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Reduce risk in your solar and storage portfolio

29 September 2022
11:00 am – 12:00 pm | PDT, Los Angeles
1:00 pm – 2:00 pm | CDT, Chicago
2:00 pm – 3:00 pm | EDT, New York City

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Welcome!

Do you have any questions?

Send them in via the Q&A tab. We aim to answer as many as we can today!

You can also let us know of any tech problems there.

We are recording this webinar today.

We'll let you know by email where to find it and the slide deck, so you can re-watch it at your convenience.

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September 29, 2022

Reduce Risk in your Solar and Storage Portfolio

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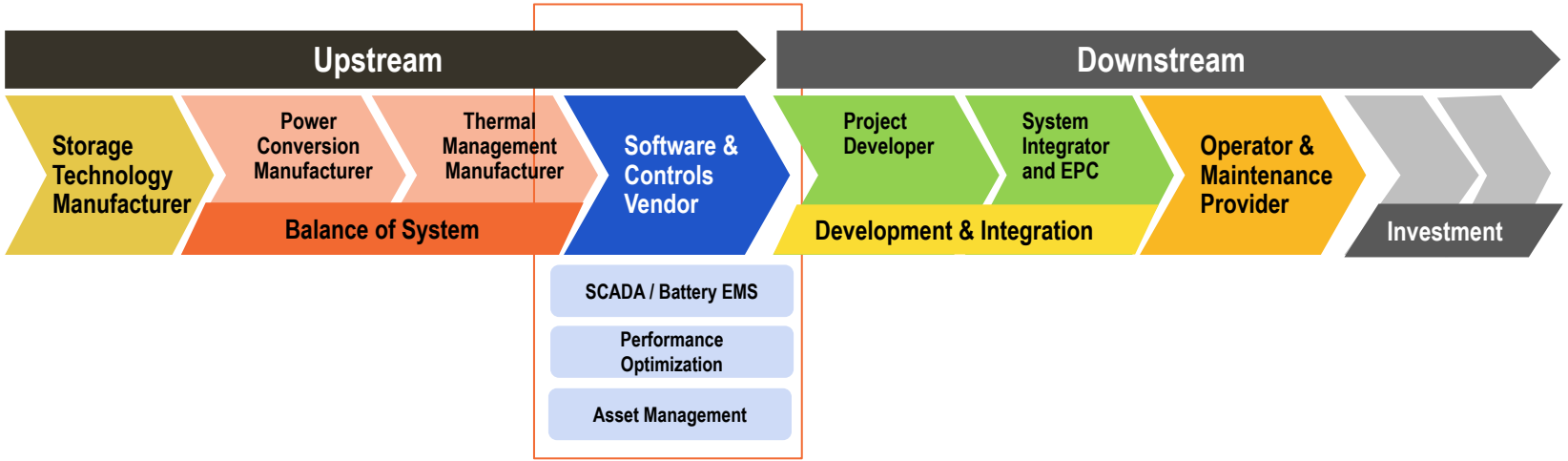
The Monitoring & Controls Market

Defining the Monitoring & Control (M&C) Market

- As renewable energy investments continue to expand and grow rapidly across on-grid and off-grid locations, investments in the monitoring and control (M&C) of these assets have also gained momentum around the globe.
- M&C can have a significant impact on optimizing the overall levelized cost of energy (LCOE) with the help of sophisticated data analysis and sensors to detect any operational issues across renewable energy power plants.
  - From **plant-level SCADA** and **data loggers** to **performance monitoring** and **predictive maintenance** tools, the combination of **sensing and measurement technologies** and **data analytics** is providing asset owners with more actionable insights to improve operational efficiencies and reduce lifetime costs.



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Solar and Storage M&C Drivers & Barriers

Impact: High ● Medium ◐ Low ◔

	Impact Over the Next 10 Years			
	1–2 Years	3–4 Years	5–7 Years	7–10 Years
Market Drivers				
Surging solar and energy storage deployments increases the demand for more sophisticated M&C investments	●	●	●	●
Constant cost reduction needs leads to increased demand for automated solutions powered by advanced algorithms	●	●	●	◐
Behind-the-meter customer solutions increases the need for M&C capabilities	●	●	●	●
Grid integration and security regulation drives demand for M&C services	●	●	●	●
Market Barriers				
The maintenance-free perception of solar and energy storage created in the early days of the industry discourages M&C adoption for small systems	◐	◔	◔	◔
Developers' hyperfocus on limiting costs promotes the use of more simplistic, low-cost M&C strategies and investments	●	◐	◔	◔
Fragmented development and installation value chain creates more complex sales channels for M&C companies	●	◐	◐	◔

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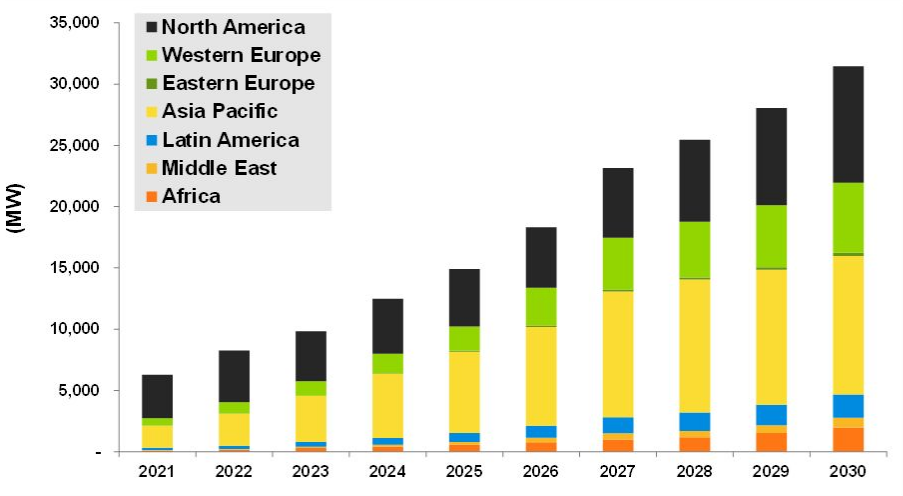
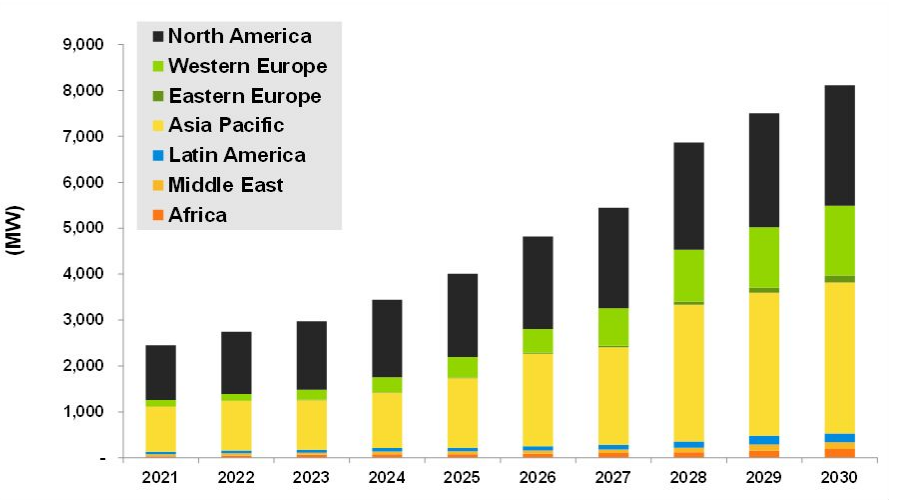
Renewable Generation is Rapidly Proliferating

Utility-scale energy storage, along with solar PV, is capturing an increasing share of global energy capacities. This includes stand-alone renewable energy systems, as well as burgeoning hybrid power plant opportunities, with solar + storage accounting for the majority of hybrid capacity additions over the next decade.

Annual Installed Utility-Scale Energy Storage Power Capacity by Region, World Markets: 2021-2030



Annual Installed Utility-Scale Solar PV plus Storage Hybrid Power Capacity by Region, World Markets: 2021-2030



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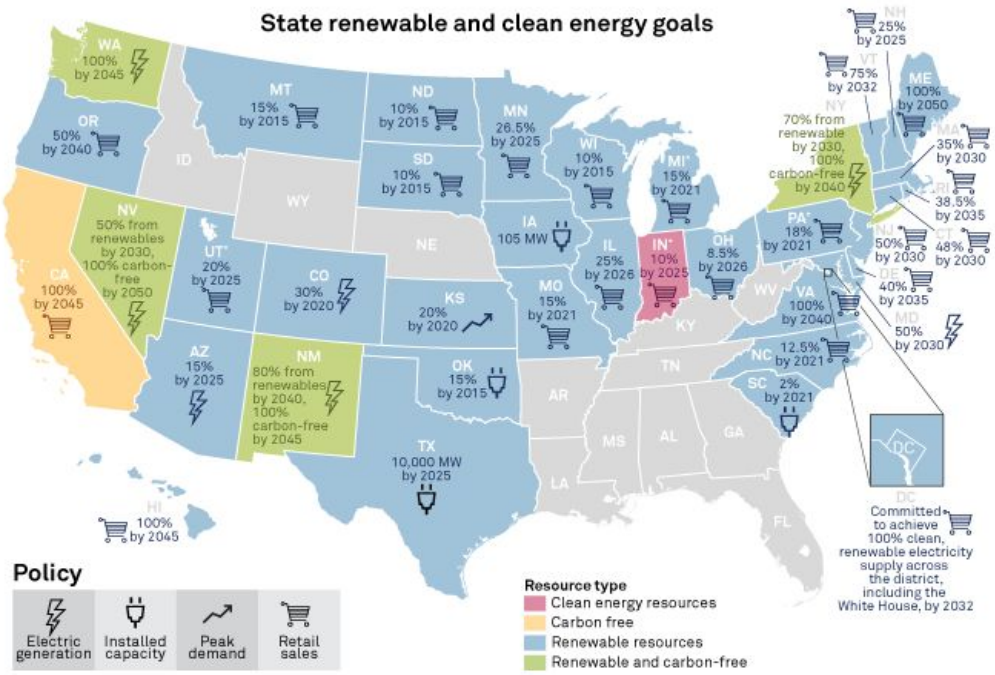
U.S. - State Renewable and Clean Energy Goals

U.S. decarbonization policy is fragmented, but dominated by strong RPS goals



Source: S&P Global

At least…

- 37 states and DC have renewable policy standards which are a key driver for adoption of renewable energy, including wind and solar
- 74 utilities in the U.S. have publicly stated decarbonization or emission reduction goals
- 51 utilities have goals for carbon free or net-zero emissions by 2050
- 71% of customer accounts in the U.S. are served by a utility with a carbon or emission reduction goal

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U.S. - Understanding the Bi-Partisan Infrastructure Bill

Seven key pillars can outline the $1 trillion infrastructure Investment and Jobs Act

This Bill demonstrates a more holistic and coordinated approach to decarbonization with economic development

Pillar	Key Implementation Details
1. Build Modern Transport Infrastructure	• Over $110 billion for public infrastructure projects (inc. also roads, bridges, airports, passenger and freight rail, ports, and waterways).
2. EV Infrastructure – Position the American Auto Industry to Win the 21st century	• Build national network of charging stations (~500,000 stations) • $2.5 billion in zero emission buses, $2.5 billion in low emission buses, and $2.5 billion for ferries. • Replacement of thousands of public transit vehicles to zero-emission credentials
3. Pursue Historic Investment in Clean Energy Innovation	• $400 billion in clean energy investments, inc. $73 billion of investments in power infrastructure (see below). $555 billion for wind and solar tax credits. $14 billion in resiliency and $3 billion in grid flexibility programs.
4. Boosts Investment into the Development of Wind Energy, Solar Energy, Energy Storage, and Carbon Capture	• $400 million for research and development into wind energy and $320 million for solar energy. • $355 million for energy storage pilot projects. $150 for long-duration storage initiatives. • $3.5 billion for large-scale carbon-capture projects
5. High-Speed Internet	• $65 billion investment to ensure every American has access to high-speed internet
6. Resiliency against Climate Change, Clean Water, and Environmental Remediation	• $50 billion in funds to protect physical and natural systems against droughts, floods, investments in weatherization • Revamping of water pipes and service lines. • $21 billion in environmental remediation (cleaning-up pollution, land rehabilitation).
7. Power Infrastructure	• $73 billion to upgrade power infrastructure, inc. resilient transmission lines (helping expansion of renewables), promotes smart grid technologies for flexibility and resilience, research into advanced power transmission and distribution

Accelerated electrification of transportation

Accelerated renewable energy adoption

Reduced low-carbon technology costs

Accelerated climate action

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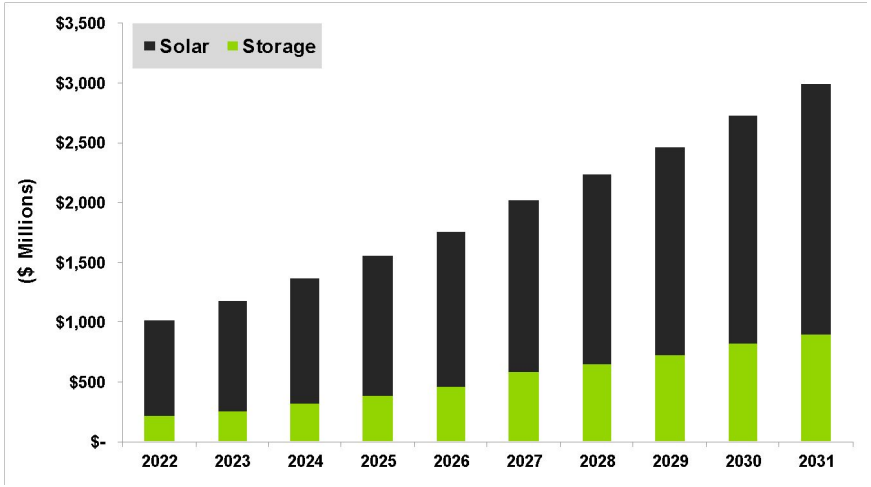
Source: https://www.whitehouse.gov/briefing-room/statements-releases/2021/07/28/fact-sheet-historic-bipartisan-infrastructure-deal/

Renewables M&C Market Forecast

- As battery energy storage and other DERs proliferate alongside solar PV, **demand for more complex solutions is required**
- **Awareness and education** is still needed around value of advanced M&C platforms
- Increasing number of solar developers are interested in **integrated systems** for **performance monitoring**, **work orders**, and **asset management**
- The M&C market, like the solar ownership market, is significantly fragmented, with a combination of **sophisticated analytics providers**, **control companies** with a solar offering, **inverter players** with their own solutions, and **O&M companies** developing solutions in-house
- **Predominant M&C business model is cloud-based SaaS**, as the renewables industry is relatively new, portfolios are often managed remotely, and these solutions rely on continuous access to external data sources (e.g., weather forecasts)

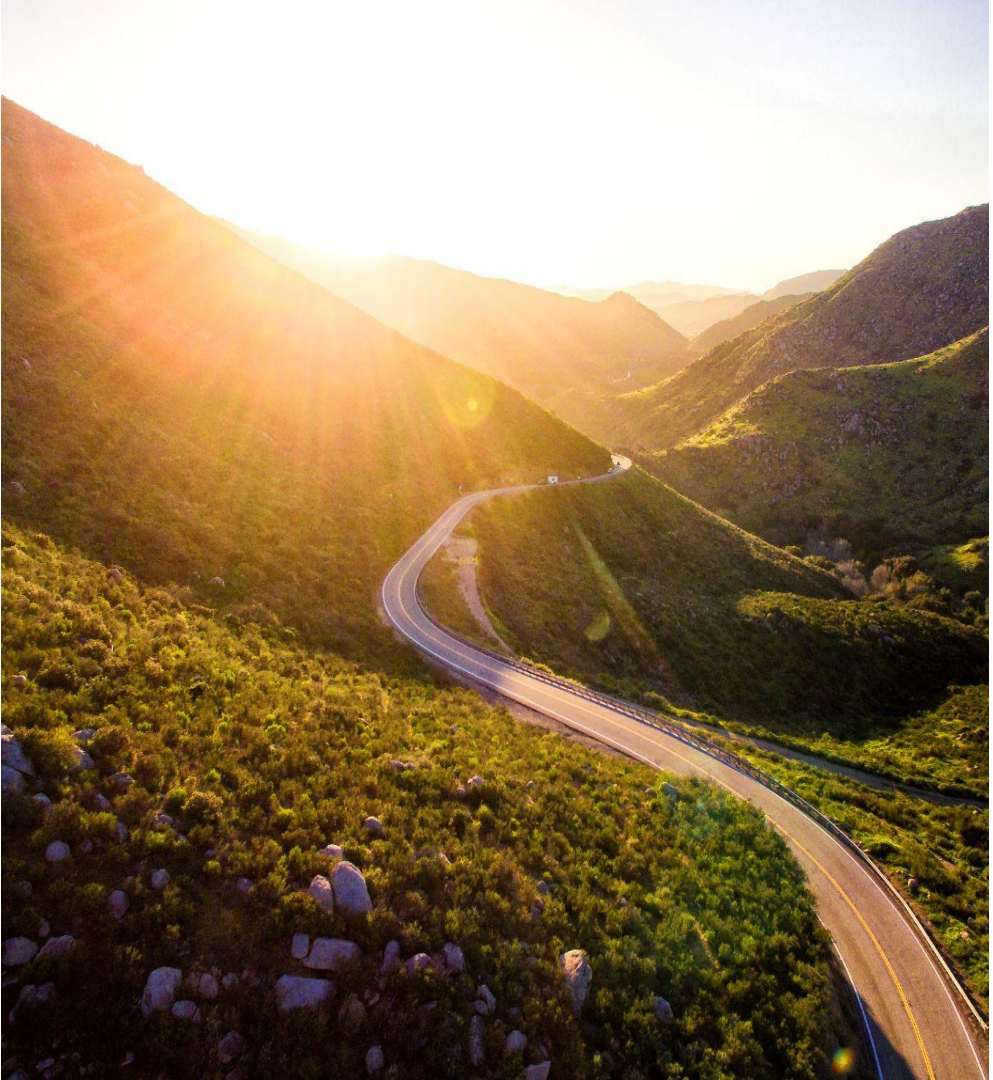
Utility-Scale Solar and Storage M&C Spending by Type, World Markets: 2022-2031



Guidehouse Insights expects that the market for utility-scale solar and storage M&C technologies **will grow from $1.0 billion in 2022 to approximately $3.0 billion at a CAGR of 12.8% over the next decade.** Asia Pacific leads the market in cumulative spending over the forecast period, while each global region is projected to grow by at least 9% through 2031.

Panel Discussion

What are some of the challenges or barriers developers and owners face as they expand their adoption of renewables?

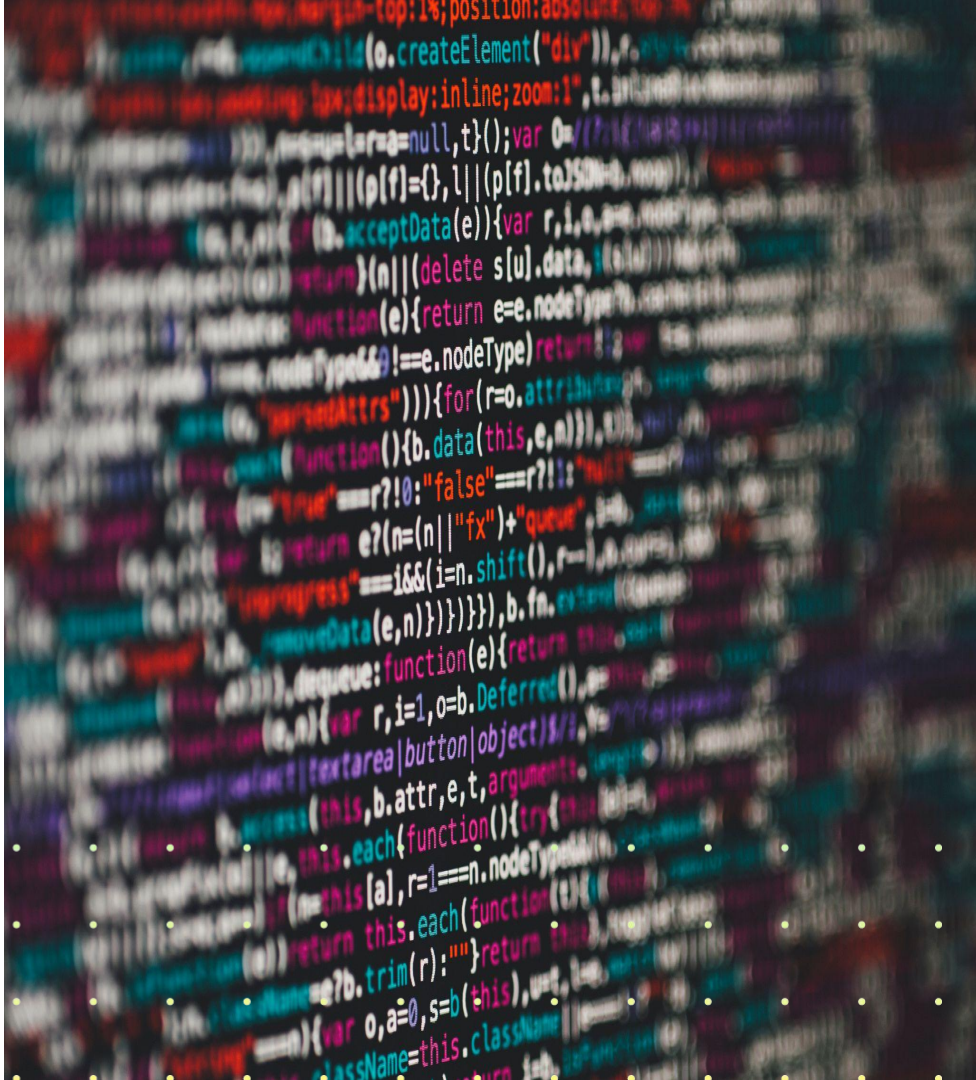


How can organizations get a higher return from projects over time?

What should you look for in a M&C partner?

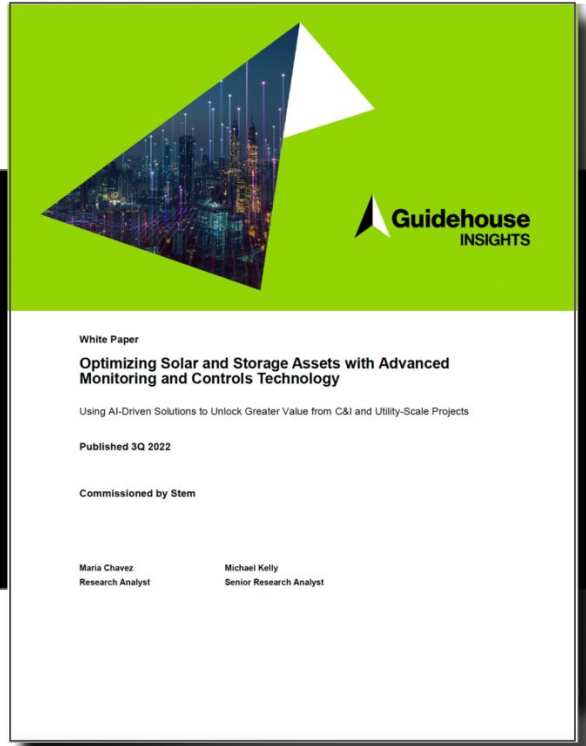
How will the Inflation Reduction Act impact the role of M&C in your solar and storage projects?

Why is digitization important?



What’s the best way to attach energy storage to solar in new construction or as a retrofit?

Additional Resources



Guidehouse INSIGHTS

White Paper

Optimizing Solar and Storage Assets with Advanced Monitoring and Controls Technology

Using AI-Driven Solutions to Unlock Greater Value from C&I and Utility-Scale Projects

Published 3Q 2022

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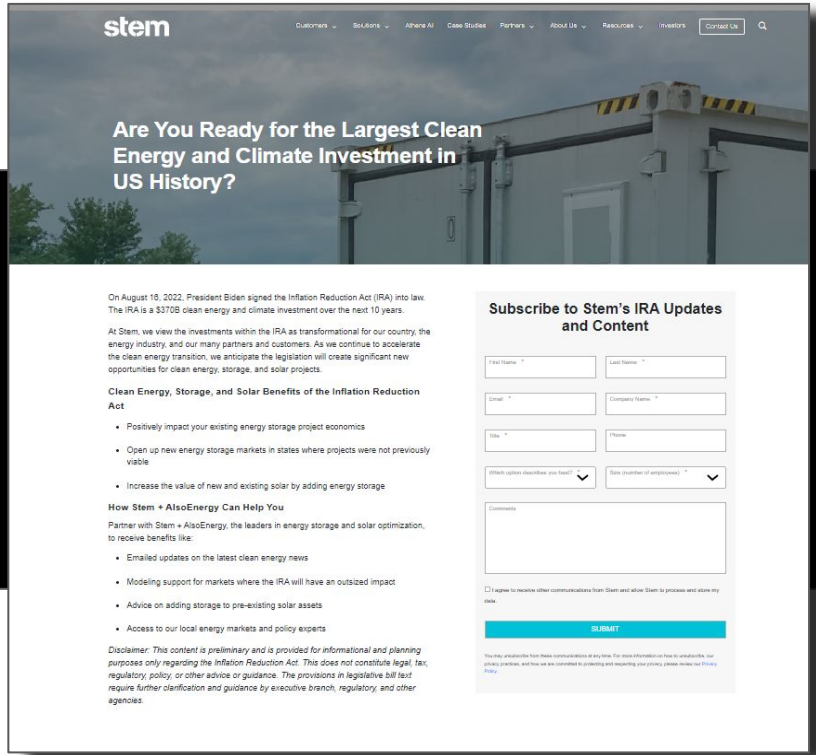

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Are You Ready for the Largest Clean Energy and Climate Investment in US History?

On August 16, 2022, President Biden signed the Inflation Reduction Act (IRA) into law. The IRA is a $370B clean energy and climate investment over the next 10 years.

At Stem, we view the investments within the IRA as transformational for our country, the energy industry, and our many partners and customers. As we continue to accelerate the clean energy transition, we anticipate the legislation will create significant new opportunities for clean energy, storage, and solar projects.

Clean Energy, Storage, and Solar Benefits of the Inflation Reduction Act

- Positively impact your existing energy storage project economics
- Open up new energy storage markets in states where projects were not previously viable
- Increase the value of new and existing solar by adding energy storage

How Stem + AlsoEnergy Can Help You

Partner with Stem + AlsoEnergy, the leaders in energy storage and solar optimization, to receive benefits like:

- Emailed updates on the latest clean energy news
- Modeling support for markets where the IRA will have an outsized impact
- Advice on adding storage to pre-existing solar assets
- Access to our local energy markets and policy experts

Disclaimer: This content is preliminary and is provided for informational and planning purposes only regarding the Inflation Reduction Act. This does not constitute legal, tax, regulatory, policy, or other advice or guidance. The provisions in legislative bill text require further clarification and guidance by executive branch, regulatory, and other agencies.

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First Name * | Last Name *
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Which option describes you best? | Size (number of employees) *
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About Stem

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.

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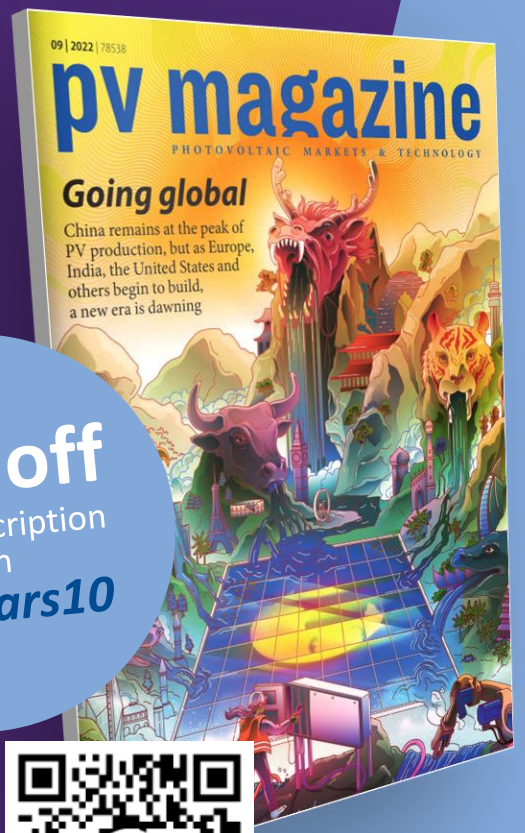

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2:00 pm – 3:00 pm BST, London

Monday, 10 October 2022
4:00 pm – 5:00 pm GST, Dubai
1:00 pm – 2:00 pm, Morocco

Many more to come!

Essential tips for successful installations

The case for residential, commercial Battery Energy Storage Systems in the MENA region

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