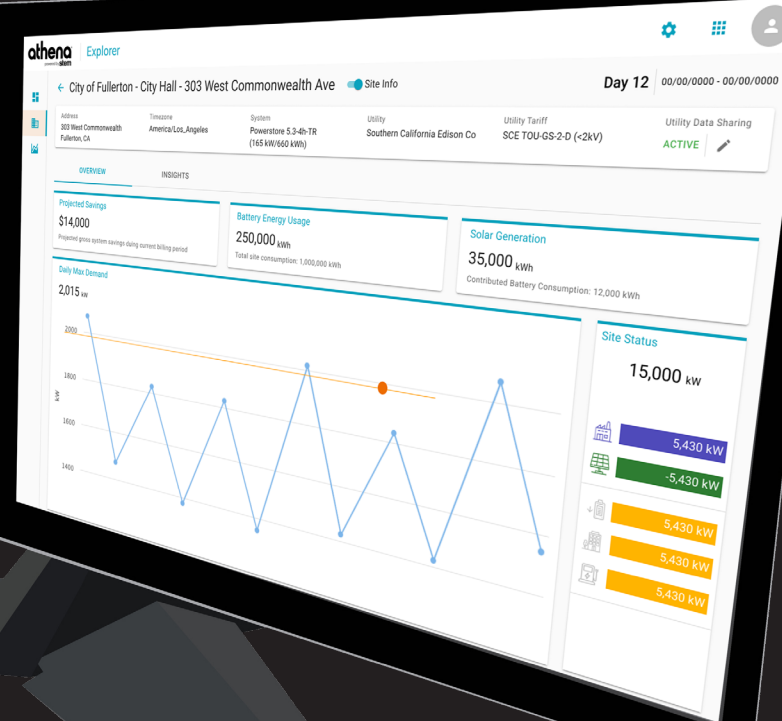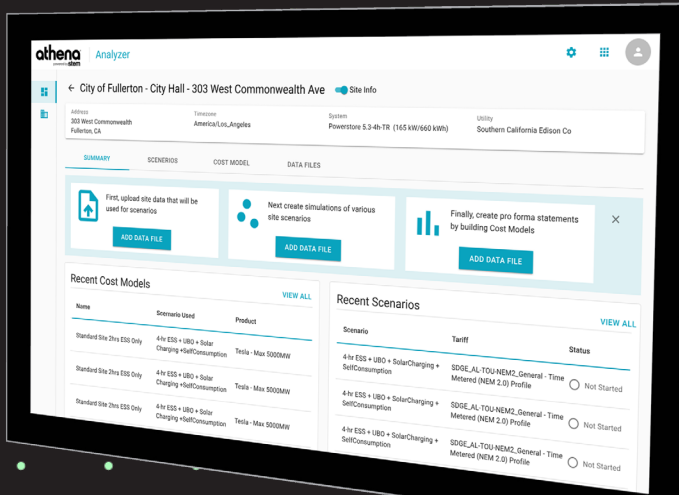# athena®

The Enterprise Energy Optimization Platform

Unlock flexibility across the clean energy value chain

November 2022

Accelerating the rise of clean energy

Solar, storage, and electric vehicles are all booming industries experiencing skyrocketing growth. As renewable energy deployments grow at residential, commercial, industrial, and utility levels, reliance on renewables and storage is increasing. Upfront costs have diminished and proven, cost-effective management solutions have emerged, enabling flexibility, efficiency, and full optimization across deployments.

The energy value chain needs a flexible solution to improve efficiency, lower global emissions, and enhance resilience while maximizing economic returns and simplifying clean energy management. The answer lies with Stem's Athena® platform that can realize, unlock, and maximize the lifetime value of clean energy systems.

So what does Athena do, exactly?

- · Empowers organizations to confidently deploy and monetize clean energy technologies at scale through an extensible platform
- · Maximizes economic and environmental returns and simplifies clean energy management
- · Enables an interconnected ecosystem of owners, developers, assets, and markets

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Reimagining energy asset management

A modern clean energy platform requires scalable software with modular applications for any use case across a fast and flexible grid. The software must adapt beyond solar and wind to optimize data from hydrogen, small-scale nuclear, compressed air, pumped hydro, and other power sources. Ideally, a monitoring and controls (M&C) solution would pair with hundreds of various hardware options and scale in parallel with any hardware configuration.

Asset owners need to contend with constantly evolving trends, regulations, and operations of diverse markets, programs, incentives, and grid operators. Adding to the complexity are varying deployment sizes, types of hardware, and operational times. Many owners are asking, "How can all that be managed by a single platform across many remote sites?"

Athena was designed holistically to allow complete asset optimization and enable a cost-effective M&C management solution. Athena's feature set includes asset management allowing sites to talk to each other and providing operators with the data & analytics, controls, issue detection, and reporting needed for efficient management.

Athena gleans data points from energy markets to control behind-the-meter and front-of-the-meter distributed energy assets. Harnessing artificial intelligence (AI) to learn from that data allows real-time analysis to maximize efficiency, resilience, revenue, and actionable insights. Athena's economic optimization feature set includes trading, billing, and forecasting – all designed to maximize revenue and increase margins.
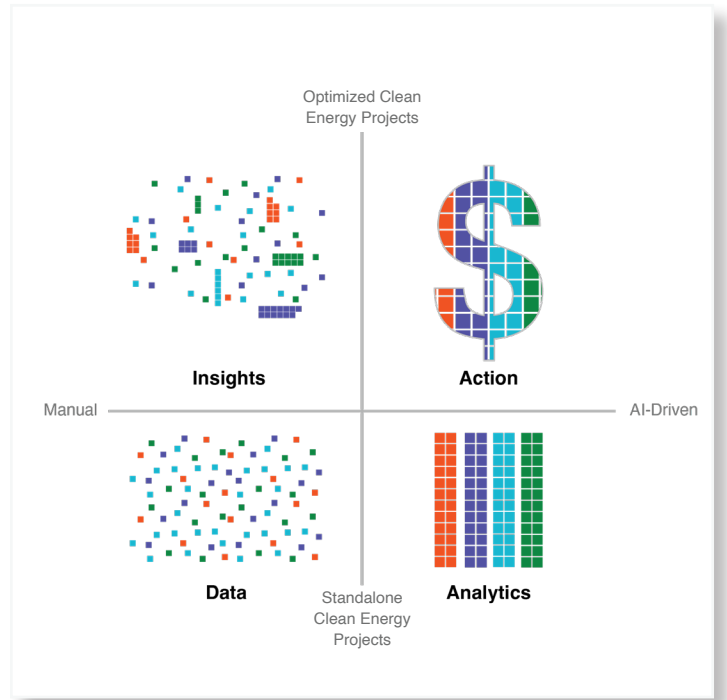
> **As the number and complexity of global renewable projects increases and demand for decarbonization of the economy grows, there is an immediate need for advanced monitoring and controls (M&C) solutions.**

Guidehouse
INSIGHTS

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Gaining expert guidance

Successful clean energy projects involve multiple assets to turn data, insights, and analytics into valuable action. This requires expertise that spans software, hardware, design, procurement, and deployment – and partnerships that extend through complete project lifecycles.

When you partner with Stem, you gain the experience and expertise that comes with being a global leader in AI-driven clean energy solutions and services. Our experts have been maximizing the value of energy assets for over a decade. We are with you every step of the way – from initial proposal development and economic analysis, to sourcing hardware and navigating tough supply chain issues, all the way through deployment and operation of your projects.

Stem's full suite of expert services across different projects, stages, and geographies include:

- **Design** services that standardize deployments and integration, helping to simplify implementation, lower risk, and accelerate time to value.
- **Network operations** services that ensure proper configuration and commissioning and include human assistance from our expert team, so projects operate at peak performance with minimal downtime.
- **Program operations** services that facilitate participation in grid services and wholesale market programs and ensure qualified, compliant participation for full value realization.

The savings estimates we provide customers and partners, like estimated utility bill savings or wholesale market revenues, are based on real data gleaned from over one billion runtime hours. Plus, Stem's Channel Partner Program gives us a global reach, with hundreds of project developers and solar EPCs across the U.S. and around the world.

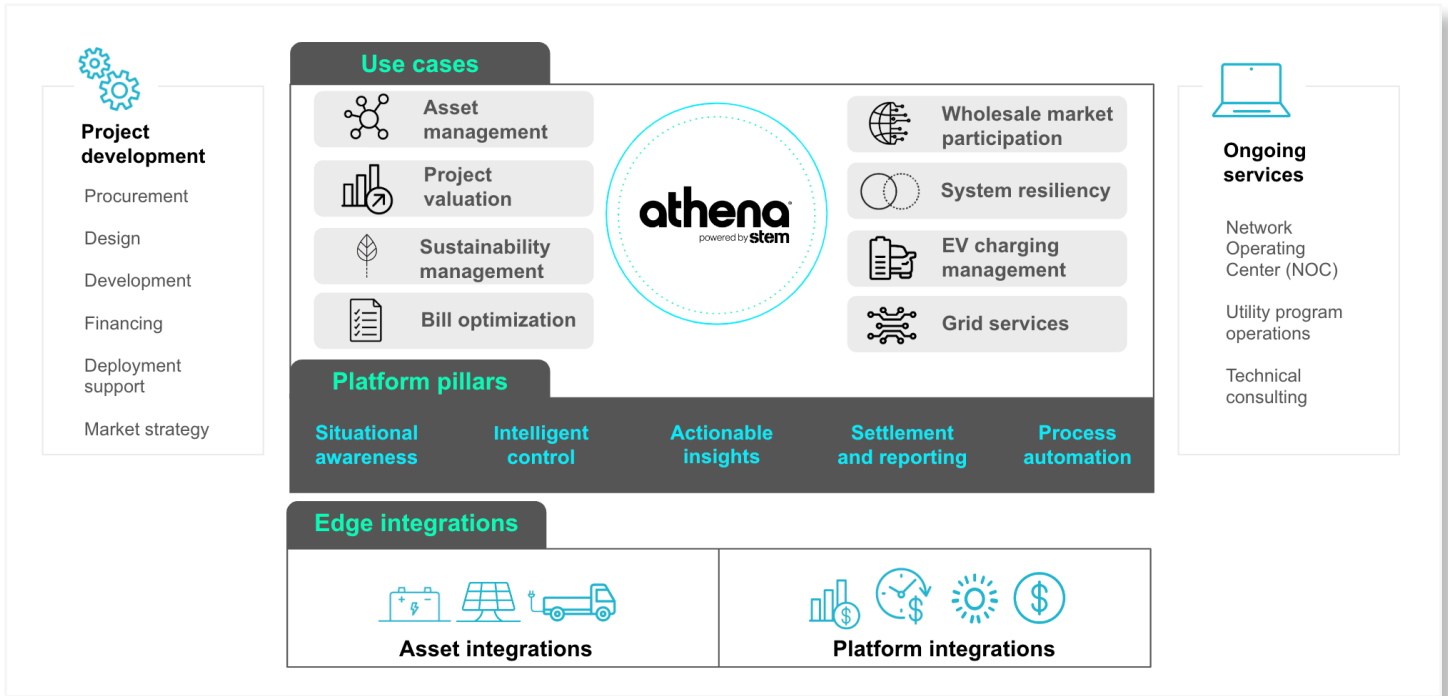**stem**

Making smart energy simple

Athena empowers organizations to confidently deploy and monetize clean energy technologies at scale through an extensible platform and turnkey professional services.

Athena's key "pillar" functionalities help make smart energy simple:

1. **Situational awareness.** Athena's granular, site-specific data provides Stem partners and customers with a real-time operational view on asset performance across every project in their portfolio.

2. **Intelligent control.** Athena stacks value streams across customer, grid, and market parameters to control assets according to partner and customer objectives.

3. **Actionable insights.** Athena forecasts, reports, and alerts partners and customers based on their objectives, increasing operational efficiency and monetization opportunities.

4. **Settlement and reporting.** Athena ensures compliance with market and policy rules, submitting and settling bids and reporting asset performance to relevant parties.

5. **Process automation.** Athena's AI-enabled automation of manual processes creates a simplified, "peace-of-mind" platform experience.

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Delivering value regardless of asset type

Athena is flexible to leverage not only today's advanced technologies, but also future technologies and value streams. Whether you're a project developer, solar EPC, system operator, or asset owner in the Stem Channel Partner Program – and even if you're a consumer, EV fleet operator, or utility – Athena can help you get the most out of your assets and your clean energy strategy.

Athena collects site-specific data at intervals down to one second to enable asset control within milliseconds. That granularity, along with Athena's continuous learning from billions of data points across hundreds of thousands of devices, give Stem and our partners an important edge in the market.

For Stem partners and the customers they serve, Athena's grid edge integrations enable scale: the ability to control and monetize clean energy assets across different markets, locations, and ownership models – whether projects are located at a customer's site or connected directly to the grid, regardless of asset type.

To be successful, grid edge assets need to quickly and efficiently overcome various operational, regulatory, and other barriers that affect revenue opportunities on a moment-by-moment basis. Stem has built its Athena platform with these in mind so that Stem partners and customers can achieve maximum results with minimal effort.

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Integrating with diverse data

Athena integrates assets with edge hardware across the clean energy ecosystem, including solar, storage, and EV infrastructure. It also interfaces with other platforms for data about weather, market prices, operations, utility rates, and other factors that are crucial to successful projects.

Athena's pillars and edge integrations enable Stem's partners and customers to achieve their goals across many use cases. For example, Athena enables proper asset management, which enhances project longevity and economics and ensures warranty compliance. Athena also conducts project valuation prior to deployment, incorporating all value streams, operating requirements, and project goals to help Stem partners and customers design the system that's right for them.

For sustainability-minded organizations, Athena assists with tracking, reporting, and optimizing greenhouse gas emissions, while in wholesale energy markets, Athena automates the "bid-to-bill" process for all assets across all markets.

Athena also dispatches energy when and where it's most needed and optimizes microgrids for backup power, promoting energy resilience for both customers and the grid. And it helps customers maximize utility bill savings, while also helping utilities leverage solar, storage, and EVs to maintain grid reliability and cut costs.

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Use cases

Athena's use cases for C&I and utility-scale energy assets span the full project lifecycle – from pre-deployment through commissioning and operation.

Asset management

Guidehouse Insights names Athena as the leading advanced M&C technology for solar and energy storage enabling businesses to standardize entire clean energy portfolio.

Wholesale market participation

Anticipate the future and maximize wholesale market revenues with Athena's machine learning algorithms that incorporate site-specific equipment, location, and market characteristics while automating bid generation and submission.

Project valuation

Easily access solar and storage performance data from one interface. View your full portfolio of asset performance across solar and storage and dive into specific site data for a deeper understanding.

System resiliency

Achieve the level of resilience you want with the right combination of onsite energy resources with Athena. Easily configure multiple resources for backup power with Stem's proprietary microgrid controller.

Sustainability management

Optimize clean energy assets for GHG emissions reductions, end-to-end ESG goals, compliance with California's SGIP, and other sustainability business goals.

EV charging management

Optimize battery storage, solar, and EV charging stations and mitigate grid impacts of commercial customers' transportation electrification strategies.

Bill optimization

Optimize solar and storage site performance, provide real-time insights into bill savings, adjust charging and discharging of battery systems, leverage rich sets of algorithms to predictively maximize savings, and access real-time, in-depth custom reporting on system performance.

Grid services

Leverage any size portfolio of energy storage assets to participate in commercial demand response programs in more than 10 utility-sponsored programs across North America.

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Growing with modular, adaptable applications

Athena offers modular, adaptable applications. We work with you to determine which apps fit your unique requirements.

Bidder™

Automate wholesale market participation

Explorer™

Review energy savings & system performance data

Supervisor™

View system operation and real-time performance

Analyzer™

Access site simulation and revenue modeling data

PowerTrack

Monitor, control, and optimize clean energy portfolios

Exceeding goals with unparalleled performance

Stem's team of industry experts, with over 200 product and technology professionals are dedicated to Athena's continuous improvement and oversee daily software releases.

Now controlling more than a half-million industrial IoT devices, Athena has logged more than a billion lifetime run-time hours – and well over 30,000 automated dispatches in 2022 alone. These figures don't just convey Athena's footprint – they illustrate the myriad data points that constantly hone Athena's machine learning algorithms.

Executing on 100% of utility obligations – even as utility demand for Stem's services increased by 72%

Achieving 96% of perfect foresight revenues in the ISO New England wholesale market – a standard that is unmatched in our industry

Obtaining full-year GHG reductions in only four months for customers within major state-level emissions reduction programs Increasing

Increasing utility bill savings by 80-130% or more relative to previous providers

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About Stem, Inc.

Stem (NYSE: STEM) is a global leader in AI-driven clean energy solutions and services.

Stem (NYSE: 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.

To learn more about Stem's Athena platform, request a demo at stem.com/athena.

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