CASE STUDY

Illinois Army National Guard's North Riverside Readiness Center

CHALLENGE:

Design a backup power solution that is cost-effective and significantly enhances energy resilience for the facility.

SOLUTION:

1. Natural Gas 150 kW generator with a 1200-amp Automatic Transfer Switch
2. Demand-Side Management Generator Configuration

RESULT:

A backup solution that fortifies its energy resilience and tackled high demand charges.

"The DSM generators at the Illinois National Guard North Riverside Readiness Center reduced the facility peak electric demand resulting in lower energy costs year-round."

Patricia Rowley
R&D Manager, Building Energy Efficiency
GTI Energy

APPLICATION:

Government - Business Offices

MODELS:

SG150 Natural Gas Generator

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GENERAC®

The Search for Energy Resilience

In an era where uninterrupted power supply is crucial for mission-critical facilities, the Illinois Army National Guard's North Riverside Readiness Center faced the challenge of ensuring energy resilience in the face of power outages and high utility demand charges. To address these issues, they turned to Generac and their innovative demand-side management generators. This case study explores how the installation of these generators provided a cost-effective solution, significantly improving the backup power supply system and enhancing energy resilience for the facility.

Nestled just outside Chicago, the North Riverside Readiness Center serves as a crucial hub for training, recruiting, and supporting the state's National Guard forces. However, like many facilities, it encountered persistent challenges regarding energy resilience, necessitating a robust and dependable backup power system. With a focus on reduced lifecycle costs, they sought a reliable and efficient solution that would address these challenges while ensuring uninterrupted operations.

Recognizing the urgency of the situation, the U.S. Army Corps of Engineers Construction Engineering Research Laboratory and the leaders of the Illinois National Guard sought the expertise of industry and research leaders in energy transition solutions. GTI Energy is a trusted leader that collaborates with a broad spectrum of energy stakeholders—including federal and state government agencies, national laboratories, gas and electric utilities, technology developers, equipment manufacturers, and infrastructure operators. GTI Energy extensively researched various options and engaged in consultations with Zonatherm, a Chicagoland Generac Industrial distributor, and worked together on activating their innovative solutions in the field.

The collaboration between the Illinois National Guard, Zonatherm, and Generac solidified the beginning of a comprehensive planning phase. Zonatherm and GTI Energy's team of experts meticulously assessed the facility's energy requirements, load profiles, and operational patterns. Through in-depth discussions and collaborative sessions, a customized solution was crafted to address their specific challenges.

Implementing the Solution

Demand-Side Management (DSM) Generators from Generac, a leader in gaseous generators, provided the ideal solution for the National Guard facilities. Zonatherm installed a natural gas-powered 150 kW generator with a 1200-amp Automatic Transfer Switch (ATS). This DSM generator configuration offered the potential for unparalleled energy resilience, cost savings, and the flexibility to adapt to varying fuel availability.

During the installation and activation process, challenges arose. One of the crucial considerations was setting up the ATS and exercising the units with full facility load. This revealed commissioning issues that would have otherwise gone unnoticed until a power outage occurred. Additionally, upgrades were required for the uninterruptible power supply (UPS) and ATS systems to provide uninterrupted power to critical systems such as servers and computers.

To address the discovered challenges, the installation team collaborated closely with the Illinois National Guard 's facility management staff. Together, they devised a comprehensive plan to implement the necessary upgrades and achieve uninterrupted power supply to critical systems, including servers and computers. Through effective coordination, these obstacles were overcome, and the installation progressed smoothly.

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Project Results and Benefits

Upon completion of the installation and activation process, the North Riverside Readiness Center witnessed a multitude of significant results and benefits. Key among them were:

REDUCED PEAK ELECTRIC DEMAND:

The DSM generator system successfully reduced the facility's peak electric demand by 22 kWe representing a **23.1% reduction from the measured peak demand** of 95 kWe. This reduction resulted in substantial savings on demand charges.

YEAR-ROUND ENERGY COST SAVINGS:

The DSM system's peak-shaving operations, totaling an estimated 250 hours per year, delivered year-round energy cost savings with minimal added maintenance costs. By intelligently managing electricity usage during periods of high demand, the facility significantly curtailed costs.

ENHANCED ENERGY RESILIENCE:

The generator system proved its effectiveness during drill weekends when the facility experienced peak occupancy and heightened electrical demand. It seamlessly handled the increased load and provided uninterrupted operations, enabling the facility to fulfill its critical mission.

COST SAVINGS AND LIFECYCLE EFFICIENCY:

The economic benefits of the natural gas-powered generator system were notable. Over a 20-year equipment lifespan, it will deliver an estimated **$30,000 in life cycle cost (LCC) savings** compared to equivalent diesel systems. With a simple **payback period of 4.4 years,** the investment in the natural gas emergency-only standby generator proved highly cost-effective.

O&M COST SAVINGS:

The generator system's optimized operation and maintenance practices resulted in substantial savings. The DSM operation reduced the payback period to 2.4 years relative to an emergency-only diesel system and 0.9 years compared to an emergency-only natural gas system.

ENVIRONMENTAL COMPLIANCE:

By opting for natural gas-powered generators, the Illinois National Guard showcased its commitment to environmental stewardship. The natural gas generator's lower emissions (as compared to diesel generators) and quiet operation helped comply with stringent environmental regulations.

"The North Riverside National Guard project was a great demonstration of how to reduce life cycle costs for backup power generation, and the added resilience of a dual fuel configuration."

Patricia Rowley, R&D Manager, Building Energy Efficiency, GTI Energy

Year-Round Energy Cost Savings And Enhanced Energy Resilience

The Illinois National Guard embarked on a transformative journey to fortify its energy resilience and tackle high demand charges. Through a collaboration with Generac and the installation of natural gas DSM generators, the facility successfully overcame its challenges. The customized natural gas-powered system delivered impressive results, including reduced peak electric demand, year-round energy cost savings, and enhanced energy resilience.

By embracing this innovative solution, the Illinois National Guard demonstrated its commitment to safeguarding critical operations while optimizing financial resources, leveraging a reliable low-cost fuel. This collaborative effort between GTI and Zonatherm exemplify the power of experience and effective planning. As the facility thrives with its newfound energy resilience, it serves as a shining example for other organizations seeking to bolster their backup power systems and embrace innovative energy solutions.

To learn how Generac's innovative solutions can help your organization enhance energy resilience and reduce lifecycle costs, visit GeneracIP.com and reach out to our team of experts today.

GENERAC®

Generac Power Systems, Inc.
S45 W29290 Hwy. 59
Waukesha, WI 53189

ASKGNRC@generac.com
1-888-GENERAC
(1-888-436-3722)

GeneracIP.com

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