for the full range of services.

*Capacity accreditation methods should be aligned with system needs. Although capacity accreditation for BESS is prevalent internationally, the accreditation value of BESS has declined in some markets as storage capacity growth addresses acute system needs. Similar saturation trends are observed in ancillary service markets.

RMI Graphic. Source: RMI analysis

Case Study: Philippines

The Philippines demonstrates how a combination of contracted ancillary service and spot market revenue can establish early investor confidence while subsequent reforms expand revenue predictability.

The Philippines has deployed over 700 megawatts (MW) of storage capacity by combining contracted ancillary service procurement through ancillary service procurement agreements, which provides reserve contracts of up to five years, and includes participation in the spot reserve market.[24] The fourth round of the country's Green Energy Auction Program has also awarded 20-year supply contracts to ~1.2 GW of integrated renewable and ESS projects for delivery between 2026 and 2029, creating another contracted pathway for storage deployment.[25] Building on these foundations, the Department of Energy's ESS Circular DC2026-02-0008 introduced revenue stacking and directed the Energy Regulatory Commission to establish supporting rules, creating pathways for BESS to access multiple value streams across energy, ancillary services, and future products.[26]

Complementary financing instruments for development contexts

The case studies above focus on market and regulatory reforms. Complementary financing instruments are generally outside the remit of energy policymakers and regulators. However, they can be used in certain situations to further improve project bankability by addressing broader economy-wide challenges such as offtaker creditworthiness, foreign exchange risk, construction and operational risks, and limited access to commercial finance that can constrain investment. Although not comprehensive, the examples that follow illustrate how these types of financing instruments are increasingly being applied to BESS projects.

Credit enhancement: Sovereign guarantees and partial guarantees can improve access to commercial debt and reduce borrowing costs by mitigating borrower, payment, and counterparty risks. For example, GuarantCo's $27 million guarantee facility backs Africa GreenCo's payment obligations under long-term power purchase agreements (PPAs), providing credit enhancement that reduces offtaker risk for IPPs and their lenders. The facility is expected to support 200–300 MW of renewable energy across the Southern Africa Power Pool. Building on this model, Africa GreenCo has also launched procurement for a 25 MW/100 megawatt-hour (MWh) BESS system in Zambia.[27]

Political and sovereign risk: Political risk insurance and guarantees can reduce investors' exposure to non-commercial risks including political violence, breach of contract, or expropriation. In 2026, the Multilateral Investment Guarantee Agency, part of the World Bank Group, provided almost $1.5 billion in guarantees to AMEA Power Ltd., covering a portfolio of 23 renewable energy and battery storage projects across Africa, the Middle East and Asia.[28]

Foreign exchange risk mitigation: Several mechanisms can reduce currency mismatch by aligning or hedging debt obligations against project revenues, including local-currency lending, tariff structures that account for foreign-exchange exposure, and currency-hedging facilities offered by development finance institutions. For example, the International Finance Corporation and Climate Investment Funds provided $55 million in long-term rupee-denominated financing for IndiGrid's 180 MW/360 MWh stand-alone BESS project in Gujarat. The locally denominated combined financing structure reduced foreign exchange risk and lowered the cost of capital.[29] Where local currency lending is unavailable, institutions such as the Currency Exchange Fund provide long-term hedging that converts hard currency debt into local currency denominated repayment obligations for borrowers, which shifts foreign exchange risk from borrowers to the hedging provider.[30]

Blended and concessional finance: Concessional finance can improve project affordability by reducing financing costs and crowding in commercial investment. For example, the African Development Bank combined a €12.6 million loan with €7 million in concessional financing from the Sustainable Energy Fund for Africa to support Cabo Verde's Cabeólica Phase II Wind and Battery Project. The blended financing package enabled a 20-year power purchase and storage services agreement with the national utility, Electra S.A., at tariffs significantly lower than the national average generation cost.[31] This approach demonstrates how concessional finance can make BESS offtake commercially viable for a small, financially constrained utility.

Export credit support: Export credit agencies can also help to mobilize commercial financing for BESS projects by reducing lender risk and supporting equipment exports. In 2025, the Japan Bank for International Cooperation co-financed two solar and storage projects in Uzbekistan totaling 1,000 MW of solar and 1,336 MWh of battery storage. Nippon Export and Investment Insurance provided insurance for more than $400 million of the commercial loans, reducing financing risk and supporting the participation of Japanese companies in project delivery and long-term project operations.[32]

The applicability of these instruments varies by jurisdiction, reflecting differences in market maturity, capital market development, and broader institutional capacity. The examples shared are illustrative rather than comprehensive and demonstrate how financing instruments can complement regulatory reforms to improve project bankability. As BESS deployment scales, further work is needed to adapt these approaches to storage-specific financing risks.

Prioritizing Phase 2 Actions

Few countries have the capacity or need to simultaneously pursue all reforms and solutions outlined in the four pillars. Exhibit 11 provides an indicative framework for prioritizing and sequencing bankability solutions, grouping actions as "foundational," "expanded," and "advanced" based on factors such as institutional capacity, market maturity, and technical capability. The sequence is a guide, not a prescription. Decision makers should prioritize the most actionable and impactful solutions for their immediate market context, and draw on experience, tools, and approaches developed in other jurisdictions.

Exhibit 11 **Indicative sequencing of BESS bankability solutions**

FROM PHASE 1 → **INTO PHASE 3**

	Foundational actions	Expanded actions	Advanced actions
1. Delivery certainty	**(A)** Standardize tender documents, model contracts, and transaction support. **(B)** Provide stable and predictable import-tariff and local-content policies.	**(A)** Design permitting processes with jurisdictional clarity, firm deadlines, and standardized or streamlined review for optimal sites. **(B)** Standardize grid codes and processes (telemetry, dispatch, metering, commissioning, testing). **(C)** Integrate flexible resources into transmission and distribution planning to initiate most impactful projects.	**(A)** Develop support resources for new developers that include technical standards and engineering guides. **(B)** Reform interconnection such as batch studies, hosting capacity data, enforceable study timelines, and prioritization of high-impact projects. **(C)** Build skilled labor force through hands-on experience and successive deployments.
2. Regulatory clarity	**(A)** Define regulatory classification and tariff treatment for BESS (charging, discharging, network fees). **(B)** Clarify ownership models and transparent cost-recovery pathways. **(C)** Establish dedicated task forces or working groups that bring together regulators, system operators, utilities, and technical experts to coordinate implementation and resolve integration challenges.	**(A)** Define product eligibility and participation rules. **(B)** Publish procurement roadmaps and long-term flexibility targets. **(C)** Integrate BESS into least-cost planning processes.	**(A)** Pursue dynamic, performance-based accreditation (considering duration, availability, state-of-charge, stress performance). **(B)** Publish comprehensive system and market data transparency to enable advanced participation and revenue modeling.
3. Revenue access	**(A)** Align product definitions, qualification, and accreditation with BESS capabilities. **(B)** Design contracts that value diverse flexibility services, including where competitive markets do not exist.	**(A)** Enable revenue stacking across accessible markets like energy, ancillary services, and capacity.	**(A)** Create products for inverter-based grid services like synthetic inertia, fast frequency response, and reactive power.
4. Revenue predictability	**(A)** Introduce long-term firm contracts aligned with system needs like PPAs, contracts for difference, tolling, or availability/capacity payments. **(B)** Enable transparent cost recovery for utility-owned BESS.	**(A)** Consider price caps/floors and use supplementary payments and minimum revenue guarantees to reduce merchant risk. **(B)** Aggregate system demand for procurement processes.	**(A)** Implement probabilistic accreditation methods for capacity-eligible technologies.

RMI Graphic. Source: RMI analysis

Pathways to Phase 3

The four pillars of bankability are intended to help countries move beyond isolated projects and establish the conditions for sustained investment. As markets mature, project delivery and demonstrated revenue performance attract progressively broader pools of capital with lower risk tolerance, reinforcing deployment at scale.

California and Texas in the United States represent relatively mature examples of large-scale BESS deployment under two different market structures. Although both markets benefited from access to deep pools of private capital willing to finance early deployments, their experience illustrates how successive market reforms, evolving revenue models, and growing investor confidence can progressively expand access.

The California example

Diversified, stackable, and state-mandated revenue streams established the market, while long-term contracts, interconnection reforms, and continued market refinements sustained growth. This helped CAISO reach 17 GW of operational BESS while lowering wholesale prices, which reduced renewable curtailment and reliance on natural gas.[33]

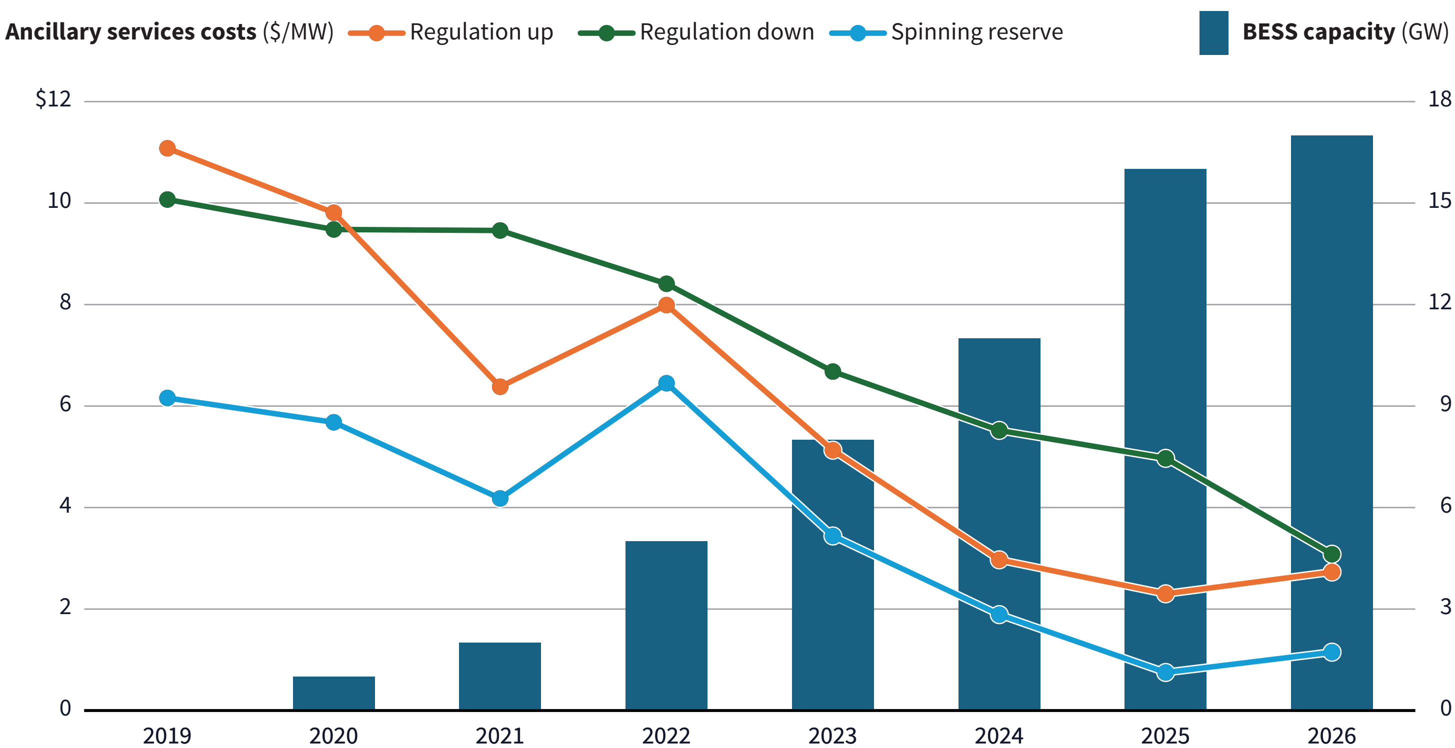
Enabling the market and early investment (Phases 1–2, 2010–20): CAISO's 2013–14 duck curve and flexible resources analysis highlighted operational flexibility needs associated with rapid solar deployment.[34] In response, California established an energy storage procurement target requiring investor-owned utilities to procure more than 1.3 GW of storage by 2020, relative to the 47 GW peak load.[35] Throughout the mid-2010s, CAISO progressively expanded market participation rules, enabling BESS to participate and co-optimize across energy, resource adequacy, and ancillary service markets. CAISO also introduced day-ahead bidding and additional participation pathways for distributed energy resources.[36]

Scaling up (Phase 3, 2020–current): California's early resource adequacy framework initially accredited BESS with more than four hours of discharge duration at 100% of installed capacity. Beginning in 2021, California's Public Utilities Commission transitioned to an effective load carrying capability (ELCC) methodology that assigns accreditation values based on each resource's expected contribution to system reliability and mandates utilities to procure certain volumes of firm capacity through CAISO's mid-term reliability orders. Although this diminished the accredited capacity value of BESS projects over time (from 96% in 2023 to 69% in 2026), publishing a transparent forward accreditation trajectory for the state-mandated reliability procurements provided investors with greater certainty regarding the future evolution of the resource adequacy revenue stream.[37] In parallel, CAISO introduced interconnection reforms in 2022 to accelerate project delivery, including stricter project readiness requirements and prioritized projects aligned with procurement and transmission plans.[38]

CAISO and California policymakers continue refining market rules to address system needs. The duck curve has been increasingly mitigated by the existing fleet of four-hour BESS. Longer-duration reliability challenges have since emerged and the ELCC accreditation method, a 2 GW long-duration energy storage target, and a slice-of-day resource adequacy framework together send a new demand signal that incentivizes longer-duration batteries. Regulatory adjustments like these bring markets into alignment with system needs, directing investment to the most beneficial types of projects.[39]

Today, CAISO's battery fleet is the region's fastest growing resource. As shown in Exhibit 12, the rapid deployment of batteries has outpaced ancillary service demand, driving down average ancillary service prices by 75% since 2019.[40]

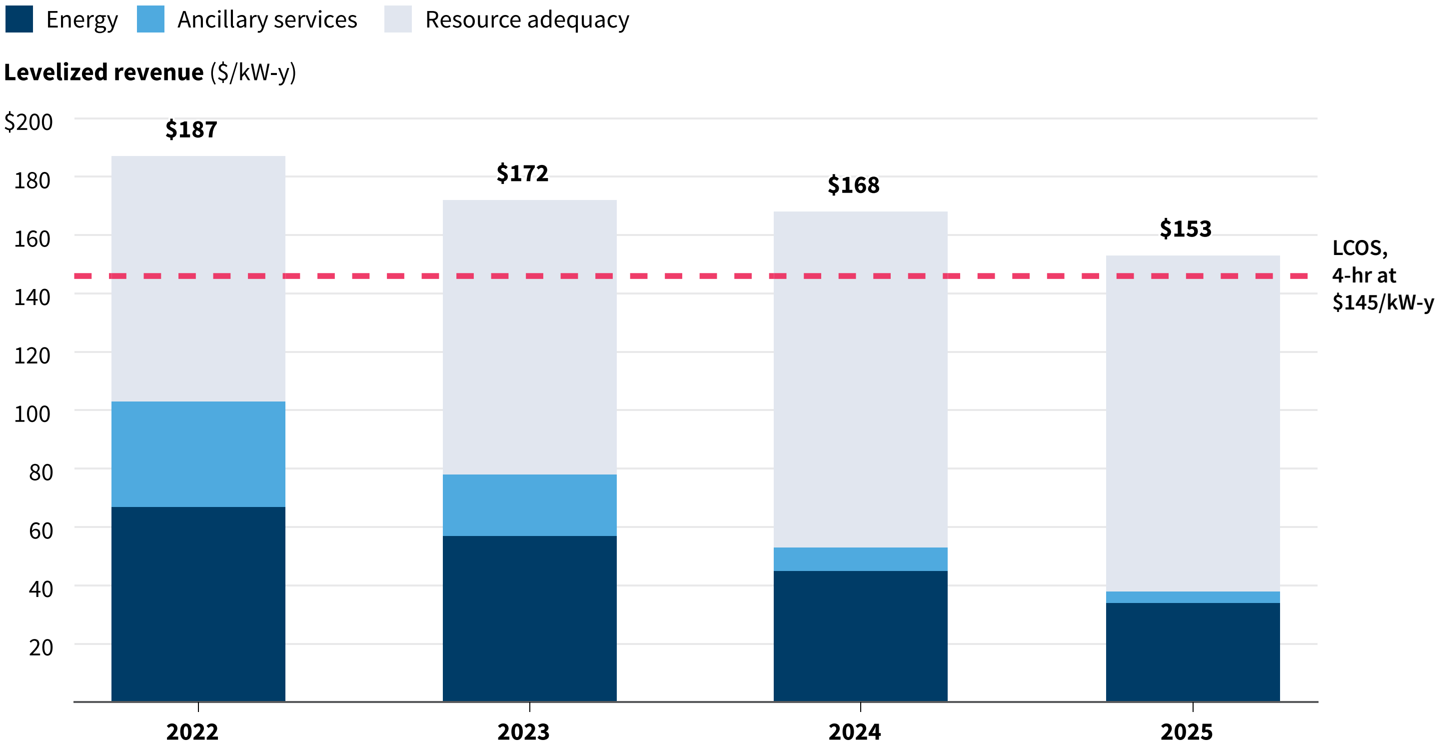
Exhibit 12 BESS growth is met with ancillary service price depression in CAISO



RMI Graphic. Source: U.S. Energy Information Administration (EIA), RMI analysis

Still, CAISO projects have remained financeable. As shown in Exhibit 13, resource adequacy contracts absorbed the shortfall as energy and ancillary services revenues compressed, holding the total revenue stack above the levelized cost of four-hour storage ($145 per kilowatt-year) in every year from 2022 to 2025. The margin narrowed from roughly $42 per kilowatt-year in 2022 to $8 per kilowatt-year in 2025, but it is the state-mandated contracted layer, not the merchant layers, that keep BESS projects viable in California.

Exhibit 13 Resource adequacy preserves economic viability as energy and ancillary service revenues are compressed in CAISO



Note: LCOS = levelized cost of storage. The 2024 resource adequacy levelized revenues were applied to 2025 due to data unavailability. Levelized revenues represent fleet-wide average.

RMI Graphic. Source: CAISO, RMI analysis

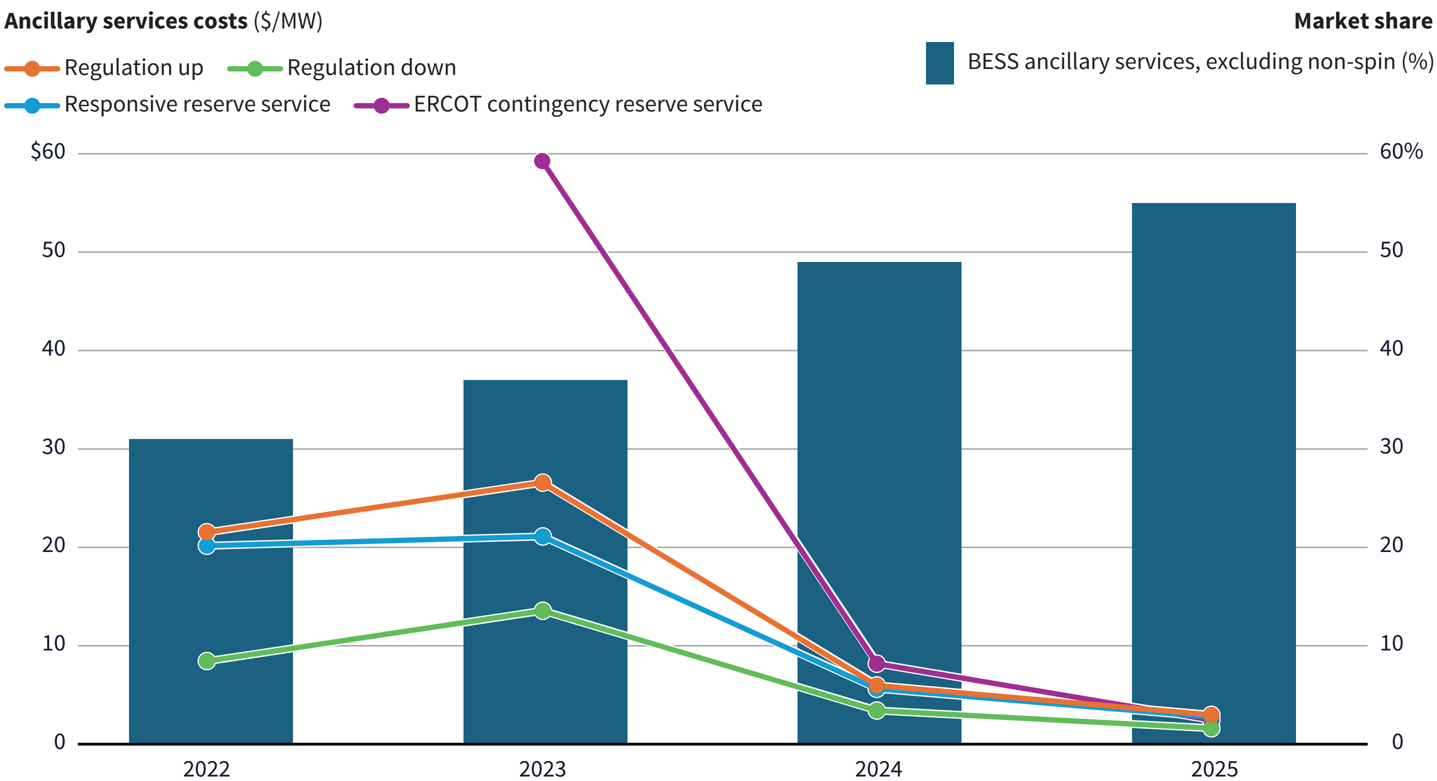
The Texas example

ERCOT, the state's regional transmission organization, leveraged competitive price signals and diversified market access to drive BESS bankability. Rapid deployment has since reduced price volatility and system costs, while also compressing the merchant revenues that initially attracted investment.

Enabling the market and early investment (Phases 1–2, 2010–20): Rapid renewables growth in West Texas created a growing flexibility need because transmission constraints led to renewable curtailment and price volatility. Although the transmission value of storage is not actively valued in most markets, grid management needs like frequency response and supply-demand matching are. ERCOT established a Battery Energy Storage Task Force (BESTF), which brought together utilities, power producers, consumers, the Public Utility Commission of Texas, the Independent Market Monitor, the Office of Public Utility Counsel, and other interested parties. The BESTF was able to address technical and regulatory challenges associated with integrating BESS to meet grid management needs.[41] Based on input from this diverse group, in 2020, the BESTF introduced a combination model that enabled BESS participation in energy and ancillary service markets by registering storage as both load and generation.[42] ERCOT's long-standing "connect and manage" framework (the fastest interconnection process in the United States) separates interconnection from transmission expansion, accelerating project delivery by managing congestion operationally rather than delaying projects to wait for upgrades.[43]

Scaling up (Phase 3, 2020–current): An additional ERCOT reform aimed at addressing fast reserve system needs further expanded market opportunities for storage. The 2023 introduction of the ERCOT Contingency Reserve Service (ECRS) created a new revenue stream for BESS that first movers were able to capitalize on before its saturation one year later (see Exhibit 14).

Exhibit 14 As BESS market share grows, ancillary service prices drop in ERCOT



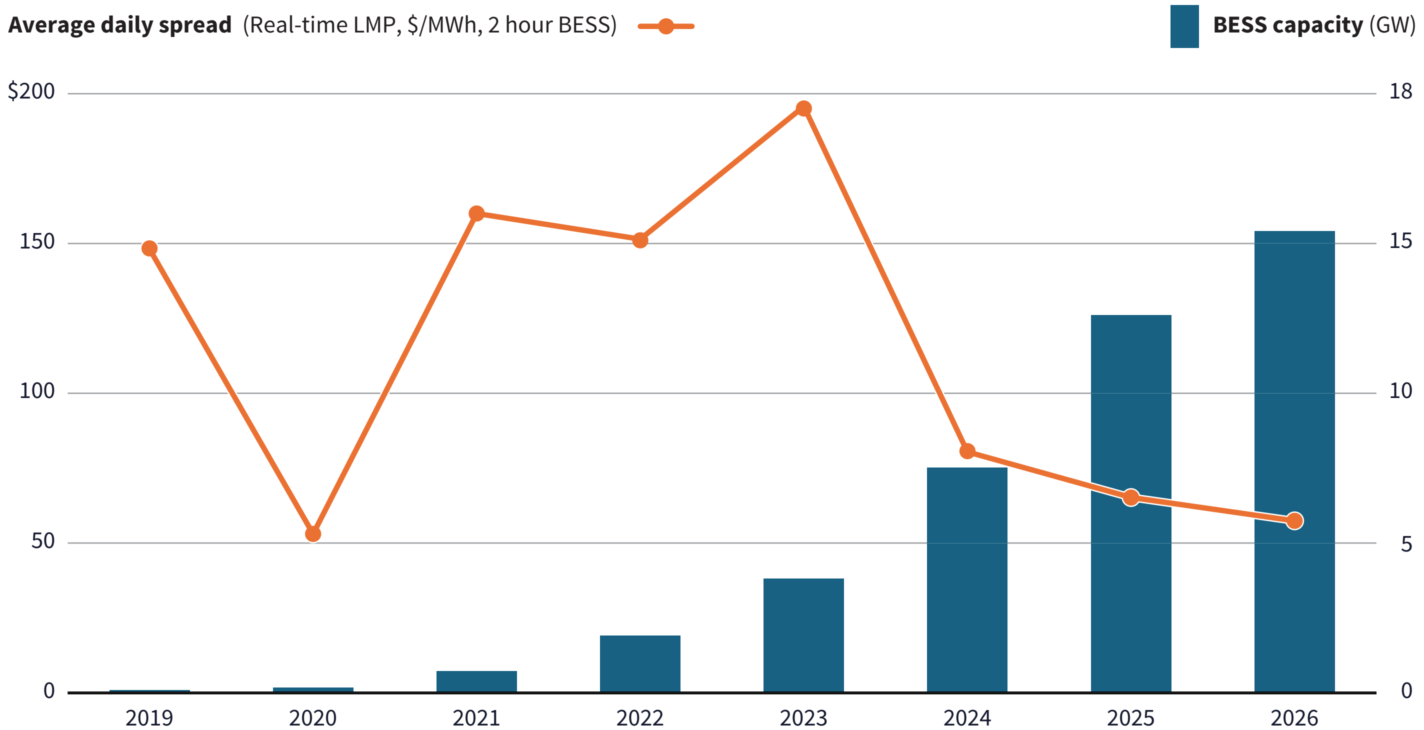
RMI Graphic. Source: Grid Status, RMI analysis

ERCOT's experience also illustrates how early market rules can lag technology deployment. Ancillary service duration requirements established before widespread battery deployment initially limited the participation of short-duration batteries, requiring subsequent reforms to contingency reserve to open the market as the storage fleet matured.[44]

Real-time co-optimization plus BESS (RTC+B), implemented in 2025, better integrated storage into real-time system operations, improving dispatch efficiency.[45] RTC+B efficiencies have contributed to service saturation, resulting in a slight dampening effect on BESS revenues in the near term. However, through this measure ERCOT is expected to drive down total system costs an estimated $2.5 billion to $6.4 billion per year.[46]

ERCOT's scarcity pricing model is uniquely merchant exposed yet largely self-correcting: high prices attract new investment, while rising BESS deployment steadily erodes merchant revenues. As shown in Exhibit 15, BESS growth coincided with a reduction in real-time locational marginal price (RTLMP) volatility, while average market share for ancillary services climbed past 50% and ancillary service prices fell more than 90%, on average, from 2023 to 2025 (see Exhibit 14).

Exhibit 15 Real-time locational marginal price volatility stabilizes as BESS achieves scale in ERCOT



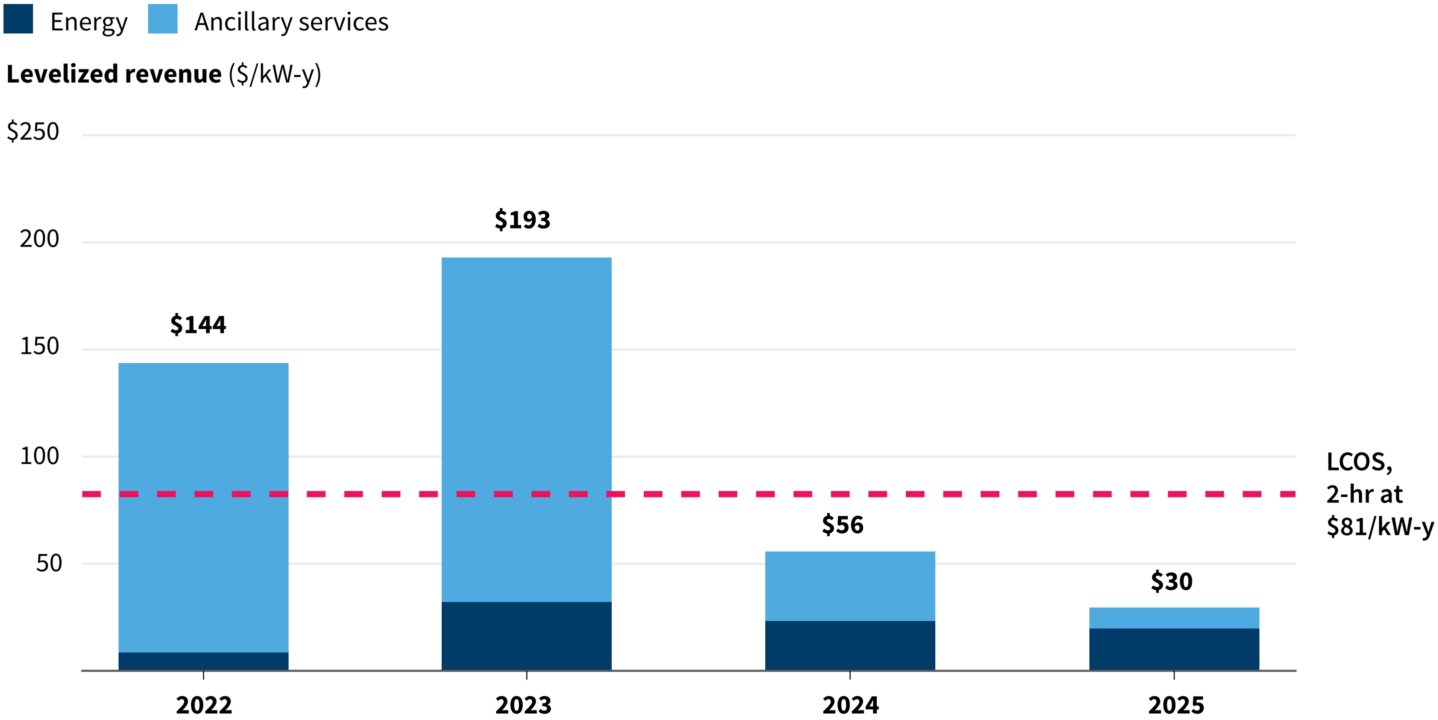
RMI Graphic. Source: U.S. Energy Information Administration (EIA), RMI analysis

As the storage footprint expanded and operational reforms were adopted to improve market efficiencies, the system benefits of BESS were realized. American Clean Power estimates BESS additions saved ratepayers $750 million in the summer of 2024 alone.[47]

The trade-off of a merchant-designed market is that once-rich revenue streams diminish as market volatility reduces with greater BESS integration. Exhibit 16 shows the consequence: merchant revenues fell from $193 per kilowatt-year in 2023 to $29 per kilowatt-year in 2025, crossing below the levelized cost of two-hour storage ($81 per kilowatt-year) in 2024.[i] Here, the contrast with CAISO's model is especially visible. ERCOT has no contracted revenue stream to absorb energy and ancillary service revenue reductions, so market saturation and unusually mild weather brought unrecovered project costs.

i ERCOT's reliance on scarcity pricing and merchant revenues has favored shorter-duration (i.e., two-hour) BESS in contrast with California's four-hour average duration driven by resource adequacy contracts.

Exhibit 16 Market saturation and benign weather reduce merchant value for BESS, leading to unfavorable economics in recent years in ERCOT



Note: A/S = ancillary service; LCOS: levelized cost of storage.

RMI Graphic. Source: Modo Energy, RMI analysis

Still, the region faces strong near-term load growth, a likelihood of more volatile weather conditions, and rising renewable penetration. These shifts could widen price spreads and increase the need for flexibility services that BESS provides. Investors are underwriting projects based on the expectation that market volatility—and BESS revenues—will recover, rather than assuming recent revenue declines will continue. With conditions for bankability in place, the market is positioned to absorb that capital as system needs evolve.

Conclusion

BESS has rapidly moved from an emerging technology to a core component of modernizing power systems. Many countries are grappling with how to translate growing pipelines and investor interest into financeable projects and sustained deployment that meet their system's unique needs affordably. Countries — and California and Texas in the United States — have followed different approaches depending on system needs, institutional capacity, and market structure, yet there are core underlying lessons that are consistent across jurisdictions.

Countries with more limited institutional capacity should prioritize foundational reforms that improve delivery certainty and regulatory clarity before expanding market products or introducing more sophisticated revenue mechanisms. As experience grows, additional reforms can progressively diversify revenue opportunities aligned with system needs and strengthen long-term investment.

Across all markets examined in this report, the same four conditions consistently emerge as the foundations of investment: delivery certainty, regulatory clarity, revenue access, and revenue predictability. Bankability is not an outcome of market maturation; it is the mechanism that enables markets to mature. By sequencing reforms to progressively strengthen these pillars while leveraging additional financing instruments where needed, countries can translate project pipelines into operating assets and create the conditions for sustained BESS deployment at scale.

Endnotes

1 Luke Hatton et al., “High Costs of Capital Hinder the Equity, Speed and Abatement Potential of Solar and Wind Deployment Globally,” preprint, Research Square, May 12, 2025, **https://doi.org/10.21203/rs.3.rs-6620411/v1**.

2 Genevieve Lillis et al., *Procuring Grid Flexibility: A global guide for decision makers to increase power system reliability and affordability in the context of rapid technological change*, RMI, 2026, **https://rmi.org/resources/procuring-grid-flexibility**.

3 Richmond Mercurio, “Power Reserve Market Starts Full Operations,” *Philstar Global*, January 27, 2024, **https://www.philstar.com/business/2024/01/27/2328761/power-reserve-market-starts-full-commercial-operations**.

4 “Private Sector Initiated Projects,” Philippines Department of Energy, **https://doe.gov.ph/site/epimb/articles/group/projects?category=Private%20Sector%20Initiated%20Projects&display_type=Card**.

5 *Guidelines for Procurement and Utilization of Battery Energy Storage Systems as Part of Generation, Transmission and Distribution Assets, along with Ancillary Services*, Ministry of Power, Government of India, October 2021, **https://static-cdn.publive.online/saur-energy/media/pdf_files/2021/10seci_bess_oct21.pdf**.

6 *India’s Energy Storage Landscape: Q1 2026*, Mercom India Research, 2026, **https://mercomindia.s3.ap-south-1.amazonaws.com/wp-content/uploads/2026/06/MercomIndiaEnergyStorageLandscape_Q12026_ExecSummary.pdf**.

7 *Report on Phase-II of the National Workshop on Renewable Energy Integration through Energy Storage Systems*, Central Electricity Authority, Ministry of Power, Government of India, 2026, **https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fcea.nic.in%2Fwp-content%2Fuploads%2Fnotification%2F2026%2F07%2FReport_of_the_National_Workshop_on_RE_integration_through_ESS_Phase_II.docx&wdOrigin=BROWSELINK**.

8 “Preliminary Monthly Electric Generator Inventory (EIA860M), June 2026,” US Energy Information Administration (EIA), July 23, 2026, **https://www.eia.gov/electricity/data/eia860m/**.

9 “CAISO Stakeholder Initiative: Energy Storage and Distributed Energy Resources,” CAISO, August 27, 2025, **https://stakeholdercenter.caiso.com/StakeholderInitiatives/Energy-storage-and-distributed-energy-resources**.

10 “Preliminary Monthly Electric Generator Inventory,” US EIA.

11 NPRR863, “Creation of ERCOT Contingency Reserve Service and Revisions to Responsive Reserve” Electric Reliability Council of Texas (ERCOT), 2019, **https://www.ercot.com/mktrules/issues/NPRR863**.

12 *Target Model Option 4+ (TMO4+) Impact Assessment*, Office of Gas and Electricity Markets (Ofgem), February 2025, **https://www.ofgem.gov.uk/sites/default/files/2025-02/TMO4%2B%20Impact%20Assessment.pdf**.

13 *Gate 2 Criteria Methodology*, National Energy System Operator (NESO), December 2025, **https://www.neso.energy/sites/neso.energy/files/documents/Gate%202%20Criteria%20Methodology%20%28December%202025%29%20-%20FINAL%20CLEAN.pdf**.

14 "Open Letter from DESNZ and Ofgem on Connections Reform Delivery," Department for Energy Security and Net Zero and Ofgem, April 15, 2026, **https://www.gov.uk/government/publications/connections-reform-delivery-update-and-battery-capacity/open-letter-from-desnz-and-ofgem-on-connections-reform-delivery**.

15 Ley 21505: Promueve El Almacenamiento de Energía Eléctrica y La Electromovilidad, Congreso Nacional de Chile, 2022, **https://www.bcn.cl/leychile/navegar?idNorma=1184572**.

16 "Amendment of the Capacity Transfers Regulation and Supreme Decrees No. 125 and No. 88," Guerrero Olivos, August 2025, **https://guerrero.cl/wp-content/uploads/2025/08/Doc_Modificacion-del-Reglamento-de-Transferencia-eng-2.pdf**.

17 *Guidelines for Procurement and Utilization of Battery Energy Storage Systems,* Ministry of Power, Government of India.

18 "Development of Battery Storage Systems," Press Information Bureau, Government of India, March 30, 2026, **https://www.pib.gov.in/PressReleasePage.aspx?PRID=2246898&reg=3&lang=2**.

19 *National Framework for Promoting Energy Storage Systems*, Ministry of Power, Government of India, August 2023, **https://cdnbbsr.s3waas.gov.in/s3716e1b8c6cd17b771da77391355749f3/uploads/2023/09/202309051208486334.pdf**.

20 "Development of Taiwan Energy Trading," Taiwan Power Company (Taipower), accessed July 7, 2026, **https://service.taipower.com.tw/smartgrid/DERIntegration/Index**.

21 Annie Huang, "Market Malaise: The Oversupply Conundrum in Taiwan's Energy Storage Sector," *DIGITIMES*, February 20, 2024, **https://www.digitimes.com/news/a20240219PD214/taipower-energy-management-energy-storage-oversupply.html**.

22 *Taiwan 2050 Net-Zero Transition: Power System and Energy Storage Key Strategic Action Plan*, Bureau of Energy, Ministry of Economic Affairs, 2022, **https://service.cca.gov.tw/File/Get/climatetalks/zh-tw/xwPTssPcZgSCQZb**.

23 *Response Stacking Guidance: Guidance for Splitting Response Services with the Balancing Mechanism and Other NESO Services*, NESO, 2025, **https://www.neso.energy/document/372541/download**.

24 "Market Data: Settlement Report," Independent Electricity Market Operator Philippines (IEMOP), accessed July 7, 2026, **https://www.iemop.ph/the-market/market-data/**.

25 "DOE Announces Results of Fourth Auction Round under the Green Energy Auction Program," Philippines Department of Energy, accessed July 7, 2026, **https://doe.gov.ph/articles/3141342--doe-announces-results-of-fourth-auction-round-under-the-green-energy-auction-program**.

26 Department Circular No. DC2026-02-0008, "Supplemental and Amendatory Policy Framework for the Energy Storage Systems (ESS) Policy," Philippines Department of Energy, 2026, **https://doe.gov.ph/articles/3336137--department-circular-no-dc2026-02-0008**.

27 "RFI: Supply of up to 25 MW/100 MWh of Energy Storage Capacity from a Battery Energy Storage System (BESS) Facility Zambia," Africa GreenCo, January 27, 2024, **https://africagreenco.com/bess/2024/rfi/**.

28 "AMEA Power Portfolio," Multilateral Investment Guarantee Agency (MIGA), World Bank Group, accessed July 7, 2026, **https://www.miga.org/project/amea-power-portfolio-0**.

29 "IFC and IndiGrid Partner to Build India's Largest Utility-Scale Energy Storage Project," International Finance Corporation (IFC), July 3, 2025, **https://www.ifc.org/en/pressroom/2025/ifc-and-indigrid-partner-to-build-india-s-largest-utility-scale-energy-storage-pro**.

30 Valentina Bellesi, Benjamin Denis, and Cornelia Schenk, "Guarantees and Other Risk Mitigation Instruments for Clean Energy: Harnessing Blended Finance to Scale Investments in Emerging Markets and Developing Economies," *OECD Environment Working Papers*, no. 266, OECD Publishing, 2025, **https://doi.org/10.1787/93a6e05c-en**.

31 Wole Lawuyi, "African Development Bank Approves €19.6 Million in Financing to Scale up Cabo Verde's Pioneer in Wind and Battery Storage Capacity," African Development Bank Group, June 16, 2025, **https://www.afdb.org/en/news-and-events/press-releases/african-development-bank-approves-eu196-million-financing-scale-cabo-verdes-pioneer-wind-and-battery-storage-capacity-84569**.

32 "Project Financing for Two Solar Power Generation and Storage Projects in Uzbekistan," Japan Bank for International Cooperation (JBIC), October 29, 2025, **https://www.jbic.go.jp/en/information/press/press-2025/press_00100.html**.

33 California Energy Commission, "California Energy Storage System Survey," California Energy Commission: Energy Almanac, **https://www.energy.ca.gov/data-reports/energy-almanac/california-electricity-data/california-energy-storage-system-survey**.

34 *Fast Facts: Flexible Resources Help Renewables*, California Independent System Operator (CAISO), 2016, **https://www.caiso.com/documents/flexibleresourceshelprenewables_fastfacts.pdf**.

35 "Energy Storage," California Public Utilities Commission, accessed July 7, 2026, **https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/energy-storage**.

36 "CAISO Stakeholder Initiative," CAISO.

37 “Decision Adopting Local Procurement and Flexible Capacity Obligations for 2015 and Further Refining the Resource Adequacy Program, 14-06–050 (2014),” California Public Utilities Commission, 2014, **https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M097/K619/97619935.PDF**.

38 “CAISO Stakeholder Initiative,” CAISO.

39 Deeksha Anand, “Five Key CAISO Policy and Market Design Initiatives to Follow in 2025,” *Modo Energy*, March 10, 2025, **https://modoenergy.com/research/caiso-five-key-policy-market-design-initiatives-follow-2025-stakeholder-process-timeline-impact-battery-energy-storage**.

40 Logan Hotz, “The State of BESS in CAISO: Key Takeaways through 2025 Q3,” *Modo Energy*, October 20, 2025, **https://modoenergy.com/research/en/battery-caiso-bess-resource-adequacy-capacity-energy-arbitrage-2025-q3**.

41 “Battery Energy Storage Task Force,” ERCOT, accessed July 7, 2026, **https://www.ercot.com/committees/inactive/bestf**.

42 NPRR957, “RTF-4 Definition of Energy Storage Resource and Related Registration and Telemetry Requirements,” ERCOT, 2019, **https://www.ercot.com/mktrules/issues/NPRR957**.

43 Jenifer Fernandes, “ERCOT Interconnection Process,” Presentation at the Generation Entity Winter Weather Preparedness Workshop, ERCOT, October 28, 2024, **https://www.ercot.com/files/docs/2024/10/30/0940-AM-ERCOT-Interconnection-Process-Generation-Entity-Winter-Weather-Preparedness-Fernandes.pdf**.

44 Brian Martucci, “In Blow to Some Battery Operators, Texas Maintains Non-Spin Reserve Threshold,” *Utility Dive*, August 7, 2025, **https://www.utilitydive.com/news/texas-puc-ercot-non-spin-reserve-battery-storage/756951/**.

45 NPRR863, “Creation of ERCOT Contingency Reserve Service,” ERCOT.

46 “ERCOT Trending Topics: Real-Time Co-Optimization Plus Batteries (RTC+B),” ERCOT, December 2025, **https://www.ercot.com/files**.

47 *Significant Energy Storage Capacity Additions Keep Costs Low and Power Reliable in Texas*, American Clean Power Association, December 2024, **https://cleanpower.org/wp-content/uploads/gateway/2024/12/ACP_Storage-in-ERCOT_2024_Analysis.pdf**.

Genevieve Lillis, James Sherwood, Drew Beyer, and Tony Chen, *Making BESS Investable: How policy, procurement, and market design translate project pipelines into operational battery energy storage system fleets and sustained deployment,* RMI, 2026, **https://rmi.org/resources/procuring-grid-flexibility**.

RMI Innovation Center
22830 Two Rivers Road
Basalt, CO 81621
www.rmi.org

Global Energy Alliance
420 Fifth Avenue
New York, NY 10018
energyalliance.org