Bloomenergy®

Microgrid Solution Overview

AlwaysON Power

Meeting today's energy challenges head on with clean, resilient microgrid solutions.

Trends Shifting the Energy Paradigm

Technology Advancement

New supply (e.g., distributed energy resources) and demand-side technologies are fundamentally altering load and have created new options for utilities and customers.

Resiliency Needs

U.S. grid outages have increased 60% over the past decade. Extreme weather is causing frequent damage to our electrical system, costing Americans and the economy billions each year.

Rising Grid Costs

Customers have seen significant, sustained rate increases over time as utilities have to spend more money on real-world repair, maintenance and hardening of their infrastructure.

Customer Preferences

Rising bar on customer experience: Some customers are disconnected from the main grid either by location or by choice—relying on distributed generation and microgrids for generation needs.

Accelerated Electrification

Efforts to electrify end uses such as transportation, buildings, and industry are changing grid demand, driving decisions to replace traditional generation with renewable energy sources.

Consumer impacts from utility exposure to elevated climate risk

Operational Risk

Potential points of failure are becoming harder to predict Threats posed by compounding climate conditions are forcing utilities to implement preemptive mitigation measures such as Public Safety Power Shutoffs (PSPS).

Supply and demand incongruences cause generation failures Situations like extreme summer heat or winter cold cause increase use of temperature control systems that require more power than grid infrastructure is set up to deliver.

Operational risks that come from loss of power are extremely high Unexpected power outages can cause disruptions that ripple through a business' entire supply chain.

Financial Risk

Infrastructure vulnerabilities to extreme weather High impact weather events, increasing in frequency and severity, have prompted utilities to spend significantly more money on hardening plans that mitigate future risk.

Disaster response protocols to catastrophic climate events including relief, recovery and damages, also recoverable in customer rates.

Aggressive climate goals at the state and federal level increasing costs of transmission projects to bring remote renewables to customers.

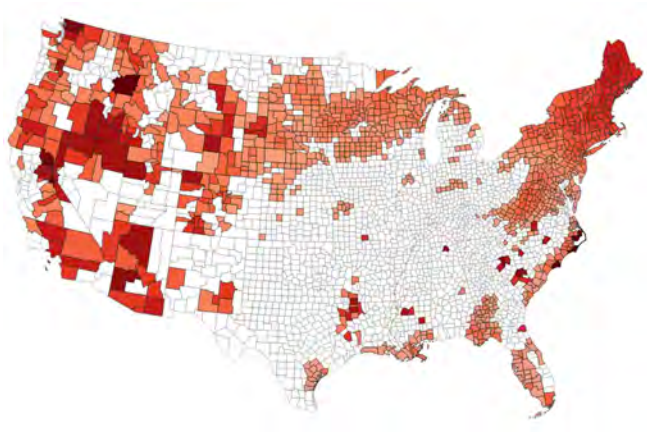
Extreme weather is stressing critical infrastructure.

We see this first hand — no matter where you live or what climate landscape you face, extreme weather is making addressing the energy challenges of today difficult for states, utilities, businesses, and communities.

During 2020, there were 22 separate billion-dollar weather and climate disaster events across the United States, shattering the previous annual record of 16 events that occurred in 2017 and 2011. The total cost over the last 5 complete years (2016-2020) exceeds $630 billion, averaging more than $125 billion per year — both new records.

From planned outages in the west to storm-induced outages in the south and east, these high-impact, high-cost ramifications of power disruptions have elevated the discussion around energy independence and the essential role microgrids play in combating our new normal.

United States Resiliency Hazard Map

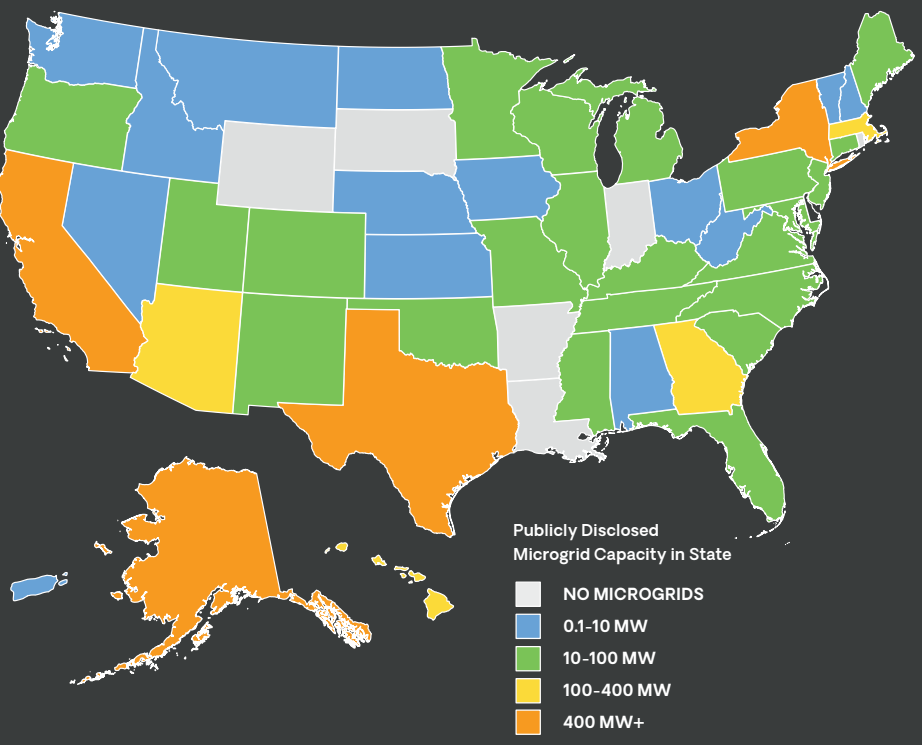


Lower Hazard — Higher Hazard

Resiliency needs are driving microgrid interest and increased adoption across the nation.

Distributed generation has completely shifted the energy paradigm, providing a clear path forward for those seeking to gain more control of their electricity supply. One solution rapidly gaining traction across industries is the microgrid.

Microgrids are distributed onsite power solutions that can disconnect from the traditional grid to operate autonomously. These localized sources of power can pair multiple generation technologies at a single site, enabling facilities to gain energy independence and progress their sustainability goals with cleaner power generation choices.



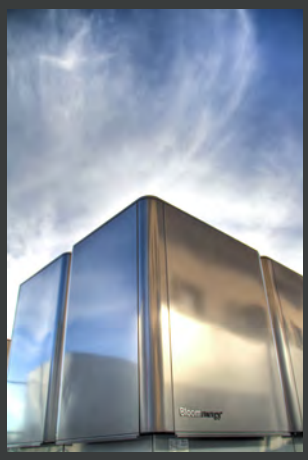
Microgrids are a win-win, allowing businesses to meet their own specific electricity needs while helping utilities address the larger challenge of hardening and decarbonizing our nation's grid.

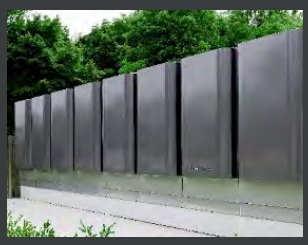
AlwaysON Microgrid Platform

Resiliency without compromise.

The AlwaysON Microgrid Solution is the 21st century answer to grid outages and extreme weather disruption. With our industry leading solid oxide technology at its core, the AlwaysON Microgrid provides unparalleled value to the customer, delivering a powerful combination of resiliency, sustainability, and predictability that no other power generation solution can match.

There is no longer a need to store extra fuel, buy extra backup power, or relocate your facilities. The AlwaysOn Microgrid's simple and elegant design offers protection from outages with low to no emissions, and is available as a service with no upfront costs.

The Bloom Energy Advantage

Bloom Energy has built an entire ecosystem around its solid oxide technology. Our platform is uniquely positioned to help overcome the compounding challenge that is sustainable resilience.

Resiliency

Our technology avoids the vulnerabilities of conventional transmission and distribution lines by generating power on-site, where the electricity is consumed. As a critical, always-on solution, microgrids can operate alongside a main grid, but independently of it during a power outage. The system operates at very high availability due to its modular and fault-tolerant design. What does this independence mean? Resilient power.

Sustainability

By converting natural gas or renewable biogas or hydrogen into clean electricity using a electrochemical reaction without combustion, we are able to achieve an industry-leading 60%+ electrical efficiency while virtually eliminating NOx, SOx, and other harmful criteria pollutants from the environment.

Predictability

Electricity rates are highly variable and as large energy consumers, businesses are subject to significant escalation and fluctuating prices that make budgets difficult to achieve. Our flexible financing options allow customers to capture all of the economic benefits of producing their own power, providing a predictable low-cost source of revenue over the life of the project.

Flexibility

Our technology operates at the highest electrical efficiency and power density in the marketplace. Energy Servers come together like building blocks and can easily scale to meet the growing requirements of business operations. Any number of modules to be clustered together in various configurations to form solutions from hundreds of kilowatts to many tens of megawatts.

Turnkey Simplicity

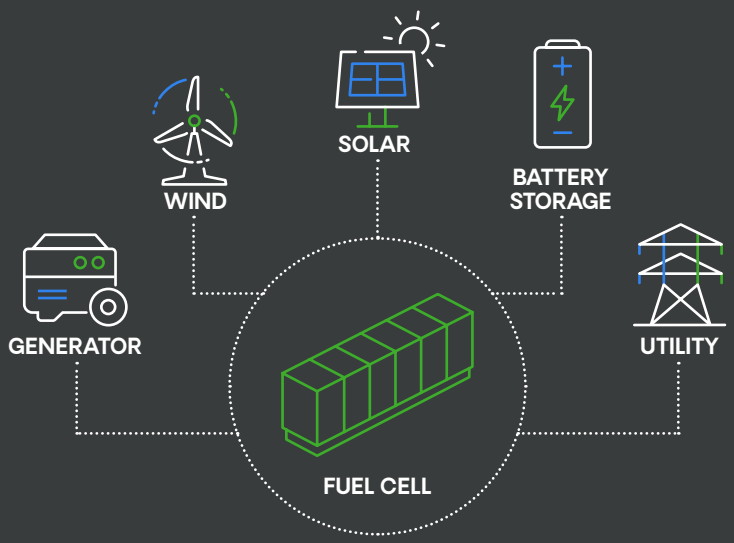
Ourenergy servers are 'plug and play' — a full turnkey offer with gas conditioning, power generation and interconnection services. Service contracts are end-to-end, and Bloom is responsible for ensuring equipment is maintained long-term based on standardized maintenance and warranty-protection protocols to sustain performance

Gain Control.
Eliminate Risk.

Flexible Microgrid Architecture

Fuel cells provide a critical foundation for building microgrids of varying complexity and can provide significant benefits to the communities, businesses, and utilities they are part of.

These localized sources of power can pair multiple distributed generation technologies at a single site, enabling facilities to gain energy independence and progress their sustainability goals with cleaner power generation choices.



Platform for Resilient Power

Some of the many ways bloom can make your business more resilient:

Utility Power Constraints

- Utility could not deliver power to a building under construction.
- Bloom installed 2.5MW microgrid that powers 100% of new building and parts of existing campus.
- Enabled building construction to proceed on schedule.

Community Protection From Storms

- City of Hartford was hit with a hurricane and storm, causing an 11 day outage.
- Bloom installed 800kW system to power critical facilities.
- Bloom Microgrids have provided a safe haven for the community over seven outages since.

Keeping Businesses Open During Disasters

- A business wanted to keep facilities open during disasters to serve their local communities with safety supplies.
- They wanted to reduce or eliminate the need for diesel generators that reduce air quality and are a hassle to maintain.
- They installed Bloom across the northeast that have powered through.

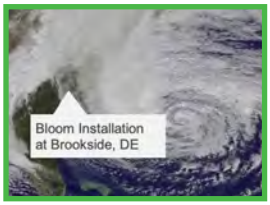
Public Safety Power Shutoff (PSPS) Protection

- California utilities implemented transmission-level "public safety power shutoffs" in 2019.
- Millions of customers were without power for up to a week.
- Bloom powered a large campus in Santa Rosa, CA for 5.5 days during a PSPS in October. 100+ utility outages.

Proven in the Field

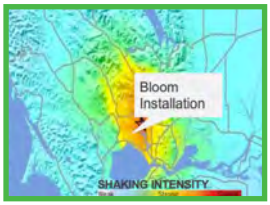
Bloom's platform has protected customers from thousands of grid events.

Hurricanes



"Bloom Energy electrical project in New Castle was unaffected by Hurricane Sandy."
—Delmarva, Regional President

Earthquakes



Magnitude: 6.0 Earthquake
1 MW Bloom Unaffected

Utility Outages

Bloom protects against major utility fault

Physical Damage

Independent system architecture continues operations through disruptions

Fire Damage

Demonstrated resilience through historic CA wildfire

Scale and Experience

Bloom Energy has been at the forefront of the energy sector since its inception, working to offer better alternatives to energy generation and delivery for nearly two decades. The versatility of our core solid oxide platform creates distinct advantages that enable applications across the entire energy value chain.

In operating our global fleet, Bloom has developed significant technical insights generating over 800 billion cell hours in the field. Our costs to manufacture have decrease dramatically, allowing a significant expansion of technological capabilities, increasing stack lifetimes and improving system efficiencies.

Our experience as a developer of fuel cell projects, in addition to our role as an OEM, provide us with the skill sets required to engage customers with turnkey solutions, develop model and finance portfolios, deliver competitive projects and consistently deliver successful opportunities for our customers.

As we continue to innovate, we are deeply confident in our ability to leverage our scale, experience, continued cost improvements and core efficiency advantages to deliver the greatest value and provide the solutions needed to propel our customers towards a better energy future.

Product Innovation

Our technology's roots can be traced back to NASA's Mission to Mars program. By leveraging breakthrough innovations in materials science, Bloom Energy Servers are among the most efficient energy generators, providing resiliency and predictability without compromise and dramatically lower greenhouse gas emissions. Bloom continues to innovate within its core fuel cell business by pressing the boundaries of size, regional scope, and installation complexity.

Financial Innovation

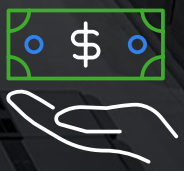
Bloom has raised close to $4 billion in third-party financing from marquee investors like Southern Company, Duke Energy, Exelon, Wells Fargo, Key Bank, and Bank of America. In just the last five years, Bloom has been able to drive down the cost of its financing by nearly 15 percent. This innovation has allowed Bloom to cater to a much wider range of customers who are averse to or wouldn't qualify for long-term (10 – 25 year) power contracts, the norm in renewable energy.

Bloom is a trusted onsite energy partner supporting a wide array of business operations around the world

500+ MW
Deployed

700+ Sites
Globally

30% CAGR
in the last decade



~$4 Billion
in Third Party Financing

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Flexible. Future Proof.

Accelerate your path to a zero carbon future.