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Athena™ Smart Energy Software

The Leading AI-Driven Energy Management Software.

Businesses, utilities, and governments are moving away from large, fossil-fueled power plants toward smaller, smarter, cleaner resources. Renewable energy, energy storage, and electric vehicles (EVs) will help dramatically lower global carbon emissions as well as the risks and impacts of wildfires and other extreme weather events.

Athena: Best-in-class Smart Energy Software

In the transition to a smarter, cleaner energy system, energy storage has a crucial role to play as a stable support for solar PV and wind and a "smart integrator" of diverse assets. Athena's artificial intelligence (AI) software is the world's first AI for energy storage and operates the world's largest network of distributed energy systems.
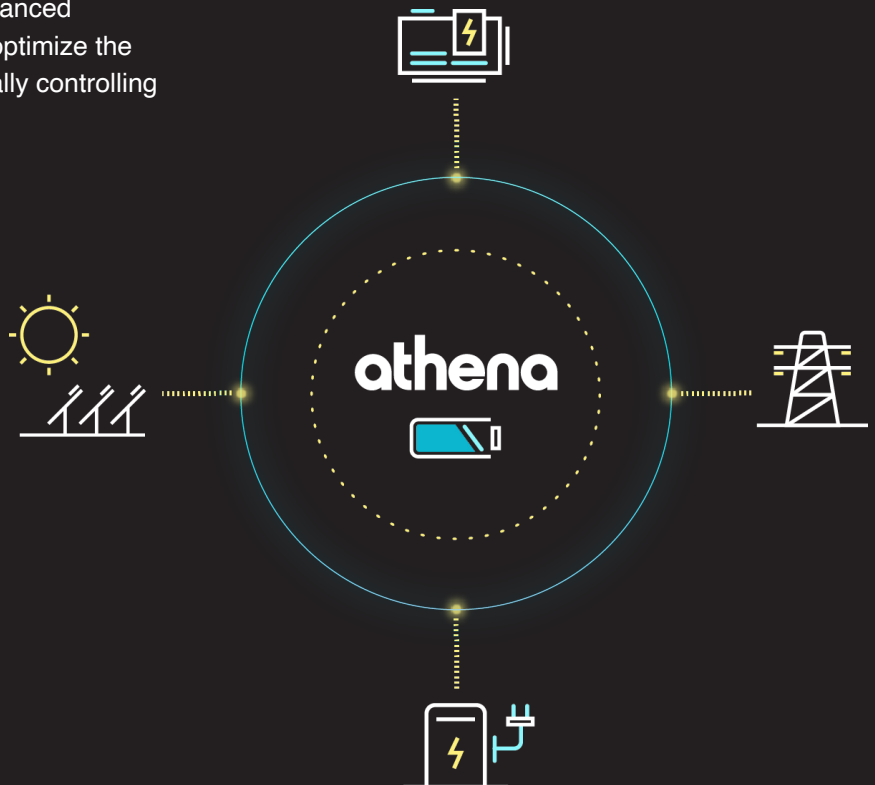
With unparalleled expertise in the adaptive energy infrastructure powering the 21st century, Stem leverages Athena to integrate, operate, and maximize value from a diverse portfolio of energy assets including energy storage, solar PV, backup generators, and EVs. Our clients – including Fortune 500 companies, project developers, utilities, and independent power producers – rely on Stem to provide the software and the expertise that brings to life their adaptive, intelligent energy strategies.

Athena Services

- **Wholesale Market Bid Optimization**
- **Solar Self-Consumption & Clipping Recapture**
- **Utility Bill Optimization**
- **Demand Response**
- **Microgrids, Backup Power & Voltage Support**
- **Incentive Revenue Optimization**
- **EV Smart Charging**

How Athena Works

Stem delivers and operates smart battery storage solutions for businesses, independent power producers, and utilities. Our market-leading Athena software uses advanced artificial intelligence and machine learning to optimize the operation of each customer site by automatically controlling these batteries.

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Core Benefits of Athena

· Maximize wholesale market revenues

· Integrate with market operators and utilities and automate wholesale energy market transactions

· Predict solar generation and optimize battery storage

· Automatically store and release energy to maximize customer benefits

· Use machine learning to maximize bill savings

· Manage and optimize single sites or large portfolios

· Track benefits and battery performance in real time

· Optimize site operation in the context of all interconnection and incentive program constraints

Better Results with Athena

Stem has taken over more than 100 energy storage systems that were previously managed by competitors. The performance improvements we've achieved show why Athena is the industry's leading smart energy software – and how Stem's unparalleled experience translates into value for customers.

Pre-transition
Software misses earnings opportunities

Athena Control
Optimized performance benefits customer and grid

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Athena Solutions

As the first energy storage provider to successfully launch a behind the meter (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 front of meter (FTM) markets in 2019. While the scale and location of FTM and BTM projects may be different, the core challenge is the same: optimizing multiple, variable storage value streams via the industry's best AI.

FTM wholesale market participation. Project developers and asset owners use Athena to optimize power generation and market participation revenues of both standalone energy storage and hybrid solar + storage power plants. Services include market revenue optimization, incentive management, interconnection compliance, solar clipping, and solar charging.

BTM standalone storage. With standalone battery storage, Athena forecasts building loads and optimizes when to draw energy from the grid or the battery based on each customer's energy rates. It considers demand charges, time-of-use rates, available utility and market programs, and any other incentive programs. Services include utility bill optimization, demand response, market revenue optimization, and incentive management.

BTM solar plus storage. Businesses with solar and storage can use Athena to forecast solar generation and unlock the value of investment tax credits (ITC), compliance requirements, state incentives, and tariffs by maximizing solar battery charging and time-shifting solar generation to when it's most valuable. Services include utility bill optimization, incentive management, solar clipping, and solar self-consumption.

Resilience and power quality. Athena automates the transition from grid power to islanded operation and manages energy allocation for backup. This increases resilience while generating new revenue opportunities. Services include backup power, voltage support, and microgrid solutions.

EV charging. For commercial EV charging stations, Athena manages demand peaks to reduce interconnection and ongoing utility costs while also supporting rapid charging. Services include EV smart charging.

A Comprehensive, Scalable Platform

Athena brings together a suite of capabilities – forecasting, monitoring, optimization, and automated controls – to deliver its many value-added services. Over time, Athena has grown from managing small BTM energy storage systems to managing diverse energy assets and co-optimizing multiple, forecast-dependent revenue streams in both BTM and FTM applications. Stem advises leading companies on their energy and sustainability strategies and is constantly adapting Athena to meet their evolving needs. The core elements of Athena's services platform include:

- **Athena Portal:** Web interface for DER analysis, management, monitoring, and reporting.
- **Athena AI Operations:** Best-in-class forecasting, optimization, and controls that maximize the economic benefits of each energy asset.
- **Athena Data Engineering:** Automated data pipelines to accurately control hardware system health, revenue data, and economic signals.
- **Athena Integrations:** Incorporated 3rd party sources for accurate weather forecasts, market dispatches, tariff data, program attributes, and other key operational inputs.

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Project Spotlights

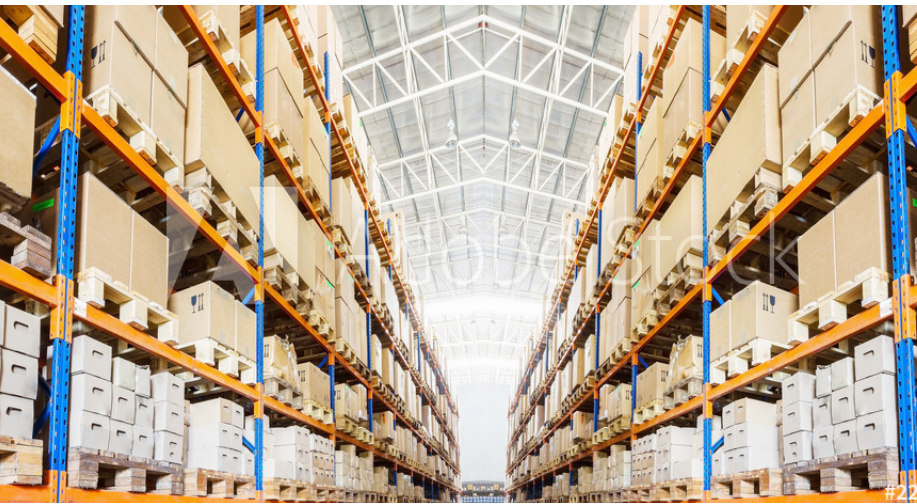## Large Utility and dozens of Municipal/Commercial Customers

Storage System
450+MWh across hundreds of sites

Configuration
Networked Virtual Power Plant (VPP)

Impact
Provides new cash flows to customers and peak capacity to the utility

Online Retailer

Storage System
1115kW / 2230kWh

Configuration
Storage + solar PV + backup generator (behind the meter)

Impact
Provides clean backup power and reduces GHG emissions

Solar Developer

Storage System
3.9MW / 7.9MWh

Configuration
Solar + storage (front of meter)

Impact
Maximizes ROI via automated market participation and incentive compliance

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About Stem

Stem provides solutions that address the challenges of today's dynamic energy market.

By combining advanced energy storage solutions with Athena™, a world-class artificial intelligence (AI)-powered analytics platform, Stem maximizes the value of flexible energy assets to optimize customer benefit. Stem's solutions help enterprise customers benefit from clean, adaptive energy infrastructure and achieve a wide variety of goals, including expense reduction, resilience, sustainability, environmental and corporate responsibility and innovation. Stem also offers full support for solar partners interested in adding storage to standalone, community or commercial solar projects–both behind and in front of the meter.

For more information, visit www.stem.com

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