



The 2020 Innovation Awards



A Note from Smart Energy Decisions

Innovation Awards Insights: New Approaches for the Energy Transition

Smart Energy Decisions is proud to present a special Insights report celebrating the winners of our *2020 Innovation Awards*. These awards recognize exemplary use and implementation of innovative technologies and progressive practices among large electric power users, their suppliers and utilities that reflect new approaches to energy procurement and management.

The volume and quality of projects represented in this year's award nominations reflect the dramatic transformation taking place in today's power markets. We applaud all nominees and congratulate the winners. We also want to thank our judges for sharing their industry expertise and enthusiasm.

Innovation Award winners were celebrated in a recent [Smart Energy Decisions Webcast](#). We thank ENGIE for sponsoring this webcast.

In the spirit of innovation, Smart Energy Decisions is creating new ways to stay connected with our community—and to help them connect to each other. We are excited to present our “Virtual Advantage” platform to power the [Virtual Distributed Energy Forum](#), September 21–25, where you'll hear from energy and facility management executives who have successfully implemented distributed energy technologies, network with peers, and engage in one-to-one meetings with leading suppliers. Buyer registration is limited; for more information, [click here](#). Suppliers may apply for sponsorship opportunities [here](#).

Finally, the winter edition of the [Renewable Energy Sourcing Forum](#) is set for December 7–9. [Click here](#) for more information on these programs. We look forward to welcoming you to these events to continue sharing the message of innovation that is crucial to your success.



Regards,



Debra Chanil
Research & Content Director
Smart Energy Decisions
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2020 Innovation Awards Methodology

Nominations for the *Smart Energy Decisions Innovation Awards* were called for in October and November 2019. Nominations were accepted in the following categories:

Customer Project

- Energy Data Management
- Energy Efficiency Technology
- Energy Storage & Microgrids
- Offsite Renewable Energy
- Onsite Renewable Energy

Utility Partnership

- Onsite Renewables
- Energy Microgrids & Storage

Special Recognition

- Ones to Watch

More than 100 nominations were received and reviewed by a panel of six judges. Submissions were judged on the **objectives** and **execution** of the project, the level of **innovation** (including approach, execution, use of technology, partnership or any other unique attributes) and **results** (including measurements, ROI, achievements and goals met).

Winners were announced in January 2020. In addition to Customer Projects and Utility Partnerships, this year's awards includes recognition for "Ones to Watch." These projects were highly rated by the judges but deemed too early in implementation to demonstrate results.



2020 Innovation Awards Judges



Wolfgang Bauer

Distinguished Professor and Associate
Vice President for Administration,
Michigan State University



Peter Kelly-Detwiler

Principal,
NorthBridge Energy Partners



Fred Mazurski

Principal,
FM Consulting



Karl R. Rábago

Principal,
Rábago Energy



David Reid

Global Energy and Productivity
Leader, Celanese Corp.



Rowena Striff

Energy Manager,
Lockheed Martin Aeronautics

2020 Innovation Awards Winners

Customer Project Awards

Commercial Energy Data Management: **Metropolis Investment Holdings, Inc.**, “345 California”; pg. 6

Higher Education Energy Data Management: **Stony Brook University**, “Data Analytics Platform”; pg. 7

Healthcare Energy Data Management: **Memorial Sloan Kettering Cancer Center (MSKCC) Breast and Imaging Center (BAIC)**, “Virtual Energy Monitoring (VEM) and Fault Detection + Diagnostics (FDD)”; pg. 8

Industrial Energy Data Management: **Pompeian, Inc.**, “Pompeian Sustainability”; pg. 9

Government Energy Efficiency Technology, **City of Santa Ana, CA**, “Energy Retro-commissioning and Retrofit”; pg. 10

Healthcare Energy Efficiency Technology, **Atrium Health**, “Enterprise Energy Management”; pg. 11

Industrial Energy Efficiency Technology: **Lockheed Martin Corporation**, “Saving Energy with Networked Lighting Management”; pg. 12

Government Energy Storage & Microgrids: **U.S. Marine Corps**, “Recruit Depot Parris Island Energy Resiliency”; pg. 13

Higher Education Energy Storage & Microgrids, **University of Massachusetts Amherst**, “1.3 MW Battery Storage”; pg. 14

Agricultural Energy Storage & Microgrids: **Bowery Farming**, “Energy as a Service (EaaS) Microgrid”; pg. 15

Commercial Offsite Renewable Energy: **Bloomberg LP, Cox Enterprises, Gap Inc., Salesforce, and Workday** for “Corporate Renewable Energy Aggregation Group”; pg. 16

Commercial Offsite Renewable Energy: **Adobe and Facebook**, “Enel Green Power’s Rattlesnake Creek Wind Farm”; pg. 18

Institutional Onsite Renewable Energy: **Minneapolis Public Schools**, “Rooftop & Canopy Solar + EV Charging at Edison High School”; pg. 19

Utility Partnership Awards

Enabling Onsite Renewables: **IBM, NextEra Energy, and Xcel Energy**, “IBM Boulder Goes Solar”; pg. 20

International Onsite Renewables: **Ecuador Ministry of Energy**, “Isabela Island Hybrid Power Plant, Galapagos Islands, Ecuador”; pg. 21

Commercial Energy Microgrids & Storage: **Consolidated Edison & Related Companies**, “Energy Storage Project at Related’s Gateway Center Mall”; pg. 22

Special Recognition for “Ones to Watch”

Commercial Offsite Renewable Energy: **Microsoft Inc.**, “A Zero-Carbon World”; pg. 243

Industrial Offsite Renewable Energy: **McCormick & Company**, “McCormick Solar Energy Purchase”; pg. 24

Government Offsite Renewable Energy: **City of Cincinnati**, “100% Renewable Energy by 2035”; pg. 25

Winner for Commercial Energy Data Management

Metropolis Investment Holdings, Inc. “345 CALIFORNIA”

PROJECT OVERVIEW: With 35 stories of commercial office space in addition to retail space and a 5-star hotel, much of the energy consumed at The California Center, a 48-story mixed-use high rise in San Francisco, is not determined by building management. Moreover, traditional lease agreements and utility billing practices disincentivize tenant engagement in the energy management process through a lack of transparency and accountability. The California Center’s project addresses this challenge.

Implemented in January of 2019, this project involves the implementation of BuildingOS, an industry-leading Building Energy Information System software, to provide the building’s 30 tenants with transparency into their own energy consumption and facilitate their participation in the energy management process. Through the cloud-based platform, tenants are now billed for their actual consumption instead of the previous practice of designating a set amount of

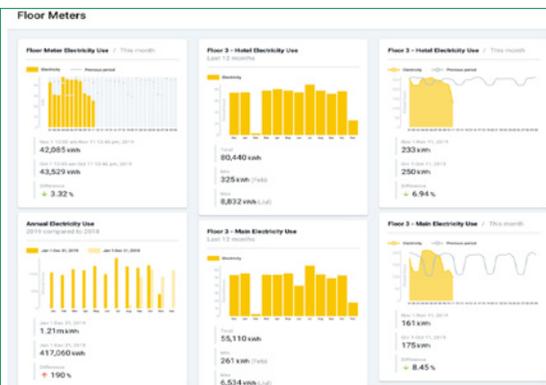
consumption per floor per billing cycle followed by a tedious process of charging for overages pursuant to lease stipulation.

INNOVATION: By centralizing, analyzing, and sharing energy consumption data with building tenants, the California Center is breaking away from the traditional commercial leasing model and allowing tenants to make data-driven decisions that will reduce overall consumption and costs. Tenants now also have access to the data needed for their own sustainability reporting, a growing demand of commercial tenants.

RESULTS: The project is yielding reductions in energy consumption by empowering the tenants to participate in the energy management process. Tenants are also able to reduce costs as a result of the newly implemented direct billing strategy. Finally, property management and engineering teams at the California Center have already experienced significant time savings, enabling them to turn to higher-value projects—i.e. identifying and acting on new savings opportunities.



*Timothy Danz, Chief Engineer,
The California Center*



“This is a leading-edge model to follow for all landowners of any major commercial, mixed-use buildings. Transparency is absolutely essential to energy management and tenant engagement is a key asset to further incentivize consumers, putting them in a position to control and manage their own energy use, promote go-green concepts, and manage their own costs.”

Judges Rule

Winner for Higher Education Energy Data Management

Stony Brook University “Data Analytics Platform”

PROJECT OVERVIEW: Stony Brook University (SBU) is an expanding and complex 12-million square foot, 1,040-acre campus, comprising of 168 buildings. Tracking energy with advanced metering and using this data to reduce consumption are just part of their efforts to meet New York State Executive Order 88 (EO88) goals. SBU has over 400 metered points with thousands of data points being collected and stored on a centralized server every 15 minutes. Finding a way to easily analyze the data becomes imperative. Rather than purchasing an analytical tool from an outside company, SBU created an analytics program used to analyze and take action on energy interval data. This allows the team to quickly glance at any anomalies in energy use, as well as track and verify the effect of energy efficiency projects.

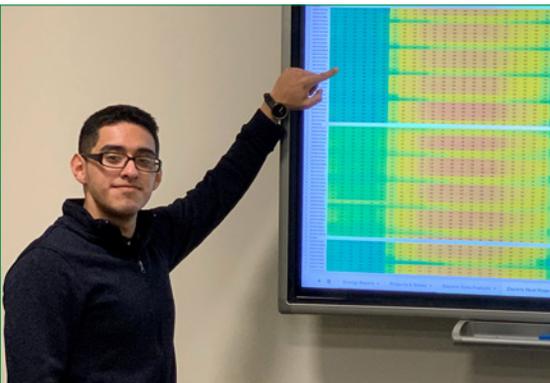
INNOVATION: Since fully developing their heat map, SBU has been able to expand upon the program to help pick up

anomalies found in the heat map, adding a feature to automatically detect if the average demand during unoccupied hours is higher than a certain threshold. An email alert is then sent out to our Energy Management and HVAC teams to help address the issue before the increase in energy use accumulates further.

RESULTS: With SBU's heat map program, they've been able to quickly catch anomalies in energy consumption. One example was with newly installed RTUs on multiple buildings. The heat maps showed that newer, more energy efficient units were consuming more energy than their 30-year-old predecessors, leading to the discovery of an issue with internal programming on the RTU controllers that prevented the units from going into unoccupied mode. This issue would have cost the university \$180,000 annually if not found and corrected.



Thomas Lanzilotta, Sustainability and Energy Manager, Stony Brook University



Christian Guzman, Assistant Energy Manager, Stony Brook University

“Not everybody has the courage to build a DIY platform to address complex energy consumption monitoring issues, but off-the-shelf programs sometimes either need enormous and expensive customization or are not well utilized. They developed what they knew they needed.”

Judges Rule

Winner for Healthcare Energy Data Management

Memorial Sloan Kettering Cancer Center (MSKCC) Breast and Imaging Center (BAIC) “Virtual Energy Monitoring (VEM) and Fault Detection + Diagnostics (FDD)”

PROJECT OVERVIEW: Providing leading-edge diagnostic and treatment planning services, it is critical that the BAIC continues to provide optimal patient care and comfort while optimizing facility performance. After recognizing faults in the facility’s building automation system, MSKCC and Edison Energy teamed to assess and develop actionable items for improvement and optimization.

By leveraging technology and professional energy management expertise to monitor, identify and optimize performance, Edison Energy’s VEM Process ensured the BAIC’s operations were closely monitored. Any variations in performance were identified and assessed for corrective actions before unseen operating deficiencies lead to spiraling energy costs. By connecting to the building automation system (BMS), VEM provided deeper insights to building operations, enabling MSKCC to achieve and maintain energy and operational savings, as well as improved occupant comfort.

INNOVATION: Operating a healthcare facility is no easy feat. It requires a delicate balance of meeting stringent patient

requirements and complex energy and HVAC systems. Often, facilities staff place patient needs, comfort, and safety above energy consumption. MSKCC understands the intricacies of operating both safely and efficiently. Through a tailored combination of hands-on testing and analysis, leveraging technology to bring a level of accountability, transparency, and persistence to energy savings and facility optimization, Edison Energy was able to craft a comprehensive energy strategy that maximized value for MSKCC. The project’s success can also be attributed to the underpinning of sound engineering fundamentals—executed in accordance with ASHRAE Energy Auditing Guidelines, NEBB Retro-Commissioning Procedural Standards, and ‘Essential Attributes of Building Cx’ per the BCxA.

RESULTS: Total estimated savings year to date (as of October 2019) is approximately 982,566 kWh of electricity and 1,747,775 lbs. of steam. This is equal to \$157,211 of electricity and \$47,714 of steam for a total cumulative savings of \$204,925.



*Robert Berninger, Director-Plant Operations,
Energy & Engineering/Facilities Management Division,
Memorial Sloan Kettering Cancer Center*



“Not enough emphasis is placed on retro-commissioning and continuous commissioning, which is particularly challenging in an environment such as a large hospital. The project was ambitious in its scope and the savings were impressive.”

Judges Rule

Winner for Industrial Energy Data Management

Pompeian, Inc.

“Pompeian Sustainability”

OVERVIEW: Pompeian is one of the largest olive oil producers in the United States, but had trouble tracking their utility data across their portfolio. The company wanted to become a Certified B Corporation but needed usage numbers across all commodities. Using the Watchwire platform from EnergyWatch LLC, Pompeian was able to easily automate utility and meter usage hosted under one system, creating a culture of collaboration and accountability when tackling energy projects and goals across all their energy-related departments.

EXECUTION: This project was deployed in July 2019 and is still ongoing. With their two California-based and Baltimore-based manufacturing plants coupled onto the same platform as their offices, Pompeian now has the ability to see trends across all locations for usage derived from olive oil produced. Mattan Sharvit led the effort and implementation of this project from start to finish. His vision to evolve from Excel spreadsheets has streamlined the energy and auditing

process to allow focus on tangible changes such as reducing energy intensity and carbon footprint.

INNOVATION: This project went above and beyond by incorporating all energy and sustainability-related departments into one streamlined goal. Accounting, finance, sustainability, energy management, engineering, facilities and procurement worked hand-in-hand to realize a network where communication and collaboration are achieved in real-time. Pompeian went from a non-existent energy focus, to a proactive mindset where all teams work together to achieve the goal of becoming a Certified B Corporation—all in less than six months.

RESULTS: Pompeian gained control of what they couldn't see, which allowed for future plans to be made taking a data-driven approach. Pompeian now has the power to progress to the next stage of their project by installing meters on facilities and systems, which will realize their greatest ROI by targeting low-hanging fruit.



Mattan Sharvit, Corporate Social Responsibility Manager, Pompeian, Inc.

“One cannot save what cannot be measured. Through this data management system, the company can implement energy-efficient measures and see the impacts in real-time. Great job.”

Judges Rule



THE OLIVE OIL PEOPLE

Winner for Government Energy Efficiency Technology

City of Santa Ana, CA

“Energy Retro-commissioning and Retrofit”

PROJECT OVERVIEW: When the City of Santa Ana, Calif. took a close look at its energy consumption, city leaders realized they could be doing better. Energy and control system audits performed by SBT Alliance uncovered a potential 88% reduction in energy from lighting and a possible decrease of more than 55,000kWh annually from its HVAC systems. For this energy retro-commissioning and retrofit project, more than half a dozen different fixture types or retrofit solutions had to be developed for the various building floors and locations. In addition, the multiple locations housed numerous sensitive areas that could not be disrupted as required by typical construction activities.

EXECUTION: The project was executed in concert with industry partners including New Buildings Institute and TRC. In order to demonstrate energy savings and improve interior comfort of INTER (Integrated Technologies for Energy-Efficient Retrofits) systems, they identified and addressed market barriers to wider acceptance and adoption, and developed a

scalable technology package, integration guidelines, case studies, utility program ideas and energy code connection to facilitate widespread implementation.

INNOVATION: As part of the Leading in LA initiatives funded by the California Energy Commission, this project was designed to demonstrate scalable emerging energy-efficient technologies for integrated facade, lighting, and plug load controls. By utilizing advanced IoT wireless controls, automated shades daylight harvesting technologies, and RRU-shut relay control technologies, this project was able to demonstrate in-the-field success for integrating emerging commercial retrofit technologies into wider adoption within the industry. The innovative technologies utilized include automated window shades, lighting retrofit and advanced lighting Control systems, plug load control, measurement and verification 2.0, building sub-metering, and building smart metering. When combined these end uses make up the majority of a building’s energy use (70% for typical office).



Christy Kindig, Project Manager, Public Works Agency, City of Santa Ana



“Great application of all possible leading-edge technologies like IoT, daylight harvesting, load controls, RCx to achieve maximum efficiency and annual savings.”

Judges Rule

Winner for Healthcare Energy Efficiency Technology

Atrium Health

“Enterprise Energy Management”

PROJECT OVERVIEW: While reducing energy use at Atrium Health facilities was the primary goal of the project, the retro-commissioning team was engaged to also address operational issues, including building pressurization within the hospital’s common areas and entrances. The team also discovered that the facilities staff depended on setpoint overrides as a means of addressing occupant complaints and controlling the HVAC system. Finally, operating room air-handling units (AHUs) had been struggling to maintain temperature and humidity requirements while operating almost constantly. The project was deployed at Atrium Health Pineville, a 506,495 sq. ft., 235-bed hospital built in 1987 and located in Charlotte, N.C. The items addressed by the team focused primarily on the building automation system programming and controls sequences.

INNOVATION: This project served as a pilot for Atrium Health by implementing cutting-edge building automation control

sequences recently published in ASHE guidelines. The project also installed fault detection automation software to lay on top of the building automation system and constantly scan the system for energy-saving opportunities. Finally, the team created a daily energy performance measurement and verification scorecard to monitor the hospital’s energy consumption, which is used to monitor energy consumption vs. weather adjusted baseline. This project engages all building occupants and helps drive a culture of energy efficiency.

RESULTS: Through the completion of this project, the hospital’s Site Energy Usage fell by 41%. Dividing the project cost by its savings yields a simple payback of 1.16 years. The project also secured an incentive from the hospital’s utility provider reducing the project’s simple payback to 0.5 years. The project has been rolled out by Atrium Health to a total of 27 acute and long-term care hospitals.



“Great demonstration of team building to help resolve longstanding complex issues by setting up baselines to compare against and comparing actual energy consumption to weather adjusted baseline. This sets the standard to measure performance year after year. Mission accomplished of serving hospital primary comfort needs while being as energy efficient as possible and an amazing SP of only 1.16 years!”

Judges Rule

Winner for Industrial Energy Data Management

Lockheed Martin Corporation

“Saving Energy with Networked Lighting Management”

PROJECT OVERVIEW: As part of its carbon and energy management initiative to reduce energy use by 25% by 2020, Lockheed Martin Corporation sought an energy-saving LED lighting retrofit and networked lighting management system for its Marion, MA location. This 700,000 square foot campus includes five buildings that house administrative offices, warehouses, production and laboratory facilities for the company’s Rotary Mission Systems operations. While the initial project driver was reducing energy consumption, a networked lighting management system would provide the opportunity to generate data about lighting usage in the facilities to further reduce energy usage as well as optimize how lighting is used in the facilities’ various work environments.

EXECUTION: EMC installed a networked lighting management system that introduced a number of controls capabilities including monitoring, scheduling, dimming, load shedding, daylight harvesting, demand response and analytics. Successful implementation required collaboration from a broad group of company players including Facilities, Finance and IT to make sure

the networked lighting management system was functioning and that all capabilities are utilized to maximize performance and deliver data to identify opportunities for further energy reductions.

INNOVATION: The new system delivers accurate, real-time data, allowing Lockheed Martin to make improvements that immediately deliver bottom line savings and continue to adjust performance as the system delivers more data. The system also easily identifies failures as they are occurring and generates reporting so repairs can be made real-time to minimize disruption to work environments. As requirements grow, the system is easily expandable and good for future reconfiguring.

RESULTS: While Lockheed Martin was able to immediately reduce lighting usage by 20% just by converting to LEDs, the networked lighting controls further extended energy savings. In total, the implementation reduced energy consumption by 1.5 million kWh, the equivalent of powering 127 homes for a year, delivering \$210,000 in annual savings and a project payback of 2.18 years.



*John L. Hartman, Facilities Engineer,
Lockheed Martin Marion*



“This kind of ROI time is practically unheard of for lighting retrofits.
Congratulations!!!”

Judges Rule

Winner for Government Energy Storage & Microgrids

U.S. Marine Corps “Recruit Depot Parris Island Energy Resiliency”

PROJECT OVERVIEW: National security and the operations of the U.S. Armed Forces depend on a reliable, resilient supply of energy. The US Marine Corps Recruit Depot (MCRD) Parris Island selected Ameresco to complete a comprehensive distributed generation and energy infrastructure project to preserve the continuity of mission-critical operations taking place on the 8,095-acre military base. This project included timely recapitalization of aging thermal and electrical infrastructure serving facilities critical to recruit training and is the most comprehensive energy efficiency and renewable energy initiative undertaken by the U.S. Armed Forces.

EXECUTION: Supported by the NAVFAC Engineering and Expeditionary Warfare Center, MCRD Parris Island used an energy-saving performance contract (ESPC) to finance the project. All work came at zero upfront cost to Parris Island and the anticipated \$6.9 million in guaranteed utility cost savings annually will pay back the financier over a set 22-year contract term.

INNOVATION: Most technologies chosen involved some level of automation—a key differentiator from other federal market projects and demonstrative of this project’s innovation. This includes an advanced microgrid control system (MCS) that is capable of monitoring and coordinating the dispatch of electricity across the campus from its combined heat and power (CHP) plant, solar PV assets, battery energy storage system (BESS) and emergency back-up generators. A fast load shedding capability is included in the MCS package, which provides a seamless transition from utility power.

RESULTS: The on-site sources of renewable energy, combined with key infrastructure upgrades and energy conservation measures performed, are projected to generate \$6.9 million in utility cost savings annually from a 75% reduction in utility energy demand and a 25% reduction in water usage.



*CDR Andy Litteral, Director of Facilities,
Marine Corps Recruit Depot Parris Island*



“The comprehensive makeover of the site from efficiency and renewables investments, combined with the slinging microgrid sets the standard for government military facilities and indeed any large, complex campus-type environment.”

Judges Rule

Winner for Higher Education Energy Storage & Microgrids

University of Massachusetts Amherst “1.3 MW Battery Storage”

PROJECT OVERVIEW: University of Massachusetts Amherst (UMA) became aware of the Massachusetts State of Charge Report, a comprehensive study undertaken as part of the state’s Energy Storage Initiative. The study presented a comprehensive suite of policy recommendations to generate 600 MW of advanced energy storage in the Commonwealth by 2025. UMA felt this initiative spoke directly to its own ambitious sustainability goals and began to explore on-site storage opportunities to complement its own evolving suite of sustainability initiatives.

EXECUTION: With a grant from the Advancing Commonwealth Energy Storage (ACES) program, UMA and Competitive Energy Services brought onboard CPower Energy Management to enroll the new storage asset in ISO-NE’s Active Demand Capacity Resource (ADCR) and Passive (On-Peak) demand response programs. Additionally, CPower enrolled UMA’s new asset in Connected Solutions, a joint

demand response program from National Grid, Eversource, and Unitil utilities. This “stacking” allowed for multiple monetization streams simultaneously.

INNOVATION: UMA’s 1.3 MW, 5.2 MWh storage battery project gives UMA flexibility in how and when it dispatches the battery in response to grid events. In terms of grid reliability, UMA helps reduce what needs to be built in the future to meet the university’s, state’s, and region’s growing and changing peak needs.

RESULTS: The 1.3 MW battery was fully commissioned in the second quarter of 2019. Since then, it has created more than \$200,000 in value over the summer. Over ten years, the revenue from one single utility demand response program will provide an essentially full return on investment.



*Raymond Jackson,
Director Physical
Plant, University of
Massachusetts
Amherst*



*Steven Lemay,
CHP Plant Manager,
University of
Massachusetts
Amherst*



“An early storage pioneer in Massachusetts, UMass was a first mover that took the right steps to optimize their storage resource and harvest multiple revenue streams. When the State of Charge report came out, there was much hope that it would lead to this type of outcome. The single stream suggests the project makes abundant sense and should be replicated in similar environments.”

Judges Rule

Winner for Agricultural Energy Storage & Microgrids

Bowery Farming

“Energy as a Service (EaaS) Microgrid”

PROJECT OVERVIEW: Bowery Farming’s Kearny, New Jersey, facility grows leafy greens and herbs, and has tested over 100 varieties of crops indoors in a completely controlled climate that is backed up by a microgrid. This microgrid was designed to improve energy efficiency, reduce end-user costs, mitigate greenhouse gas emissions, and improve grid resilience. The facility is interconnected to the utility grid and has an onsite natural gas generator with advanced emission control, a rooftop solar array, and a lithium-ion battery energy storage system. The site uses between 700–900kW and can be fully islanded during a grid outage.

EXECUTION: Scale Microgrid Solutions designed, built, owns, and operates the proprietary hybrid microgrid system that leverages Schneider Electric EcoStruxure technology for Bowery’s facility in New Jersey. The system will use the behind-the-meter distributed energy resources (DER) and microgrid control technologies to manage on-bill costs like Demand Charges and to participate in grid ancillary service

markets like Synchronous Reserve, Economic Demand Response and Frequency Regulation.

INNOVATION: This project is reimagining how companies of the future will need to operate to provide for 21st century needs. Sustainable indoor agricultural production is critical to feeding a growing global population and Bowery has built a facility wherein crop production is already 100+ times more efficient than traditional farmland. The combination of these three partners—Scale Microgrid Solutions, Schneider Electric, and Bowery Farming—shows the whole is greater than the sum of its parts.

RESULTS: In addition to the grid services and utility program participation, the Bowery’s microgrid has already proved its worth in terms of grid resilience. When the grid supporting Bowery’s facility and surrounding area lost power, Bowery was able to remain fully operational as the microgrid was designed to back up the entire facility.



*Irving Fain, CEO & Founder,
Bowery Farming*



“This is an exciting project, bringing microgrid benefits to an agricultural facility. It should be highly replicable.”

Judges Rule

Winner for Commercial Offsite Renewable Energy

Bloomberg LP, Cox Enterprises, Gap Inc., Salesforce, and Workday “Corporate Renewable Energy Aggregation Group”



Michael Barry, Head of Sustainable Business Operations, Bloomberg LP



Kevin Sok, Energy and Sustainability, Cox Enterprises



Wilson Griffin, Director, Sustainable Innovation, Gap Inc.



Max Scher, Head of Clean Energy and Carbon Programs, Salesforce



Erik Hansen, Sustainability Director, Global Impact, Workday

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PROJECT OVERVIEW: The procurement of affordable renewable energy is very difficult for all but Fortune 10 companies. Historically, project developers wait for a single corporation or utility to purchase most or all of their project’s output, leaving the few megawatt-hours that remain for smaller buyers. Even as smaller companies are interested in reducing carbon emissions, they either cannot purchase renewable energy or must spend an inordinate amount of time and effort to identify a project that meets their needs and usually have little ability to influence terms once a project is found. The Corporate Renewable Energy Aggregation Group project addresses this monopoly by democratizing the process of procuring renewable energy and making it accessible to businesses of all sizes.

In January 2019, a group of five U.S.-based corporations—Bloomberg, Cox Enterprises, Gap Inc., Salesforce, and Workday—connected in search of innovative ways to procure renewable energy. Working with LevelTen, the five corporate buyers teamed up to collectively act as the anchor tenant for a 100-megawatt solar project based in North Carolina. The five companies, under the name Corporate Renewable Energy Aggregation Group, inverted the traditional process of renewables procurement and benefitted from a reduced cost by creating one larger deal. By purchasing between 5 and 10 megawatts of solar power each to aggregate a total of 42.5 megawatts, the buyer group relies on this shared solar to offset energy consumed in their business operations nationally and contributes to a cleaner energy grid locally.

EXECUTION: The Corporate Renewable Energy Aggregation Group leveraged a uniform virtual power purchase agreement (VPPA) that combined five unique contracts to streamline the legal review process and shared a single legal counsel to negotiate the transaction. Meanwhile, LevelTen gathered data on each company’s VPPA preferences to determine which projects aligned with each of their key risks, values, and locational requirements. From the short list of projects that met the group’s needs, the group selected BayWa r.e.’s North Carolina solar project, procuring relatively small slices of the project with minimal transaction costs.

INNOVATION: Prior to this project it was nearly impossible for businesses to each commit to purchase small capacities of energy (5-10 MW). This deal serves as a blueprint for the future of renewable energy aggregation: Aggregating small-scale energy buyers and sellers enables more diverse businesses to enter the market and accelerate the worldwide transition to clean energy.

RESULTS: With their shared investments, the five companies will offset 64,362 metric tons of CO₂ emissions each year. The businesses also believe that in addition to moving closer to long-term company carbon neutrality and renewable energy goals, investing in this project is good for business as citizens increasingly feel pressured to support brands that invest in climate resilience. The new 100-megawatt solar development also creates a cleaner grid, funneling energy into the local grid to power thousands of homes and businesses each year.

Corporate Renewable Energy Aggregation Group

Bloomberg

COX
ENTERPRISES

Gap Inc.

salesforce

workday.

Level10
Energy

BayWa r.e.

“The challenge for growth in the renewable PPA markets: once the big buyers who can swing their own solo deal—or function as ‘lead sled dog’ with a few smaller plates on for the ride—are gone, how do we keep the corporate momentum going? This deal may have established a replicable model to help address that issue.”

Judges Rule

Winner for Commercial Offsite Renewable Energy

Adobe and Facebook “Enel Green Power’s Rattlesnake Creek Wind Farm”

PROJECT OVERVIEW: By using a collaborative approach to finding power purchase solutions for two companies with different energy needs, the Rattlesnake Creek wind farm is enabling leading technology companies Facebook and Adobe, to make significant progress on their renewable energy targets. With this project, Enel Green Power’s Rattlesnake Creek wind farm supports Facebook’s new Papillion Data Center with 100% wind power. At Adobe, this project is furthering the company’s progress towards its goal to be 100% powered by renewable energy by 2035. Enel Green Power’s Rattlesnake Creek wind farm is a 320 MW project located in Dixon County, Nebraska, representing the second-largest wind project in the state.

EXECUTION: In November 2017, Facebook purchased 200 MW of Rattlesnake Creek’s wind energy from Enel Green Power, which was then expanded to the eventual purchase of the full 320 MW to supply the expanding data center.

With Adobe in need of a smaller energy supply, the company agreed on a plan with Facebook to enable Adobe’s purchase from the project. Enel Green Power then customized a unique power purchase solution to meet the offtake needs of both companies.

INNOVATION: This project is the technology industry’s first aggregated purchase of wind energy, whereby Facebook will gradually purchase Rattlesnake Creek’s full 320 MW output by 2029. Before 2029, the companies will share the output of the wind project, with Adobe purchasing the energy produced by 10 MW of Rattlesnake Creek and Facebook purchasing the energy produced by the remaining 310 MW of the project. Facebook’s partnership with Adobe enabled the creation of a flexible offtake structure that allows Adobe to benefit from utility-scale renewable energy at a cost-competitive rate.



Amanda Yang,
Renewable Energy
Manager, Facebook



Vince Digneo,
Sustainability
Strategist, Adobe



“This project shows collaboration between companies with different renewable energy goals and how they can work together to achieve their objectives.”

Judges Rule

Winner for Institutional Onsite Renewable Energy

Minneapolis Public Schools

“Rooftop & Canopy Solar + EV Charging at Edison High School”

PROJECT OVERVIEW: Innovation is part of the mission statement for Edison High School in Minneapolis, MN. The Minnesota Public School system (MPS) found a cost-effective way to reduce its carbon footprint and engage the community in a sustainability initiative by entering into a long-term solar power purchase agreement to install a mix of rooftop and canopy solar on the school’s campus. The project also includes the installation of two electric vehicle charging stations in the staff parking lot. Working together, Sundial Solar and MPS secured a grant from Xcel Energy’s Renewable Development Fund to finance a portion of the project. C2 Energy Capital provided late-stage development services including financing. C2 Energy manages the ongoing operations of the project.

INNOVATION: The project employs both rooftop and canopy structures to maximize the offset of conventional purchased electricity. One of the canopy structures is co-located with a

community garden and greenhouse, and also provides shade to an outdoor break area. The central location of the array offers an educational opportunity to students for an up-close view of photovoltaic solar. The EV charging infrastructure serves not only to prepare the school for widespread adoption of electric vehicles but also to spur that transition by making the infrastructure available and visible. Electricity production from the solar arrays is available to the public in real-time via Edison High School’s webpage, engaging the school community in its sustainability-focused educational efforts.

RESULTS: This project demonstrates to students, teachers, and parents that renewable energy and vehicle electrification is a practical and achievable step toward addressing climate change. The project began delivering power to the high school at the beginning of 2019 and is forecasted to generate more than 600,000 kilowatt-hours in its first year of operations.



Andy Lesch, Project Manager, Construction Services, Minneapolis Public Schools



“The combination of rooftop, canopy, and EV charging makes this project innovative. On the surface this might appear to be a ‘standard’ type of project but there are definite complexities in negotiating a deal that encompasses all these facets.”

Judges Rule

Winner for Enabling Onsite Renewables

IBM, NextEra Energy, and Xcel Energy “IBM Boulder Goes Solar”

PROJECT OVERVIEW: IBM has a corporate goal to procure 55% of the electricity it consumes from renewable sources by 2025. Their campus in Boulder, Colorado, is one of IBM’s largest sites in the world and supports a strategic data center, and therefore plays a critical role toward meeting this goal. Colorado has a regulated electricity market so RE procurement options must be pursued through their utility, Xcel Energy (Xcel). In the past, IBM had not been able to substantially increase its use of renewables at that site; that recently changed with Xcel’s announcement of their “Solar*Rewards” program.

IBM is hosting a single-axis tracking, 10 MW direct current solar array on 55 acres at the Boulder campus. The system is owned and operated by NextEra Energy Resources (NEER); IBM purchases the electricity via a PPA. The system is interconnected to Xcel’s network and Xcel is buying the system’s RECs through the Solar*Rewards program to

demonstrate compliance with Colorado’s Renewable Portfolio Standard (RPS). It is now the largest solar array in Boulder County and also IBM’s largest on-site solar array to date.

INNOVATION: IBM worked with NEER and Xcel to interconnect the project on Xcel’s side of the meter so that IBM did not have to manage the intermittency of solar power. To maintain desirable land use status post solar array installation, a contract was signed with a local farm to have sheep graze the land for vegetation management.

RESULTS: The project is currently cash flow positive for IBM—for environmental, including renewables, projects to sustain over time they must make financial sense. It also presents to the public corporate support of innovative renewables procurement options, incentivizing Xcel and others to pursue similar programs in the future.



*Andrés Rodríguez,
Program Manager, Energy
and Climate, IBM*



*Matt Ulman, Vice President
Distributed Generation,
NextEra Energy*



*Darryl Presley, Key Account
Manager, Xcel Energy*



“Amazing feat of successful collaborative partnership with all stakeholders—utility, customer, developer, A&E, and sheep farmer for grazing!”

Judges Rule

Winner for International Onsite Renewables

Ecuador Ministry of Energy

“Isabela Island Hybrid Power Plant, Galapagos Islands, Ecuador”

PROJECT OVERVIEW: Commissioned by the Ecuadorean government to resolve a complex environmental issue confronting the Galapagos Islands, Siemens developed a first-of-its-kind hybrid electricity generation system using renewable fuels—providing a sustainable, reliable energy supply that can serve as a model for clean power for decades to come. The solution replaces the highly pollutive electric power system on Isabela Island, the largest of the national park’s 21 islands and the launch pad for tens of thousands of global tourists who each year take boat tours of the archipelago and its wildlife.

The solution engineered for the Isabela Island Hybrid Power Plant exploits different energy resources to create a system capable of fulfilling the requirements of the island’s power demand: resilience, availability, and quality of supply as well as sustainability. A mix of local and imported resources from the

continent was used to create a system including a solar PV plant, pure plant oil gensets, energy storage, control system, performance guarantees for renewables, and a digital solution for remote management and monitoring. The system is designed to run carbon-neutral with biofuel and solar energy.

RESULTS: The plant has proven in numerous events that it works safely and is stable and has shown excellent performance, especially in cases where the grid is being supplied fully through inverter power. Other benefits include running carbon-neutral, a 30-dB noise reduction, 99% availability, shut down of engines at good solar radiation, guaranteed renewable plant performance, average monthly reduction of 85 tons of CO₂.



“The project is located in a challenging geography and involves multiple fuel sources in a complex zero-carbon microgrid. Particularly impressive was the utilization of the two remote operation centers and software simulations, as well as real-time weather prediction to optimize solar resource. This shows mastery of complexity—a must have for this industry to flourish.”

Judges Rule

Winner for Commercial Energy Microgrids & Storage

Consolidated Edison & Related Companies

“Energy Storage Project at Related’s Gateway Center Mall”

PROJECT OVERVIEW: The Gateway Center Battery Storage project in Brooklyn is a unique partnership made possible by Con Edison’s Brooklyn-Queens Neighborhood Programs, which works with customers to help them curtail power usage and change the ways they get and use energy. As the largest battery storage system in NYC, the project protects the local electrical grid by balancing DERs and improving reliability during times of peak demand. DERs offer a cost-effective and sustainable alternative to costly infrastructure that would otherwise be needed to address rising demand in an already congested area of the grid. Enel X installed the 4.8 MW/16.4 MWh front-of-the-meter lithium-ion battery system at the Gateway Center mall in Brooklyn that supplies new sustainable energy to Con Edison. The system’s unique grid-connected design enables a direct relationship between Enel X’s storage resources and Con Edison, while simultaneously simplifying transactions by removing the standard complexities of energy management and tenant participation.

INNOVATION: The unique deal structure that includes a utility, third-party company, and commercial real estate developer not only provides a solution to modernize the grid but also drives down project costs, making it a win-win scenario for all parties involved. This novel, highly replicable leasing real-estate structure can be leveraged to help deliver on sustainability goals and protect the electrical grids in complex, densely-populated markets by balancing DERs and improving reliability during times of peak demand.

RESULTS: To date, the Gateway Center battery storage system has delivered 100 MWh of stored electricity to the New York grid. While boosting reliability, the system has also contributed to substantial emissions reduction during periods of peak demand by avoiding and displacing carbon-intensive electricity.



Gregory Elcock, director of energy efficiency programs, Consolidated Edison



“I like this as a story of utility leadership and partnership on a non-wires solutions project. Figuring out the value proposition for real estate companies as well is also great. This is highly replicable, especially for other load-pocket situations.”

Judges Rule

One to Watch for Commercial Offsite Renewable Energy

Microsoft Inc. “A Zero-Carbon World”

PROJECT OVERVIEW: Microsoft is extremely energy-intensive due to their massive computational and hosting needs; their servers and data centers require a commensurate energy supply. They also set an aggressive goal to reduce their operational carbon emissions by 75% by 2030 and 60% by 2020. This leaves Microsoft with the challenge to match an intermittent green power supply from renewable assets (wind and solar) with their very stable energy consumption profile. This project will allow Microsoft to power its data centers with a diversified renewable energy mix, manage the energy production variability, and directly support their ambitious sustainability goals.

The project involves local wind and solar assets in Texas with a nameplate capacity of 200MW each, with construction scheduled to be completed by year-end 2020. The deal combines a 5-year Wind Virtual PPA and a 15-year Solar Virtual PPA providing intermittent power, together with RECs as well

as a 12-year financial hedge (Volume Firming Agreement) to transform intermittent power into a fixed baseload profile matching closely the data center’s load. The resulting supply is competitively priced, reliable, customized, and long-term, with very low residual risk.

INNOVATION: ENGIE designed a unique structured product suite to meet Microsoft’s requirements. It is particularly efficient to combine wind and solar profiles in Texas, since the wind tends to blow harder at night and during the winter, which offers a great complement to a solar profile. The partnership between ENGIE and Microsoft also covers the implementation of Darwin, a digital energy performance management platform, which contributes to the efficiency of the generation assets helping enable predictive maintenance, cost-optimization, and improved performance.



Vanessa Miller-Fels, Renewable Energy Strategist,
Microsoft



“This is a highly innovative project in that a solar deal was coupled with a wind deal to smooth out the supply profile.”

Judges Rule

One to Watch for Industrial Offsite Renewable Energy

McCormick & Company

“McCormick Solar Energy Purchase”

PROJECT OVERVIEW: While McCormick has completed dozens of energy efficiency projects and a few on-site solar projects, the Company recognizes that achieving its GHG reduction goal without some type of large scale, off-site renewable will be almost impossible. Another challenge: they don't want to enter any VPPAs due to their complexity and potential financial risks. The solution: McCormick has executed a contract to purchase enough solar electricity to power its Maryland and New Jersey sites (due to their location in the PJM electric grid, where the solar array is also located) from Project Skipjack, a utility-scale solar array in Virginia that will be operational in mid-2021. The estimated electricity consumption for these sites, which includes 4 manufacturing plants, the corporate HQ, an R&D building, and a distribution center, is 48,000 mWh per year.

EXECUTION: Constellation Energy brokered the deal between McCormick (and the two other off-takers of the

plant's output) and sPower, the developer. The agreement is a retail electricity purchase contract that will replace the existing contract for “brown” power from the electric grid.

INNOVATION: This contract is one of the first of its kind for solar energy in the PJM grid. Rather than the developer, sPower, having to contract with the grid operators to sell the array's output to the electric grid on the wholesale level, and then the grid operators, in turn, sell the electricity on the retail level, sPower is contracting directly with the end-users. McCormick will also have bundled RECs with the electricity purchase. This is a preferred approach to reducing GHG emissions vs simply buying unbundled RECs where the electricity itself was never purchased or consumed by McCormick.



Jeff Blankman, Sustainable Manufacturing Manager, McCormick & Company



“Not every corporate is going to want a VPPA, and while this approach is limited by location (i.e., asset needs to be in same ISO/RTO as customer), it could apply to much of the country for those customers shy of VPPAs.”

Judges Rule

One to Watch for Government Offsite Renewable Energy

City of Cincinnati “100% Renewable Energy by 2035”

PROJECT OVERVIEW: This project was designed to meet the goals of the City of Cincinnati for 100% renewable energy by 2035. Ohio is a deregulated state, which allows for the City to select its power supplier. Renewable power was selected through a long-term PPA that serves as a budget hedge to lower the City’s exposure to market fluctuations. This project utilized a market-based approach that directed money currently being spent on utilities to onsite and offsite solar as well as energy efficiency, to lower the City of Cincinnati’s carbon footprint as much as possible through both an increase in renewable generation and reduced consumption.

This project has four components: 35 MW of offsite solar for City and City Utility energy use, which will provide 24% renewable energy to offset the City government’s annual consumption; 65 MW of offsite solar for City Community Choice Aggregation Program; 2 MW of onsite solar at 10 City facilities, and energy efficiency upgrades at City facilities.

INNOVATION:

1. A market-based approach was utilized.
2. The 35 MW PPA is the first large scale PPA in Ohio for a municipality, and one of the largest in the country.
3. The 65 MW for the Community Choice Aggregation Program represents Cincinnati’s work-around for community solar, which is currently unavailable to Ohio residents. When successful, this model will spread to other community aggregation programs spurring large growth in renewables for aggregation programs through Ohio and other states with similar legislation.
4. The City of Cincinnati is working with other municipalities to purchase additional solar for their use at this site.



Michael Forrester, Energy Manager, City of Cincinnati, Office of Environment and Sustainability



“This shows what a committed city can do, within the constraints of the market. Also, it involved multiple projects with some complexity, therefore representing a model for what other cities might achieve. There is potential for some type of replicability that moves the needle.”

Judges Rule

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