

RAISING THE BAR FOR SMART BUILDING

SOLUTIONS

On November 8, 2018, leaders in energy technology and service providers gathered at 41 Madison Avenue in New York City to discuss opportunities for implementing smart building solutions in New York commercial real estate. The event was hosted by the New York State Energy Research and Development Authority (NYSERDA) as part of its Real Time Energy Management (RTEM) program, an initiative to support state energy goals by incentivizing the adoption of cloud-enabled smart building technologies. To date, the 59-million-dollar incentive program has supported nearly 400 projects with an average of 12-15% annual energy savings.



PropTech panelists at the RTEM event hosted by NYSERDA.

The RTEM event coincided with the NYC Real Estate Tech Week and included presentations, facilitated discussions with RTEM qualified vendors, and a PropTech panel discussion with leaders in the New York real estate market. Conversations during the event highlighted the needs of the real estate industry to accelerate the smart building transition and the role of the RTEM program in helping address those needs.

RTEM and the Smart Building Transition

RTEM refers to a combination of internet-enabled systems and services that monitor and identify improvements in building energy use. These systems integrate with building management systems (BMS) to continuously transmit building performance data to the cloud, where it can be centrally monitored and analyzed. The granularity and frequency of data from RTEM systems allows building owners, managers, and tenants to make smarter decisions about building energy use and to detect issues before they lead to costly inefficiencies. RTEM systems also include solutions that interact with the grid to receive and react to demand response signals.

During the event, NYSERDA highlighted that smart building solutions like those supported by NYSERDA's RTEM program are critical to meeting state energy goals; however, the market for smart building technologies has seen relatively slow adoption despite NYSERDA incentives that significantly lower upfront investment costs for eligible projects. According to NYSERDA, this slow uptake stems primarily from market confusion around what these technologies are and how to navigate through the range of solutions available on the market. By creating a threshold for eligible smart building solutions, the NYSERDA program helps ease this burden on customers. The threshold ensures, for instance, that

eligible systems are cloud-enabled, which allows real time energy data to be monitored and analyzed remotely.

The RTEM program also provides incentives for projects that integrate with a site's existing BMS, allowing solutions with unique applications to build off each other to create more holistic smart building systems. For sites without a BMS, RTEM vendors can install wireless sensors and meters to capture the necessary energy system points for centralized monitoring and analysis. This integration of systems is essential to how the real estate industry defines smart buildings. Currently, however, the majority of RTEM systems are focused around heating, ventilation, and air conditioning (HVAC). During the event, NYSERDA encouraged participating vendors to push the market toward more integrated smart building systems by including, for example, solutions for lighting, utility meters, and demand response in their RTEM project scopes.

Integrated Solutions for Real Time Management

Representatives from the real estate industry supported the need for integrated solutions during the PropTech panel discussion, highlighting that true smart buildings can monitor and control not just HVAC, but other aspects of the building such as occupancy (e.g. through lighting sensors), indoor air quality, water usage, and security. In describing his motivations for investing in smart building technology, John Gilbert, COO of Rudin Management Company, noted, "we weren't thinking about real time *energy* management, we were thinking about real time *management*."

Gilbert continued that for building owners the real value of these systems does not necessarily stem from energy savings, but rather the improvement to tenant experience, stating "property owners care about one thing: attracting and retaining customers."

Dana Robbin Schneider, JLL, highlighted that in the commercial market, the most attractive tenants—"the Googles, Amazons, and LinkedIns"—will want to see more than just energy data, suggesting that RTEM vendors and service providers give increased focus to the non-energy benefits such as improved worker comfort and productivity when engaging with the real estate industry. Echoing other panelists, Schneider emphasized that the integration of energy and non-energy stems requires that individual solutions can communicate with each other and the existing BMS using an open communications protocol.



John Gilbert, Rudin Management Company, shows off his mobile app for tenants that enables comprehensive building management security.

When combined with cloud-based storage and analytics, real-time building data generated by these integrated systems can be monitored and analyzed remotely. This presents significant benefits to owners and managers of large portfolios of buildings. During the panel discussion, John Gilbert demonstrated that by using an app on his tablet device, he could see what is happening across his entire portfolio in terms of energy consumption, water usage, occupancy, and

Challenges to Scaling Smart Buildings

While the RTEM program helps drive adoption of these smart building solutions, panelists noted that for RTEM systems to be cost effective several other structures must be in place, ranging from IT infrastructure, to submeters, to the technical capacity of building staff. Regarding IT infrastructure, Jamil Bhatti, Knotel Labs, noted that “the [real estate] industry suffers from low expectations around technology... what we are talking about is stuff that other industries were doing 15 years ago.” Jamil highlighted that the foundation of smart buildings is connectivity. Building owners need to think about robust building connectivity as a necessary component to leveraging RTEM and other smart building solutions.



Jamil Bhatti, Knotel Labs, describes the state of technology in the real estate industry.

The need for submeters presents a separate challenge. Submeters enable the ability to measure energy and utility usage in specific buildings or parts of the building to provide a more comprehensive understanding of how buildings can be optimized. This also allows building owners to charge tenants more accurately based on actual utilities consumed, encouraging behavior and operational changes that lead to greater energy savings. However, because submeters do not provide energy savings or improve tenant experience directly, it can be difficult to make a compelling business case to convince property owners to install them. “Finance is driving where we put meters—we put meters where are going to make money off them,” noted JP Flaherty, Sr. Director of Sustainability and Utilities at Tishman Speyer.

Several panelists highlighted this challenge as a reason why NYSERDA and utilities should provide improved incentives for submeters. NYSERDA representatives, however, emphasized that by including submeters in project scopes, vendors can unlock incentives for submeters through the RTEM program. The conversation suggested that greater clarity around RTEM program incentives for submetering may spark interest among potential customers in exploring a smart building project.

Key Takeaways for the Smart Building Industry

According to NYSERDA, a shift toward smart and networked buildings will provide the groundwork to support New York State’s energy goals while simultaneously improving the living and working environments of building occupants. The RTEM event during NYC Real Estate Tech Week made clear that implementing these solutions will require greater alignment of the needs of building owners with the services and solutions offered by vendors. This includes fully integrated and interoperable RTEM systems with demonstrable impacts on savings, property value, and tenant experience.

NYSERDA’s RTEM program is aimed at addressing many of these needs by providing additional funding opportunities to encourage vendors to broaden their RTEM project scopes. For example, NYSERDA announced a [new RTEM premium pilot program](#) this year that provides higher funding for RTEM systems that integrate additional building systems, provide utility data, increase cybersecurity

standards, and use standardized data tagging. Panelists and vendors also highlighted a need for increased awareness on the value of RTEM systems, which NYSERDA is hoping to address by developing resources and tools that vendors can use to help communicate the RTEM value proposition, including case studies and videos.

However, certain market needs will require additional resources and industry coordination. Demonstrating the impact of non-energy benefits, for instance, was a priority voiced by several panelists. Vendors expressed challenges in quantifying these impacts, and asked NYSERDA for increased guidance on what these non-energy metrics should be. NYSERDA noted that while the operational and energy benefits have become clear through NYSERDA case studies, measuring non-energy benefits has not yet been done industry wide. [Additional research and case studies](#) to understand the impacts on tenant experience will be critical for accelerating the smart building transition.

The need for standardized data tagging was another industry wide challenge discussed at the event. The ability of NYSERDA to analyze data generated through the RTEM program to demonstrate cost effectiveness depends on consistent data across vendors and project types. Currently, many RTEM vendors use unique data tagging conventions, making it difficult to evaluate the RTEM program across projects and building typologies.

Ultimately, the adoption of real time energy management solutions will require continued coordination between NYSERDA, solution providers, customers in the New York real estate market. NYSERDA aims to support this by continuing to facilitate dialogues to help align the goals and strategies of building owners and RTEM qualified vendors.

For more information on the NYSERDA RTEM program, visit <https://www.nysERDA.ny.gov/All-Programs/Programs/Real-Time-Energy-Management/Resources>.