EQUINOX RENEWABLE ENERGY | inspira HEALTH NETWORK | SMA

Illuminating Medicine

A Case Study on the First UL 3741 Project in New Jersey

As a leading network of health care providers in New Jersey, Inspira Health strives to deliver the full continuum of primary, acute and advanced care services. Savings and profitability are a must for a charitable healthcare organization like Inspira, so the choice to install a solar array on their newest facility, located in Deptford, made both financial and ecological sense. Cost savings produced via the reduction of their electricity bill will be reinvested into the organization's mission to create a compassionate experience to improve the health and well-being of the community. The decision to proceed with solar provides positive financial and environmental impact. This project was developed under the new Underwriters Laboratory (UL) 3741 certification, which achieves the highest commercial safety standard.

UL 3741 addresses safety processes and principles for achieving rapid-shutdown requirements in PV arrays without MLPE devices, providing a simpler and safer solution. To achieve UL 3741 certification, products must pass a series of tests designed to simulate situations firefighters may encounter on a solar rooftop. The testing analyzes the risk posed to first responders if they were to meet damaged solar panels while wearing typical protective gear. Compliance with this standard delivers firefighter safety with minimal components on the rooftop when following the installation practices incorporated by racking manufacturers during testing.

When Equinox Renewable Energy started planning the details of this project for Inspira, proceeding with UL 3741 for PV hazard control was an easy decision to make.

"A simpler system is a safer system and an array listed to UL 3741 is inherently simpler," said Julian Rossini, principal of Equinox Renewable Energy. "Fewer connections and components mean fewer potential points of failure, reducing the actual need for firefighters and other personnel to be on the roof working around or on the PV array."

Inspira Deptford opened in early 2024 in a building previously operated by Dick's Sporting Goods. The 80,000 square-foot facility has been transformed into a healthcare hub and includes primary care and specialty physician offices, sports rehab, cardiac rehabilitation and diagnostics and advanced medical imaging.

"As an organization committed to safety and sustainability, Inspira Health is proud that our rooftop solar array is the first in the state to achieve Underwriters Laboratory (UL) 3741 certification," said Michelle Marshall, system vice president of business development and strategy for Inspira Health. "Equinox worked tirelessly to develop a solution that would significantly reduce our carbon footprint while maintaining the highest level of safety."

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The project's total size is 331 kW with an estimated annual production of 450,000 kWh. This production offsets 70% of the energy needs for the facility. This array features 566 Trina solar panels and 5 SMA CORE1 inverters. SMA and racking manufacturer Sollega engineered the first solution commissioned in New Jersey that meets the UL 3741 certification, together with Equinox Renewable Energy.

"There were multiple reasons we selected SMA for this first UL 3741-approved project in New Jersey," says Rossini. "The reliability of the CORE1 inverters is first and foremost. Additionally, the skilled engineering team and the relationship with the sales, marketing, and operations professionals really makes a difference."

For the Deptford facility, Inspira partnered with Rendina, a recognized leader in healthcare real estate who specializes in health systems, hospitals, and medical groups throughout the country.

"At Rendina we believe the solar array is a win-win situation" said Dave Chan, RPA Property Manager. "It's a win on the financial side as the electricity generated will offset our utility costs. It's also a win on the environmental side as we are utilizing a clean renewable energy source to power our building. Lastly, we pride ourselves on providing best-in-class service, and the use of this new technology is a great example of that."

The project endured several challenges presented by the building's limited load reserve. This was resolved with a hybrid racking layout using the fewest ballast blocks possible. This design combined with mechanical anchors and distributing the inverters' weight over the beams solved the original issues.

This was possible by Sollega, SMA and Equinox engineers working in tandem. Through collaboration, a hybrid racking layout was designed which distributed inverter weights proportionately across the project, plus it avoided significant extra weight that would have been added if MLPE rapid shutdown devices were utilized.

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As the building was under full renovation, being converted from a retail store to a state-of-the-art medical facility, the team had the time to design a complete UL 3741 solution. "We appreciate the opportunity to have worked with Equinox Renewable Energy and SMA on this first of many UL 3741 projects," said Elie Rothschild, sales manager with Sollega.

When the permit plan was submitted, this new approach eliminated the need for rapid shutdown devices at the module level, which is important as this increases system safety. Trina Solar 210Rmm N-type bifacial modules reduce the project's footprint with more production per square foot due to their 585 wattage and the additional gain that comes from the backside of the panel.

This pioneering UL 3741 project represents a significant leap forward in sustainable healthcare infrastructure. By harnessing the power of renewable energy, this initiative not only reduces the facility's carbon footprint and provides the highest level of project safety but also demonstrates a commitment to environmental stewardship and community well-being. As we look to the future, it serves as inspiration for other institutions to follow suit, showcasing the transformative potential of integrating new approaches to green technology into critical infrastructure. This milestone underscores the importance of collaboration and innovation like that of the UL 3741 methodology in addressing both community health and the challenges of climate change.

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