



## **OPTIGRID™ STORED ENERGY SOLUTIONS - DISTRIBUTED ENERGY STORAGE SYSTEMS FROM ENERSYS®**

Manage energy use, cut costs and ensure emergency electrical backup for your building or enterprise. Working with Glenwood Properties, EnerSys® installed OptiGrid™ Stored Energy Solutions - a modular distributed energy storage system - to help reduce costs and improve energy reliability in New York City.

## **INTELLIGENT ENERGY STORAGE REDUCES OPERATING COSTS AND IMPROVES SERVICE TO NYC RESIDENTIAL HIGH RISE BUILDINGS, AND BEYOND**



### **HELPING UNLEASH POTENTIAL TO MEET THE CHALLENGES OF A CHANGING WORLD**

Today, business success goes beyond the traditional financial bottom line. It is about conducting business in a way that creates value for employees, customers, business partners, communities and shareholders – all at the same time. At EnerSys®, our goal is to help you achieve sustainable growth through an integrated intelligent energy storage approach that links people, processes and technology and is driven by strong industry experience and leadership. This integrated approach links collaboration, innovation, people and technology to provide intelligent, customized energy solutions.

Energy storage systems are beginning to be deployed within Manhattan to not only meet the challenges of supporting the grid during critical power events but also time shifting abundant overnight energy and releasing the energy to meet peak requirements for each building installation. These intelligent energy storage systems will help flatten the load curve that varies dramatically throughout the day, effectively shifting the building load to off peak power rates.

### **A HIGH-PERFORMANCE BUILDING IS A HIGH-PERFORMANCE BUSINESS**

The way your building works is directly tied to your bottom line. And whether you're looking to boost profitability or simply make necessary equipment repairs, you can make your building work better by increasing your energy performance. From a single piece of equipment to a comprehensive, whole-building upgrade, intelligent energy storage programs from EnerSys let you incorporate energy efficiency on a scale that makes sense for you. And with each upgrade you decide to make, your building gets more efficient, marketable and profitable.



## ENERGY STORAGE SYSTEMS NEEDED TO BALANCE SUPPLY AND DEMAND OF ELECTRICITY

Grid operators, utilities and governments are now encouraging storage installations that are physically situated closer to the retail electricity customer. As in the case of Con Edison (Con Ed) and the New York State Energy Research and Development Authority (NYSERDA), the agencies are encouraging distributed energy systems in New York by offering steep incentives for energy storage projects.

A local energy storage system provides flexibility to manage load in a building or to balance load and generation in the power grid. From the building owner's perspective, storage enables load shifting to optimize energy costs while maintaining comfort. From a grid operations perspective, building storage at scale could provide additional flexibility to grid operators in managing the generation variability from intermittent renewable energy resources.

These changes in both supply and demand present a new set of challenges. Our grid infrastructure is aging. It lacks intelligence, and is generally inflexible in handling the growing demands of consumers in a rapidly accelerating electronic age. Now more than ever customers want new ways to manage their costs and become active participants in making energy decisions.

Customers want energy management tools such as smart thermostats and high-efficiency appliances. They're demanding more detailed information about their energy use so they can make wiser decisions that save money and help the environment, including information about renewable energy options such as solar photovoltaics. And when it comes to powering their lives, customers expect more reliability and immediate response when the lights go out. In short, the modern energy user wants more choice, control and convenience.

To empower customers with technology, better integrate distributed energy resources and modernize the grid, Con Ed is proposing Advanced Metering Infrastructure (AMI), known commonly as smart meters. With AMI, customers will have access to new energy management tools that will give them detailed information about their energy use. At the same time, Con Ed will be able to automatically detect when customers lose power, leading to faster restoration times. Plus, the technology will allow utilities to securely integrate—and communicate with—thousands of small distributed resources and give grid operators the information they need to maintain grid reliability.

The adoption of intelligent energy storage as part of the electricity supply chain solves many of these challenges. Utilities are discovering significant benefits through the integration of large battery systems into their power grid structure. And that's why they are reaching out to large commercial electricity users to collaborate.



### GLENWOOD

## GLENWOOD PROPERTY MANAGEMENT: COMMITTED TO ENERGY RELIABILITY IN NYC

Glenwood is one of New York City's largest owners and builders of luxury rental apartments. The full-service Manhattan real estate organization has earned a reputation as the leader in its field through the continuity established as owner, builder and manager of all of its properties. Prestigious locations, innovative design, superior construction, outstanding views, elegant lobbies and impeccable services are benchmark qualities that have become synonymous with every Glenwood residence.

Glenwood has provided personalized care and attention in every detail and enriched the quality of life offered in each of its rental apartment buildings for nearly five decades. Glenwood owns and operates a premier portfolio of apartment buildings throughout Manhattan such as Barclay Tower, Emerald Green, Paramount Tower, The Brittany, The Grand Tier and The Pavilion.

Large commercial electricity users like Glenwood are paving the way for broad acceptance of energy storage technology. Energy reliability is a critical issue for Glenwood. For efficient building operations and for safety, the company's commitment to enhancing reliability was the motivation of exploring and deploying intelligent energy storage systems at several luxury properties over the past few years.



The reality is we need to be aggressive in finding ways to be smarter about the future of energy. Everyone I know thinks about green energy; about how they can create a cleaner future. Our work with EnerSys® lets us take advantage of renewables and lowers our electricity costs as well. It's a win at every level.

**Josh London**  
SVP of Glenwood Management



An anticipated, but surprisingly dramatic additional benefit demonstrated by Glenwood's trial systems leads to managing cost volatility in New York's incentive electricity rate structures (the day ahead market). The system stores energy during off-peak periods when rates are low, and then releases the energy during peak periods when prices can be very high. It works as a physical hedge against volatility risk during periods of high demand, effectively capping costs by using energy from storage at times when rates have the potential to skyrocket.

Positive results in demand response and building grid stability from both trial systems led to Glenwood's decision to move toward deploying new systems across its building portfolio.

Another motivator behind the system deployment for Glenwood is their corporate green initiative to buy power generated by wind and solar. Glenwood is committed to advancing ideas and methods to help achieve sustainability in New York City. One of its goals is to create 'net-zero' buildings; buildings that produce no carbon emissions. Glenwood's investment in energy storage extends beyond the financial reward. It's also serious about advancing better resource management for a more livable community.

**"At Glenwood we have always believed that it is our duty to support load reduction on the grid during the critical summer power season,"** said Josh London, SVP of Management for Glenwood. **"With the flexibility of the initial Demand Energy solution, we can participate in the summer DMP program and then use the EnerSys® energy storage system to reduce our demand charges during the off season. By flattening our building's load overall, we are able to provide added stability to the local operating grid."** Three of the ten (10) 100 kW/400 kWh behind-the-meter energy storage systems being installed in separate Glenwood properties across Manhattan, has already passed the NYSDERDA Measurement and Verification (M&V) testing process. Testing will continue with the remaining seven systems.

## COLLABORATION WITH MUNICIPAL AGENCIES LEADS TO FINANCIAL SAVINGS

Recognizing the importance and significance of installing such systems throughout Manhattan, city agencies took notice and worked together for almost a year to facilitate the testing. The Fire Department of New York City (FDNY) was diligent in the joint quest with Glenwood and EnerSys to assure that the battery system would not be a fire hazard. The compact storage systems take up minimal space in a building's parking garage or basement – approximately 135 square feet for the equipment.

From a financial perspective, an initial test system has saved one building \$75,000 in power bills for each of the last two years. Glenwood expects that the system, which at the time cost about \$ 1 million, will pay itself off within five years. On the basis of these results, Glenwood has decided to procure 10 more systems, each at 100kw, with EnerSys 99% recyclable lead acid batteries as the key component to be installed in their other high-rises in Manhattan.

Glenwood was impressed with how the use of lead acid battery technology stands up to the test of today's needs. The company's 15 year pro forma has achieved an ROI of less than three years on the project. With 18% year over year reduction in operational utility costs for the past four years, it's a win on all levels.

## WHY ENERSYS®?

According to Glenwood management, getting to know the EnerSys team and leadership was one key to forming this strategic alliance. According to Glenwood SVP Josh London, the combination of EnerSys being a locally based, US blue chip company with an established reputation and a down to earth approach, made for a comfortable way of working together. And that reinforced Glenwood's decision to entrust the "meat of the system" to EnerSys batteries.



**EnerSys® installation at Paramount**



**EnerSys® installation at Emerald Green**



**EnerSys® installation at Liberty Plaza**

EnerSys® brings more than 100 years of experience in the battery industry, a full range of integrated support services and the deep technical knowledge needed to deliver the long life and performance required to assure both building and grid system reliability and resiliency. We understand that increased grid and facility resiliency is a critical priority of Mayor de Blasio's Building Resiliency Task Force and an important goal of the Office of Recovery and Resiliency of NYC.

**Ed Stein**  
*Manager of Business Development,*  
**EnerSys®**

Glenwood also appreciates how EnerSys stands behind its product. According to London, **"EnerSys is exceeding our expectations. They are over-delivering on product performance for such a well-known entity. We may be dealing with a giant, but they're also a manufacturing company that knows what it is doing."**

## **STABILIZING YOUR POWER GRID IS CRITICAL – LET US SHOW YOU HOW**

The deployment of an aggregated 1MW of energy storage across Glenwood's properties represents the first example of a networked distributed energy storage portfolio in NYC that is capable of managing individual building loads in real-time or responding as an aggregated asset to a critical power event called by Con Ed or New York Independent System Operator (NYISO).

Power disturbances are a major concern for today's utilities and industries. Growing demand, aging infrastructures and blackouts are just a few of the challenges. As Glenwood has experienced, EnerSys has a solution – to provide the products and engineering solutions designed to meet or exceed the needs of the energy storage market.

EnerSys can help you stabilize your power grid and improve power quality and efficiency. OptiGrid™ Stored Energy Solutions from EnerSys allow you to integrate large battery systems into your power grid structure so you can:

- Stabilize your power grid
- Improve power quality and efficiency
- Moderate peak demand
- Integrate renewable resources
- Prevent blackouts that put your community safety and economy at risk
- Relieve this strain on your transmission and distribution infrastructure

When tied to the grid, intelligent energy storage enables organizations to take full advantage of incentive electricity rates, while avoiding high demand charges and time-of-use fees. And having sufficient capacity makes it possible to keep mission-critical systems running during grid disturbances and brief outages without firing up any generators.

As our society becomes more and more dependent on technology, the consequences of power failure will be even greater. Large-capacity batteries from EnerSys and its OptiGrid™ Stored Energy Solutions – a flexible, turnkey, utility-scale capacity optimization system – can meet a variety of needs in large electrical equipment and new power systems.

Don't let blackouts and brownouts put your community and economy at risk. Contact EnerSys today to see how the OptiGrid™ Stored Energy Solution can be customized to your needs.

**For more information on OptiGrid™ Stored Energy Solutions, call us at 1-800-538-3627 or visit us at [www.enersys.com](http://www.enersys.com)**

### **ABOUT ENERSYS®**

EnerSys, the global leader in stored energy solutions for industrial applications, manufactures and distributes reserve power and motive power batteries, battery chargers, power equipment, battery accessories and outdoor equipment enclosure solutions to customers worldwide. Motive power batteries and chargers are utilized in electric forklift trucks and other commercial electric powered vehicles. Reserve power batteries are used in the telecommunication and utility industries, uninterruptible power supplies, and numerous applications requiring stored energy solutions including medical, aerospace and defense systems. Outdoor equipment enclosure products are utilized in the telecommunication, cable, utility, transportation industries and by government and defense customers. The company also provides aftermarket and customer support services to its customers from over 100 countries through its sales and manufacturing locations around the world.

We all need to work together to manage our electric grid and intelligently manage load growth in NYC, and this pioneering technology offers a viable solution. In our mission to expand sustainable practices within the Glenwood portfolio, energy storage is an ideal solution that helps ConEd and NYSEDA solve real and pressing problems in managing the grid, while simultaneously elevating the quality of life at our properties.

**Josh London**  
*SVP of Management for Glenwood*

