



# Ultra-Reliable Onsite Generation



**How Enchanted Rock Delivers  
5-Nines+ Resiliency at Scale**

A FULLY OUTSOURCED, PERFORMANCE-DRIVEN APPROACH TO CRITICAL POWER RELIABILITY



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# Executive Summary

## Key Takeaways



### GRID RELIABILITY RISKS ARE INCREASING

Severe weather, aging infrastructure, and rapid load growth place new pressure on electricity systems across the United States.



### INTERCONNECTION OF LARGE LOADS IS LAGGING

Utilities are struggling to connect new facilities and operations to the grid in a timely manner.



### DOWNTIME TOLERANCE IS COLLAPSING

Modern facilities depend on continuous digital and automated processes where even short outages can cause major operational disruption.



### TRADITIONAL BACKUP SYSTEMS ARE OFTEN INSUFFICIENT

Diesel generators designed for emergency use may not meet the reliability, environmental, or operational needs of modern facilities.



### OPERATIONALLY PROVEN RESILIENCY SOLUTIONS EXIST

ERock's onsite resiliency model combines ultra-reliable power with speed-to-power deployment and bridge-to-power capabilities — all while minimizing environmental and community impacts.



For decades, commercial and industrial facilities operated under a simple assumption: electricity service was readily available and highly reliable. Backup generators were installed primarily to meet regulatory requirements or protect against rare emergencies.

Today, that assumption is becoming less certain. The US grid is under mounting pressure from severe weather, aging infrastructure, and rapid growth in electricity demand—from data centers, advanced manufacturing, and electrified transportation.

At the same time, many organizations cannot tolerate even brief interruptions. Automated processes, digital infrastructure, and continuous production environments mean that even short outages can disrupt operations.

Meanwhile, companies building new facilities find they cannot connect to the grid — sometimes for several years.

As a result, many organizations are reassessing how they approach electric power. If the grid cannot deliver the reliability — or even the access — modern operations require, what alternatives exist that provide resilience without compromising environmental performance or community well-being?

This paper explores these questions and introduces Enchanted Rock's (ERock) onsite resiliency model, which helps organizations both protect operations from outages and secure reliable power — with speed — when utility infrastructure cannot keep pace with project timelines.



# The New Reliability Reality

## What's Changed?



### The ERock Story:

**400+**

Operational Sites

**38,500+**

Hours of Utility Outages Covered

**99.999%**

Combined Reliability

Across the United States, the grid is becoming more complex — and less predictable. Severe weather events, infrastructure constraints and surging electricity demand are reshaping the operating environment for organizations that depend on continuous power.

The data is stark. Major weather-related power outages rose [78%](#) between 2011 and 2021 compared with the previous decade. At the same time, much of the nation's grid infrastructure is aging, a challenge compounded by rising electricity demand from data centers, advanced manufacturing, and electrified transportation.

Outages are also [lasting longer](#), almost tripling for U.S. electricity customers, from about 106 minutes in 2013 to more than 335 minutes in 2022.

And for many organizations, the

challenge isn't just reliability—it's access. Grid capacity constraints and long interconnection queues are making it harder to secure grid power in a timely way — if at all.

### Reliability Expectations Are Changing

This comes as tolerance for power disruptions collapses for modern operations that rely heavily on automated production systems, sensitive digital infrastructure and tightly integrated operational processes. Even brief interruptions can cascade into significant losses — halted production, damaged equipment, lost data, and lengthy restart procedures

In sectors like healthcare, water treatment, life sciences and advanced manufacturing, power reliability isn't just an operational issue — it's tied to continuity, regulatory compliance, and public safety. So many now require near-





where outages are rare and recovery is immediate.

For these organizations, the question becomes: What does it take to achieve that level of reliability in an increasingly complex — and often slow-moving — grid environment?

### **A New Model for Onsite Resilience**

As reliability expectations increase, many organizations are rethinking how onsite power systems are designed and operated. Rather than relying solely on standby backup generation, a new class of resiliency systems is emerging that operates in coordination with the utility grid.

These systems allow facilities to draw electricity from the grid under normal conditions while maintaining

the ability to transition seamlessly to onsite generation during outages. The result is a more resilient operating model that protects critical operations without requiring facilities to disconnect from the broader electricity system.

ERock's approach is built around this concept. The company develops and operates modular natural gas generation systems designed to provide reliable onsite power for facilities that must maintain operations during grid disruptions. By integrating system design, deployment, and long-term operations within a single operating model, these systems provide resilient power while remaining compatible with surrounding communities and the existing grid.

### **Speed to Power Is Becoming a Strategic Constraint**

Reliability isn't the only challenge. Increasingly, it's timing. Where demand is high on the grid, it can take several years to interconnect. Data centers and advanced manufacturing facilities can be built much faster. The result is a widening gap between when power is needed and when it can be delivered.

### **The Shift Ahead**

As electricity demand accelerates and grid complexity increases, resilience planning is becoming a core operational priority for many commercial and industrial organizations.

The following sections examine the forces driving this shift and how new approaches to onsite resiliency help organizations adapt to the realities of today's power system.



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# Why Traditional Backup Falls Short

Many organizations have responded by installing conventional backup generation. Diesel generators have long been the standard solution for emergency power in commercial and industrial facilities.

These systems can provide short-term backup during outages, but they were not designed to deliver the level of reliability many modern operations require.

## Diesel Generators Are Designed for Emergencies

Diesel generators typically operate only during periodic testing or outages, meaning their performance under sustained real-world conditions is rarely validated.

As a result, they may sit idle for long periods, leaving them vulnerable to mechanical or control-system issues that may not appear during limited test runs.

Fuel logistics can also present risks. Extended outages or extreme weather can disrupt diesel deliveries, creating additional operational risks.

## Fragmented Delivery Models Create Reliability Gaps

Traditional resiliency projects can introduce additional challenges because responsibility is often divided among multiple organizations. Engineering firms design and construct the system, while other parties handle operations, maintenance, or market participation.

When responsibility is distributed in this way, maintaining consistent performance over time can become more difficult. The organization operating the system during an outage may not be the same one that designed or built it, creating potential gaps in accountability.

## Reliability Is an Operational Discipline

Reliable power is often framed as an equipment problem. In practice, reliability depends on how systems are operated, monitored and maintained over time.

Systems that remain idle until an emergency provide limited assurance that they will perform when needed. By contrast, systems that operate regularly under real conditions are continuously tested and verified, allowing operators to identify mechanical issues, validate controls, and maintain readiness.

For organizations that depend on uninterrupted power, reliability is not simply a matter of installing backup equipment. It is the result of disciplined operations, continuous monitoring, and clear accountability for system performance throughout the system's life.



# ERock's Ultra - Reliability Model

ERock delivers resilient power through an operating model designed to support critical facilities over the full lifecycle of each system. Rather than supplying equipment alone, the company develops, deploys, and operates onsite generation systems that are continuously managed throughout their operational life.

From early project development through long-term operations, ERock teams design, build, monitor, and maintain the energy infrastructure that supports customer facilities. This integrated approach aligns system engineering, operational performance, and maintenance practices under a single operating model focused on reliability.

## A Fully Integrated Delivery Model

ERock manages the entire system lifecycle, including project development, system design

and engineering, EPC delivery, commissioning, monitoring, and long-term operations and maintenance. The teams responsible for operating the systems remain closely connected to the engineers and project teams that designed and deployed them.

For customers, this structure provides a single point of accountability for system performance and long-term reliability.

## Systems Designed to Operate

A defining feature of the ERock model is that its systems operate regularly under load — always doing real work — rather than remaining idle until an emergency.

Running systems under actual operating conditions allows ERock to validate performance, maintain mechanical readiness, and continuously test control systems.

Unlike many diesel generator tests, which often involve starting equipment without placing it under meaningful load, ERock systems are routinely exercised in ways that more closely reflect real operating demands

This approach produces operational data that informs maintenance practices and helps improve performance across the fleet.

The result is exceptionally high system availability. Across ERock's operating fleet, systems have delivered greater than 99.999% reliability while supporting customer operations through thousands of hours of utility outages.



# “ERock operates one of the largest fleets of resiliency microgrids in the United States...”

## Continuous Monitoring and Maintenance

Operational visibility is central to the reliability model. ERock monitors its systems around the clock through a centralized Microgrid Control Center, where operators track performance data, system status and grid conditions across the fleet.

Continuous monitoring allows operators to coordinate system dispatch during outages and identify potential issues before they affect system availability. Field technicians support these efforts through regular inspections, preventive maintenance, and service activities that ensure equipment continues operating according to design specifications.

Because the same organization designs, installs, and operates the systems, operational insights from the field can be incorporated directly into maintenance practices and future deployments.

## Flexible Deployment and Operational Value

ERock also provides value during

normal grid conditions. In regions where market opportunities exist, its onsite systems can help support the power system during periods of high demand.

Examples include California’s Base Interruptible Program (BIP) and Texas Four Coincident Peak (4CP), where customers can reduce costs or generate value by making onsite generation available when the grid is under stress and prices spike. ERock has the in-house expertise to identify these opportunities, structure projects to qualify for participation, and help monetize generation assets over time.

Participation in these programs can offset lifecycle costs while maintaining the primary mission of reliability.

ERock systems are also designed to solve one of the fastest-growing constraints for large-load customers: securing reliable power on the project’s timeline, not years later. In these cases, onsite generation becomes a bridge to the grid; it provides continuous electricity until permanent grid infrastructure becomes available.

Once utility service is established, the onsite system remains in place as a resiliency asset or can be redeployed to support other locations.

## Reliability at Scale

Today, ERock operates one of the largest fleets of resiliency microgrids in the United States, supporting hospitals, research campuses, manufacturing facilities, water infrastructure, and other critical operations.

Across this fleet, systems have supported customers through more than 38,000 hours of grid outages while maintaining greater than 99.999 percent reliability. These deployments demonstrate how a model centered on integrated operations, continuous monitoring, and lifecycle accountability can deliver resilient power across a wide range of critical infrastructure environments.



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# What Sets ERock Apart



## Fully Integrated Delivery Model

ERock manages the entire system lifecycle — from project development and engineering to commissioning, monitoring, and long-term operations and maintenance — under one unified operating model focused on reliability and accountability.



## 24/7 Monitoring and Maintenance

Through its centralized Microgrid Control Center, ERock continuously monitors system performance, grid conditions, and operational status while field technicians perform preventive maintenance and inspections to maximize availability.



## Systems Designed to Operate

Unlike standby-only backup systems, ERock's onsite generation systems run continuously under real operating conditions, allowing constant validation of performance, mechanical readiness, and control systems.



## Flexible Grid Support

ERock systems can participate in energy market programs such as California's BIP and Texas 4CP, helping customers reduce costs, monetize onsite generation assets, and support grid stability during peak demand periods.



## Exceptional Reliability

ERock's operating fleet has achieved greater than 99.999% reliability while supporting customers through more than 38,000 hours of utility outages across critical infrastructure environments.

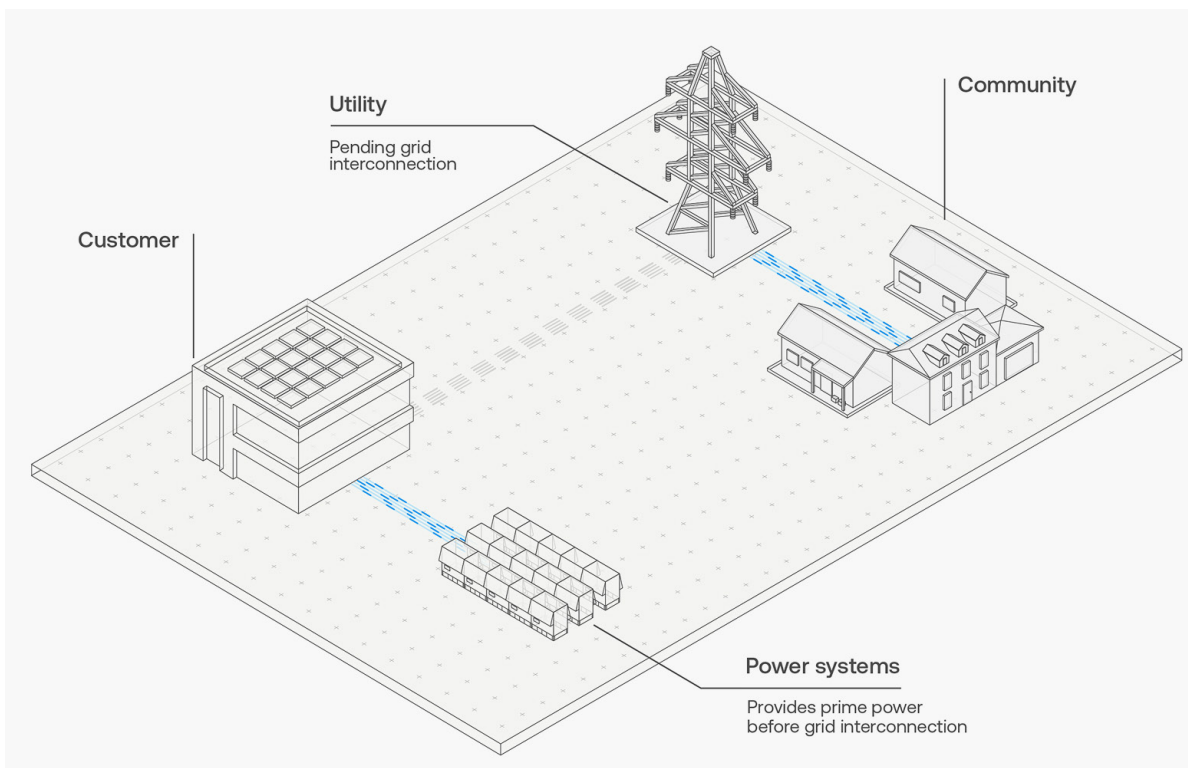


## Scalable Resiliency

ERock operates one of the largest resiliency microgrid fleets in the U.S., supporting hospitals, manufacturing facilities, research campuses, water infrastructure, and other mission-critical operations with dependable onsite power.



# How Reliability Is Engineered and Operated



Reliable power systems must perform under real operating conditions, not just during scheduled testing. ERock systems are designed and operated with this requirement in mind, combining resilient generation, automated controls, and centralized operational oversight to maintain power when the grid cannot.

## Natural Gas Generation

A central component of the ERock system architecture is natural gas generation.

Unlike diesel generators that rely on onsite fuel storage and delivery logistics, natural gas systems draw from existing pipeline infrastructure. This fuel supply is more reliable during extended outages and eliminates

many of the operational risks associated with refueling during emergencies.

Natural gas generation also enables systems to operate continuously under normal conditions, supporting the operating model that underpins ERock's approach to reliability.

## Automated Islanding

When a grid disturbance occurs, the microgrid must transition quickly from utility power to onsite generation. ERock systems are designed with automated islanding capability, allowing facilities to disconnect from the grid and continue operating using onsite generation without manual intervention.

This automated response helps maintain



# ***“ERock systems follow a different operating philosophy: run often and run under load.”***

even brief interruptions can disrupt processes or halt critical services.

Once utility power is restored and grid conditions stabilize, the facility can seamlessly transition back to grid service without disrupting ongoing operations.

## **Remote Operations and Monitoring**

ERock’s centralized Microgrid Control Center provides continuous oversight of system performance across the operating fleet. Operators monitor system performance, track grid conditions, and coordinate system dispatch when outages occur.

Continuous monitoring helps identify potential issues early so they can be addressed before affecting system availability. It also provides operators with situational awareness across all deployed systems during grid disturbances.

## **Why “Run Often, Run Loaded” Matters**

Traditional backup generators are typically tested periodically but remain idle most of the time. While testing provides some validation, it does not fully replicate the conditions experienced during a real outage.

ERock systems follow a different operating philosophy: run often and run under load.

Frequent runtime allows continuous validation of mechanical systems, controls, and dispatch

performance while maintaining equipment readiness. Operating under real conditions also allows engineers to identify potential issues earlier and refine system performance over time.

As a result, customers can have greater confidence that systems will respond as expected during grid disruptions.

## **The Advantage of an Integrated Model**

ERock’s vertically integrated model helps prevent these gaps. Because the same organization designs, builds, operates, and maintains the systems, operational insights can be incorporated directly into engineering practices and maintenance strategies.

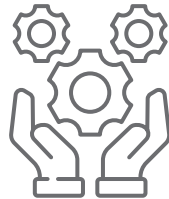
Field experience informs system improvements, while operational teams maintain direct visibility into system performance.



# Community-Friendly Resilience



**Scaled to Environment**



**Complements the Grid**



**Responsible to the Community**

***As organizations invest in onsite resilience, local impacts such as emissions, noise, visual footprint, water use, and construction disruption are becoming increasingly important considerations.***

ERock systems are designed to deliver high levels of reliability while minimizing their impact on surrounding communities. This allows critical facilities to strengthen resilience without introducing the environmental or infrastructure concerns often associated with traditional power generation.

## Designed for Sensitive Environments

Many traditional power plants require large footprints, extensive cooling systems, large/unsightly emissions control systems, and significant construction activity, making them difficult to site in populated or space-constrained environments.

ERock's modular generation platforms are compact and scalable, allowing systems to be installed within existing facility footprints. This design reduces construction timelines and minimizes disruption compared with traditional generation infrastructure such as large turbine installations.

## Low Local Impact

Natural gas systems produce significantly lower local emissions than conventional diesel backup generation. The systems are also designed to operate without water consumption, eliminating the cooling water requirements

common in many traditional power plants.

Engineered for quiet operation and a low visual profile, these systems can typically be enclosed behind a ~10-foot wall—significantly less intrusive than conventional turbine stacks that may exceed 40 feet—making them well suited for critical infrastructure in dense or sensitive environments.

## Complementary to the Grid

ERock systems are designed to work in coordination with local utilities rather than replace them. Facilities continue operating on utility power during normal conditions, while onsite generation provides reliable continuity during grid disruptions.

## Reliability That Works with Communities

Resilience infrastructure must protect critical operations while remaining compatible with the communities around it. ERock's approach allows organizations to strengthen reliability while minimizing environmental and community impacts.

The result is resilient power infrastructure designed to operate responsibly within the communities it serves, while also providing backup power to the grid, making power outages less likely for everyone.





  
**ENCHANTED ROCK**  
*The Power is On.*



# Proven at Scale: Selected Project Examples



ERock systems operate across a wide range of critical infrastructure environments and are designed to perform under real-world conditions.

The following examples illustrate how the operating model has been deployed across different sectors and operational requirements.

## **Bridge Power for Advanced Electronics Manufacturing: Solving the Speed-to-Power Gap**

For some large-load projects, the challenge is not just resilience but speed to power. Large industrial and technology facilities increasingly face delays in utility interconnection timelines, creating a gap between project completion and access to permanent grid service.

For an advanced electronics

manufacturer in Texas, ERock was selected to deploy a 10.5 MW low-voltage bridge power system designed to deliver continuous 24/7 onsite electricity beginning in late 2025. The system will serve as the facility's primary power source while the utility completes permanent infrastructure upgrades.

Once full utility service becomes available, the system can either remain onsite to support resiliency and grid services or be redeployed to support another manufacturing location in the Dallas–Fort Worth region that requires interim power.

## **U.S. Army Engineer Research and Development Center**

At the U.S. Army Engineer Research and Development Center in Vicksburg, Mississippi, ERock partnered with the U.S. Army Corps

of Engineers and the local utility to deploy a resiliency microgrid designed to protect the facility's advanced computing infrastructure.

The system protects sensitive computing infrastructure used for engineering and defense research.

## **Children's Medical Center Plano**

Healthcare facilities require extremely high levels of electrical reliability for patient care and hospital operations.

At Children's Medical Center Plano in Texas, ERock deployed a 6-MW natural-gas microgrid to provide reliable backup power for the hospital campus. The system allows the facility to maintain operations during grid outages while also supporting the local power system during periods of high demand.





By moving beyond traditional diesel-only backup, the hospital benefits from only backup, the hospital benefits from a cleaner and more efficient resiliency solution for critical clinical infrastructure.

### **Baton Rouge General Medical Center**

Baton Rouge General Medical Center partnered with Entergy and ERock to deploy resilient backup generation across two hospital campuses. The systems allow hospital operations to continue during grid outages.

The project reflects a broader shift among healthcare providers toward full-campus resilience rather than backup systems limited to life-safety loads.

### **California Department of Water Resources**

ERock partnered with the California Department of Water Resources to build and operate three fast-response power plants under the state's Electricity Strategic Reliability Reserve Program.

Together, the facilities provide approximately 148 MW of dispatchable generation capacity, with each site capable of delivering 48 MW. These systems respond rapidly during grid emergencies and provide backup power that supports local communities during periods of extreme demand.

### **City of Houston Northeast Water Purification Plant**

Reliable electricity is essential for water infrastructure serving large urban populations.

At the City of Houston's Northeast Water Purification Plant (NEWPP), ERock deployed 32 MW of backup generation to protect one of the region's most important water facilities.

The ERock system protects plant operations while delivering more than \$20 million in capital cost savings compared with traditional backup power solutions.

As the project's director noted during deployment: "The NEWPP project will add 320 million gallons per day by 2024 to the existing water plant's capacity. The City of Houston evaluated several companies and selected ERock for this project based on technical requirements, performance of past projects, and competitive pricing."  
— Ravi Kaleyatodi, P.E., Project Director, NEWPP Expansion Project, City of Houston



# Conclusion: Reliability Without Compromise

For many commercial and industrial organizations, ultra-reliable power is no longer optional. Increasing grid strain, growing operational complexity, and the rising cost of downtime have made resilience a core operational requirement.

Couple this with an oversubscribed grid that can't quickly connect new customers, and it becomes clear that ERock's approach is designed for this environment.

By integrating system design, deployment, operations, and maintenance into a single operating model, the company provides resilient, utility-aligned on-site power that supports facilities during grid disruptions — and the broader electricity system at other times.

And because there is no need for an immediate grid connection, these systems deliver power quickly, serving as a bridge until the grid is ready for a new customer, and afterward, as a valuable asset that keeps the power on when the grid cannot.

As electricity demand accelerates and grid complexity increases, resilient onsite power is becoming a foundational component of modern infrastructure rather than a contingency solution.

Today, this model has been deployed across hundreds of systems supporting critical infrastructure across the United States, demonstrating how operationally managed microgrids can deliver reliable performance under real-world grid conditions.

For organizations that depend on uninterrupted operations, reliability without compromise is becoming an essential part of modern infrastructure.



# Contact Information

Connect With Us

Advancing smarter approaches to distributed power today.



## Headquarters

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Enchanted Rock, LLC  
1113 Vine St., Suite 101  
Houston, TX 77002  
Phone: 713.429.4091

## General Inquiries

---

Email: [info@enchantedrock.com](mailto:info@enchantedrock.com)  
[www.erock.com](http://www.erock.com)

