



Wholesale Energy Market Participation

Generate More Revenue with Stem's Clean Energy Solutions

Energy storage can provide a variety of wholesale market services. With federal policy continuing to open up wholesale markets to energy storage, these revenues are poised to account for a growing share of value streams for both front-of-the-meter (FTM) and behind-the-meter (BTM) storage projects. Stem leverages our best-in-class Athena[®] software to help a range of customers – including independent power producers, utilities, financiers, and large business customers – maximize wholesale market revenues from eligible projects.



Stem Brings Market-Leading Expertise in Monetizing Energy Assets

Stem pioneered intelligent energy storage and currently operates the world's largest digitally connected energy storage network. As the first energy storage provider to successfully launch a large-scale BTM virtual power plant (VPP) and integrate it into California wholesale markets, Stem brought market-leading expertise, credibility, and software when it announced its entry into FTM markets in 2019.

Stem's Athena® platform integrates, manages, and maximizes value from diverse energy assets including energy storage, solar PV, backup generators, fuel cells, and electric vehicles (EVs). Athena co-optimizes multiple value streams from these assets in real time across retail and wholesale energy markets – under complex tariffs like New York's Value of Distributed Energy Resources (VDER); in BTM projects that interface with wholesale markets, such as California's Demand Response Auction Mechanism (DRAM); and in FTM projects that participate directly in wholesale markets such as ISO New England.

Wholesale Energy Market Services

- Economic Modeling & Analysis
- Athena Software Integration
- Market Registration
- Market Bid Optimization & Dispatch Scheduling
- Data Management
- Performance Reporting & Settlement

How Stem's Athena® AI Drives Value in Wholesale Markets

Two landmark regulatory rulings are expected to transform wholesale energy markets with respect to energy storage, enabling substantial new value streams for current and future projects. FERC Order 841 seeks to remove barriers to wholesale market participation by energy storage, while Order 2222 aims to allow BTM energy storage, solar PV, and other distributed energy resources (DERs) to transact in wholesale markets.

While the scale and location of FTM and BTM projects may be different, the core challenge is the same: co-optimizing multiple, variable value streams. Here are six ways Stem's Athena drives value in wholesale markets:



Maximize Market Revenues

Effective market participation depends on reliable, real-time communication. After submitting an optimized bid, Athena dispatches energy in response to market signals and shares verified performance data with market operators so asset owners can receive payments. Stem's AI is also constantly learning and improving its algorithms, in concert with market trading partners.



Optimize Bidding Strategy

Optimal bidding in deregulated energy markets is a complex process that demands advanced software. Athena's bidding platform generates multiple data forecasts and then overlays economic and operational constraints to produce energy bids that are optimized for each market interval.



Automate Program Management & Compliance

Electricity market rules and contract requirements can change many times over a project's lifetime, significantly altering how the asset generates revenue. Stem's expert team continuously updates Athena to account for location-based incentives, compliance requirements, tariffs, and operational changes in order to maximize project revenue.



Enable Optimal Design

Designing successful projects requires sophisticated analysis of project- and market-specific inputs. Athena's algorithms combined with Stem's modeling capabilities, project evaluation tools, and market expertise incorporate thousands of data points to simulate how a project would perform throughout its life.



Support Financing and Bankability

With unparalleled insight into lifetime performance plus adaptability that maximizes project value, Stem supports project financing efforts. Athena can operate projects to meet a variety of different financial targets, ensuring the financial profile needed to receive funding.



Enhance Storage Lifecycle Value

Athena actively manages battery state-of-charge (SOC), cycling, and other operational factors to extend performance and delay degradation – sometimes well beyond initial manufacturer estimates – to the benefit of program and warranty compliance and overall project value.

Project Spotlights



Big Box Retailer

Storage System
315kW / 510kWh

Configuration
Storage + solar (behind the meter)

Impact
Provides new cash flows from demand response programs

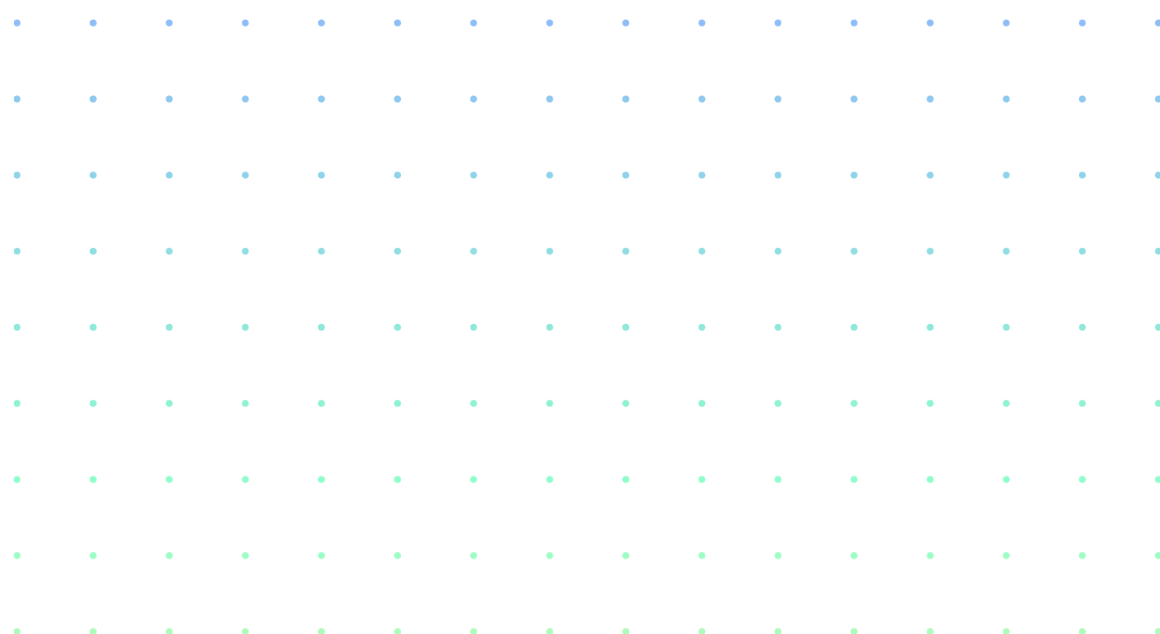


Solar Developer

Storage System
4MW / 8MWh

Configuration
Storage + solar (front of meter)

Impact
Maximizes ROI via automated market participation and incentive compliance





About Stem

Stem provides clean energy solutions and services designed to maximize the economic, environmental, and resiliency value of energy assets and portfolios.

Stem's leading AI-driven enterprise software platform, Athena® enables organizations to deploy and unlock value from clean energy assets at scale. Powerful applications, including AlsoEnergy's PowerTrack, simplify and optimize asset management and connect an ecosystem of owners, developers, assets, and markets. Stem also offers integrated partner solutions to help improve returns across energy projects, including storage, solar, and EV fleet charging.

For more information, visit www.stem.com

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