

# *Insights from the 2020*

## **SMART ENERGY DECISIONS**

### **DISTRIBUTED ENERGY FORUM**



September 21-25, 2020

# Distributed Energy Forum: Virtual Collaboration Drives Success

Smart Energy Decisions' second annual **Distributed Energy Forum** continued its mission to help accelerate the adoption of distributed energy resources by focusing on advancing best practices and facilitating new business partnerships between large electric power users and suppliers. This virtual event welcomed our community of customers from commercial, industrial, institutional, and government entities on September 21–25, 2020 to our proprietary virtual platform. General sessions featuring energy management executives sharing their experiences and plans to incorporate DERs, as well as a buyers-only Peer-to-Peer Mastermind session and an open forum offered these customers and suppliers the chance to explore DER opportunities and strategies, along with high-quality networking in an intimate environment.

This *Insights* report, part of our continuing series, offers excerpts from each general session to give you a taste of the thought-provoking content, as well as the spirit of collaboration in evidence throughout the event.

As always, we're extremely grateful for the support of the SED Advisory Board and the growing ranks of supplier sponsors who form a central element of the content at Smart Energy Decisions events.

We look forward to the next edition of the **Virtual Distributed Energy Forum**, September 13–15, 2021, where buyers and suppliers will come together once again to explore "DER's Role in Your Sustainability Strategy." Buyers may [click here](#) for an application to attend. Suppliers may [click here](#) for sponsorship opportunities.

We are proud to bring our community together to advance the energy transition.



Cordially,

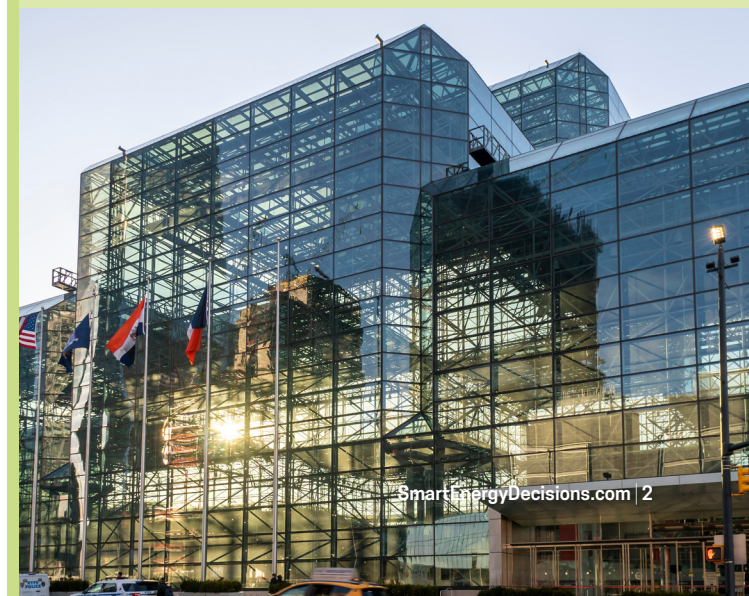
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September 2020

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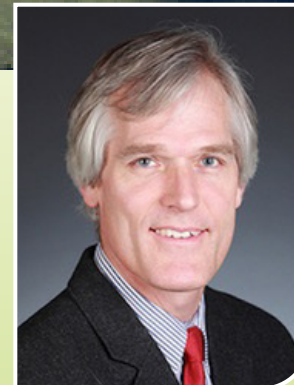


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# Opening Keynote: Achieving Energy Independence in Manufacturing



**Alex Fried,**  
Senior Energy  
Purchasing  
Manager,  
Procter & Gamble



**Peter Kelley-Detwiler,**  
Director of Education  
Programs, Smart  
Energy Decisions



## Opening Keynote: Achieving Energy Independence in Manufacturing

**KELLY-DETWILER:** What are you responsible for at P&G?

**FRIED:** I've been with Procter & Gamble for 33 years and in our energy purchasing group for the last three. I am responsible for sourcing from nine sites in North America including natural gas, electricity, and steam. The combined spend of everything that comes across my desk is well into the tens of millions of dollars annually. We have a team of six buyers who work out of our Cincinnati company headquarters. I work predominantly virtually from either my home or my Mehoopany office.

**KELLY-DETWILER:** Is the Mehoopany plant the most sophisticated property you manage?

**FRIED:** It's one of the largest sites of about 150 manufacturing locations that P&G has worldwide. Also, because it is a paper site making Bounty and Charmin, it's quite energy intensive. The types of energy involved are typically vacuum drying, which is normally done either by steam-driven motors or electric motors, and then a large thermal load, which is both a combination of steam and also hot air.

**KELLY-DETWILER:** Thanks. I understand you used to buy your gas for that facility from the Gulf and then somewhere around 2008, you had an epiphany. What happened?

**FRIED:** In 2008 there was a press release by some who predicted that the Marcellus Shale, which underlies a good portion Pennsylvania, the southern tier of New York and Ohio, and West Virginia, would eventually become—with technology, specifically hydraulic fracturing and horizontal drilling technology—the largest natural gas find to date and be worth trillions of dollars because of the size of the reservoir. When I read that, my eyes quickly flew to the map where I saw that, oh, my goodness, our Mehoopany plant actually could lie right atop this very large natural gas

source. There was something here that could be quite interesting for Procter & Gamble to take advantage of.

**KELLY-DETWILER:** Ultimately, you selected a driller, but how did you get from the concept to that point?

**FRIED:** There was about a year of internal exploration, discussion, and alignment until we ultimately got to an agreement. I would say it was a very step-wise path. I shared it internally with the plant leadership first, then with some of our family care business leadership that basically is responsible for all of our sites that make Bounty and Charmin, and then from there also with our Cincinnati-based energy purchasing team. It just sequentially went up the ladder. Along the way there were some great questions that everyone had in terms of what's the likelihood, what would be the risk, how could we make this as much as possible a win and not a loss?

Very quickly, we knew that this would be a significant advantage, as a large industrial gas user, to have that type of resource right on our own property. And already at that facility, we had been making about half of our electricity onsite using combined heat and power since 1985. We certainly had the capability, at least from an energy footprint standpoint, to increase that. The key was finding more advantageous sources of low-priced natural gas. Of course, when you can get the natural gas right there from your property and on top of that if it's found—as any landowner would—you get the benefit of some royalties to lower the cost further. That was a slam dunk combo.

**KELLY-DETWILER:** Many of the buyers in the room are dealing with complex undertakings and, irrespective of what those are, there are commonalities in terms of what you need to do to move a project through a multi-faceted organization. What advice would you have for someone who's doing



## Opening Keynote: Achieving Energy Independence in Manufacturing

something complicated that could benefit the company and the environment as well?

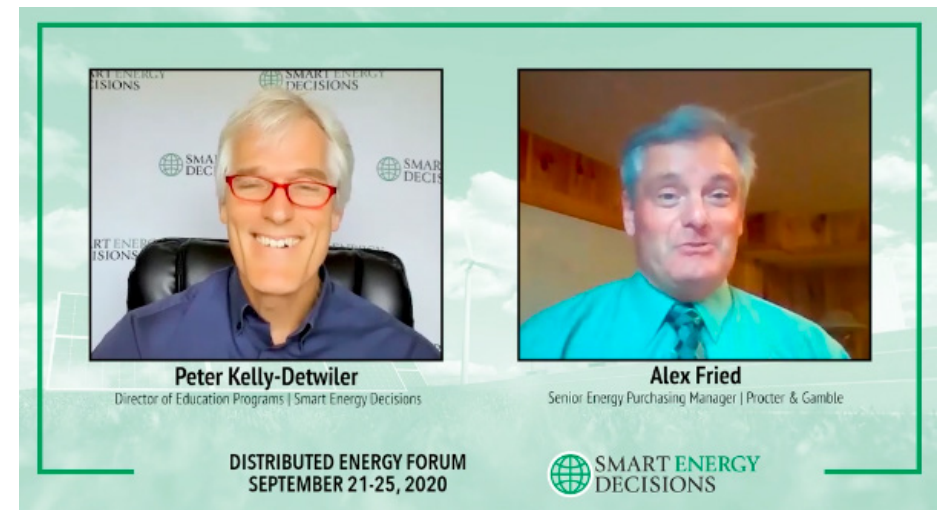
**FRIED:** First, have some clearly defined roles. Second, it's like any sport, you must have a good team. I was blessed because when we got into the details of doing combined heat and power (CHP) like finding the right unit as we looked at the thermal output, use, and technical details versus the electrical output, there were smarter people than myself involved. We had a great engineering team. We also had operators in our utilities department who already ran one CHP and certainly were excited about the possibility of getting a second to further expand plant capabilities in that area.

Third, going back to the sports team analogy, you must have good ownership and leadership. I needed alignment and resources. There had to be support from the hierarchy saying that this ultimately made sense for the plant and the consumers that we serve. There was a unique opportunity and it just so happened this could significantly improve our cost structure, make us more energy efficient and reduce some of our environmental footprint at the plant.

When considering leasing our property, there were some logical financial questions. The way I like to handle those is to ensure an estimate of what gas would be worth to us if found. It's certainly in the millions of dollars from a supply chain standpoint. The good news is that—with all of

these lease agreements in Pennsylvania at that time—there was an upfront bonus payment per acre whether gas was found on your property or not. It still made sense to allow the gas exploration company to try.

In our case, it was a walk off single or a grand slam home run. If the driller didn't find gas on our property, there was a still significant bonus lease to us as the property owner for letting them try. If gas was found, it would reduce supply chain costs and the ability to do co-generation and other projects like compressed natural gas for trucking and material handling at our warehouse, etc. 🌐



**“There was a unique opportunity** and it just so happened this could significantly improve our cost structure, make us more energy efficient and reduce some of our environmental footprint at the plant.”

—**Alex Fried**, Senior Energy Purchasing Manager, Procter & Gamble



# Keynote: Powering Philadelphia's Future



**Christine Knapp,**  
Director, Office of  
Sustainability, City  
of Philadelphia



**Emily Schapira,**  
President & CEO,  
Philadelphia  
Energy Authority



**Debra Chanil,**  
Director of Research  
and Content, Smart  
Energy Decisions

## Keynote: Powering Philadelphia's Future

**KNAPP:** I want to start by acknowledging some areas of focus for our office in the last year and where we're going in the future. We issued a municipal energy master plan for the City of Philadelphia a little over two and a half years ago that set some real goals for the city government for the way that we use energy in our own buildings so that we can lead by example. We want to reduce energy use in our buildings by at least 20%, move to 100% renewable electricity, and reduce greenhouse gas emissions by 50%—all by 2030. We want to do that without spending any additional money and, in fact, cutting what we're spending on energy as a city.

We can do this by using less energy. We have some really great programs through which we've invested in city buildings. The Philadelphia Art Museum is perhaps the most visible and iconic with its steps featured in the *Rocky* movies. It's a large, city-owned facility and is in 24/7 operation to keep the art secure. We're investing about \$11 million to make energy-efficient upgrades and slash GHG emissions while helping to create and sustain jobs.

We also have the opportunity to use cleaner energy. We're particularly proud of our solar power purchase agreement for a 70-MW facility to be built two hours away from Philadelphia and will provide about 22% of the city's electricity needs. We're locking in today's pricing so that we will save money over time. This project also helps boost the local economy and puts people to work in building and maintaining the facility.

Beyond just what we can do as a municipal government with our own assets, we set policies and programs to help move everybody towards our climate and energy goals. We know that's critically important for meeting international goals for climate change as well. We've had a successful energy benchmarking program in Philadelphia since 2012 and have seen a 5% reduction in energy use and a 12% reduction in GHG emissions from large buildings participating and reporting their energy use. To build off of that,

last year, we passed a building energy performance regulation through the city council that requires those same large buildings to achieve a high-performance building standard or perform a tune-up every five years.

There's a lot of work underway and more to come. Things are changing and pivoting due to COVID-19, but we're looking at this as an opportunity to bring all these crises together to find common solutions and achieve multiple goals at the same time. We're doing a lot of this in partnership with the Philadelphia Energy Authority. I know Emily's going to share its perspective as well.

**SCHAPIRA:** Philadelphia Energy Authority is a municipal authority that's designed to enable the city to hold long-term contracts or to engage in other procurement that might be otherwise difficult. Before I tell you more about our work, I'll give you some additional context on Philly and how we think about things. There are two metrics that we especially focus on: energy burden and energy insecurity.

Energy burden is the percent of your income that you pay towards your utilities. In Philadelphia, which is one of the poorest big cities in America, residents at 30% of area median incomes, our poorest population, pay 23% of their income to utilities—that's crisis level. Compare that to what the average person pays, which is usually 3% to 6% of their income at the most.

Energy insecurity refers to people who are going without food or medicine to pay for utilities. They face an imminent utility shut-off or set their home to an unsafe or unhealthy temperature. In Philadelphia, more than 50% of all African American households at any income level, and more than 40% of all renters, face energy insecurity at least once a year.

All of that, combined with COVID and the effects of other current events, leads to a bit of a crisis. That's the context in which we operate. Though there are many amazing things happening in Philadelphia, it's



## Keynote: Powering Philadelphia's Future

important to think of the most vulnerable among us in everything that we do. We believe in using energy as a tool for impact across economic development, job creation, poverty alleviation and improving public health. We look at all the goals that Christine has set for the city and see how, through energy, can we help influence those.

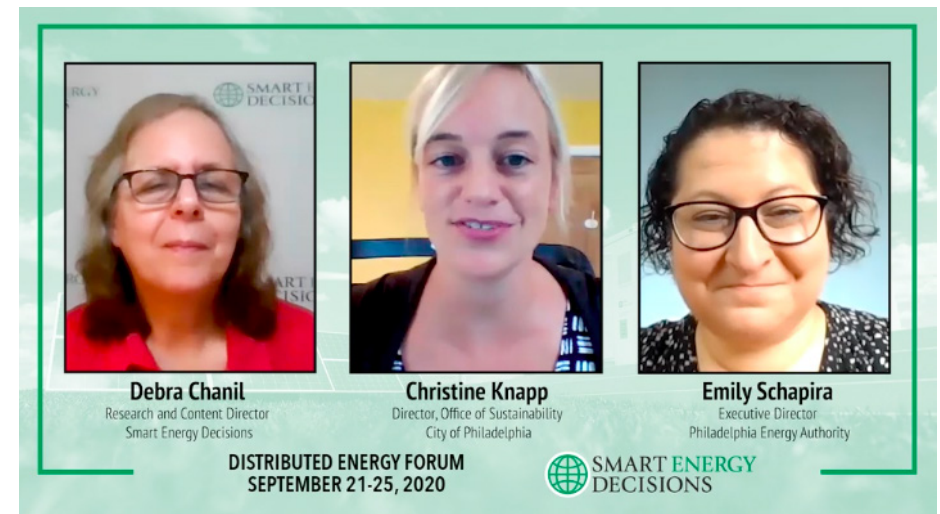
**CHANIL:** What should buyers be thinking about in their own locations and in their own business?

**SCHAPIRA:** From our perspective where we sit in city government, you don't have to have a big source of funding. You don't have to have a particularly favorable political environment or regulatory environment in your state. There is so much that you can do just with a little bit of resources and a big plan. That's what we've been able to do in Philly. We didn't start out with a billion dollars to invest in this; we had to create financeable projects. Think how you can use the resources of the city government to fix some of those market gaps that have prevented clean energy from really taking off and help drive it that way.

**KNAPP:** Get over your preconceived notions. For a long time, we thought solar was too expensive. With the Energy Authority, we put out an RFI to see what a solar power purchase agreement might look like in terms of cost

and financing. It showed us that there was parity with the grid electricity we were already paying for. We were pleasantly surprised. When we moved forward with clean energy, other organizations took note and implemented their own projects as well.

Also, the more you do something, the easier it gets. You have to start somewhere. Don't get impatient. It'll take time at first, but then once you have success, you can continue to build off it and do more. 🌍



**“Though there are many amazing things happening in Philadelphia, it’s important to think of the most vulnerable among us in everything that we do. We believe in using energy as a tool for impact across economic development, job creation, poverty alleviation, and improving public health.”**

**—Emily Schapira, President & CEO, Philadelphia Energy Authority**

# Keynote: The Future of the Grid is Distributed



**Doug Sansom,**  
Director, National  
Accounts and  
Wholesale Origination,  
NRG



**John Failla,**  
Founder and  
Editorial Director,  
Smart Energy  
Decisions

## Keynote: The Future of the Grid is Distributed

**FAILLA:** I'm intrigued by this notion that the future of the grid is distributed. Tell us your views on that.

**SANSOM:** The future of the grid is distributed because customers want control over the cost of energy. They also want reliability and choice. Access to cost-efficient energy is a business necessity. Their beliefs are fundamental to sustained growth in DERs. So, these reasons combined with new lower-cost technology is driving capital spending for distributed energy resources, particularly behind the meter. In fact, according to Wood McKenzie report, DER capacity will reach 387 GW by 2025 driven by \$110 billion investment in such things as battery storage, electric vehicle infrastructure, and grid-interactive appliance sales.

**FAILLA:** What do you think are the customer needs and pain points that are driving this need for a distributed grid and the increase in distributed energy resource deployment?

**SANSOM:** We know from experience that the customers are focused on their operational needs probably more so than just energy itself. They see energy as a means to the end. Customers want DERs to help them overcome challenges such as managing the cost of energy in the face of dynamic rate determinants, time of use, demand charges, coincident peak demand charges, etc. Customers also want DERs to help them achieve sustainability goals while providing assurance that their power will always be there when they need it. All of this translates to freedom to access energy on their terms at a cost-efficient rate when they need it.

**FAILLA:** What changes do you think are needed on the customer side of things to address these needs?

**SANSOM:** Change is already happening. Customers are shifting their energy approach to understand total cost and benefits delivered across all various solutions that they can project into their business. Customers

who seek to optimize their consumption across all their resources are more efficient, so they are not just looking at one thing—they are looking at multiple factors about their energy consumption and use. Customers who separate supply from the many forms of DERs like demand response, behind-the-meter reliability, and sustainable assets simply don't have the integrated energy infrastructure to be cost-efficient, and they're often much less cost-efficient than those that integrate everything. Integrating those resources to manage load under a variety of conditions is fundamental to deliver low-cost energy to support the needs of the business.

**FAILLA:** Based on my interactions with large customers, I see they tend to split supply and demand management. NRG's new framework for an integrated portfolio approach really makes sense. To get a better idea of what this may look like, can you walk us through a day in the life of a customer and what types of DERs they would be activating?

**SANSOM:** To try to illustrate a typical day, you must consider different reasons for solutions and why distributed energy resources may be dispatched.

For example, on an operational basis, a customer may dispatch a distributed energy resource— say, a battery or a generator behind the meter—or participate in DER programs when the benefit is much greater than the cost of dispatching that asset. They could also look at this from a grid perspective when, say, time-of-use or demand charges or other determinants within the grid are much more expensive than the cost of dispatching those resources. Finally, there could also be a reason to dispatch renewable resources when they have tangible sustainability goals and the benefit is greater than the cost. It may sound simple but, when you look at those three different types of solutions and try to bring those together, it becomes complex for the customer. I believe customers are seeking information on how to manage and optimize everything so that they dispatch those resources in a way that brings them the most value.



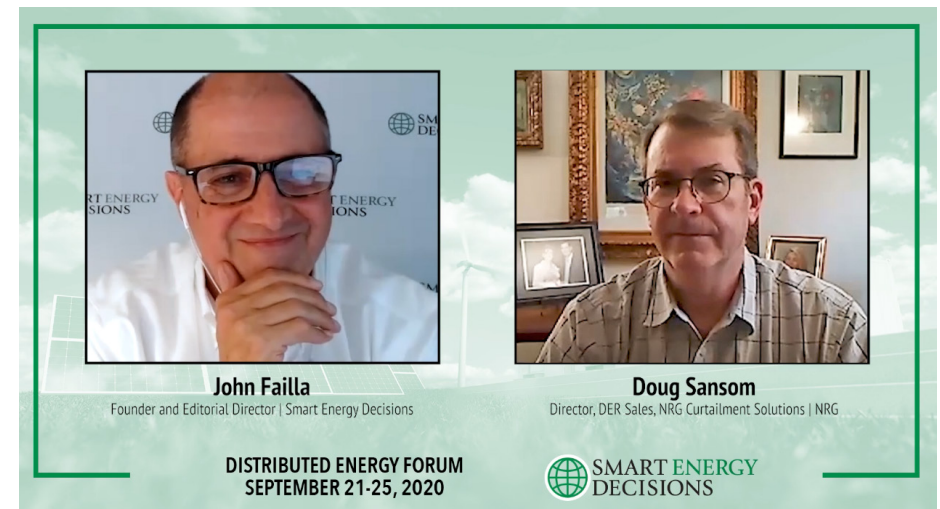
## Keynote: The Future of the Grid is Distributed

**FAILLA:** I couldn't agree more. Customers are starving for information on how to realize benefits. Let's say I'm a customer listening in. What should I be considering as I go about looking for the right supplier partner that can help me achieve benefits and the potential of this type of bundled, integrated solution?

**SANSOM:** There are five questions that a customer seeking some answers should ask. First, how large is the cost of energy relative to the rest of the business's cost structure? That's important because it shows how essential an energy solution is to their overall business. Second, is the business flexible enough to reduce energy during peak demand periods? Obviously, there are times on the grid when everybody's using energy and it may be inconvenient for the business to reduce its consumption. It's important to understand when your peaks occur and how those match up with the overall grid or some of these programs. Third, what's the cost to business if a power outage happens during operations? I've had several customers tell me that it would potentially put them in the red for the entire fiscal year.

Fourth, does the business have resources dedicated to responding to the energy market and managing sustainable resources of supply? The largest businesses may have the staff and direct market access to see how markets are trending to reduce their consumption when it makes sense. However, most companies are not that sophisticated and seek to service that out

because the cost of having such staff and market participation is often greater than the benefit for their size business. Finally, fifth, what's the real cost of managing multiple energy providers versus working with a single, sophisticated one? Many customers have one provider for their DER solutions—whether it's demand response or behind-the-meter assets like generators or batteries—and another who is selling them energy, whether that's electric power or gas. What's the synergy of bringing those together? What's the real cost of managing multiple providers versus just managing one? 🌐



**“It may sound simple but, when you look at those three different types of solutions and try to bring those together, it becomes complex for the customer. I believe customers are seeking information on how to manage and optimize everything so that they're dispatching those resources in a way that brings them the most value.”**

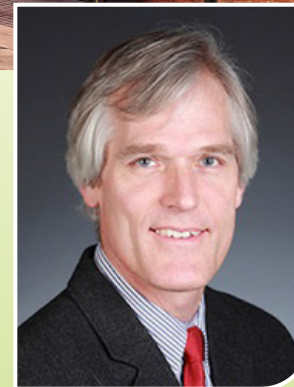
**—Doug Sansom, Director, National Accounts and Wholesale Origination, NRG**



# Keynote: Strategies for Innovative Efficiency Financing



**Ben Suplick,**  
Director of Engineering  
and Energy Planning  
for Facilities and Real  
Estate Planning,  
University of  
Pennsylvania



**Peter Kelley-Detwiler,**  
Director of Education  
Programs, Smart  
Energy Decisions



## Keynote: Strategies for Innovative Efficiency Financing

**KELLY-DETWILER:** Tell us about the UPenn campus and how energy efficiency upgrades and operation considerations differ by building and use.

**SUPLICK:** UPenn is approximately 13 million square feet with about 200 buildings very close to each other due to our urban environment. We also maintain 260 acres of property or landscape. We have 20 schools and centers, varying from the medical to veterinary to arts and chemical/physical sciences. We have a museum, the Institute of Contemporary Art. Then, there are buildings for our athletics. It's a whole myriad of different programming and uses and, hence, the buildings all serve different purposes. There're many challenges to reliably meeting various needs.

**KELLY-DETWILER:** You also have a climate action plan, targeting 100% carbon neutrality by 2042. How does that play into everything else you're trying to accomplish?

**SUPLICK:** We issued our 2042 goal in 2012. We thought 30 years would give us enough time to reach carbon neutrality and our president is adamant about and involved with us being a sustainable organization. That presents some challenges as you're trying to achieve energy efficiency both with buildings that go back to the 1800s as well as new ones. We're trying to constantly improve our buildings and drive them towards the most efficient operation possible but that takes time, effort, and money. Sometimes you're pressing the technology curve. We're always willing to be the second or third user of a new technology but sometimes we have to take chances to get to the level that we need.

**KELLY-DETWILER:** That must take a lot of capital. I understand you used century bonds.

**SUPLICK:** I'm responsible for our deferred maintenance backlog. We do ongoing facility condition assessments to determine when building equipment is reaching the end of its service life. Our extensive backlog got to a point where we felt that our annual budget wasn't going to address it or our need to improve the energy efficiency of the campus. Leadership felt that borrowing money during a period of low-interest rates in 2012 would allow us to fund larger-scale building renovations and complete HVAC system replacements with a less piecemeal approach.

**KELLY-DETWILER:** How is the capital broken down?

**SUPLICK:** We did feasibility studies on the buildings that we felt were the best candidates for energy efficiency improvements and selected the top ten to pursue in the first set of projects. We also determined the payback for those improvements. UPenn operates in a slightly different manner than some of the other colleges and universities around the country in that we use a resource-centered management model. Each school and center is responsible for its buildings, taking in operational revenue and paying for the upkeep and maintenance of its buildings. It's like having 20 different little colleges and universities next to each other and connected.

For example, the School of Arts and Sciences renovated its chemistry building first, taking on the debt and paying it back with the energy savings. Then, the money is redeployed again. The idea of a century bond is, if there's a 30-year life on this equipment, the money can be redeployed three to four times throughout the hundred-year bond life.

**KELLY-DETWILER:** Priority setting must be an interesting and very dynamic challenge.

**SUPLICK:** Yes, it's something that we're doing on a regular basis, assessing our next best opportunity while considering what's working in the schools



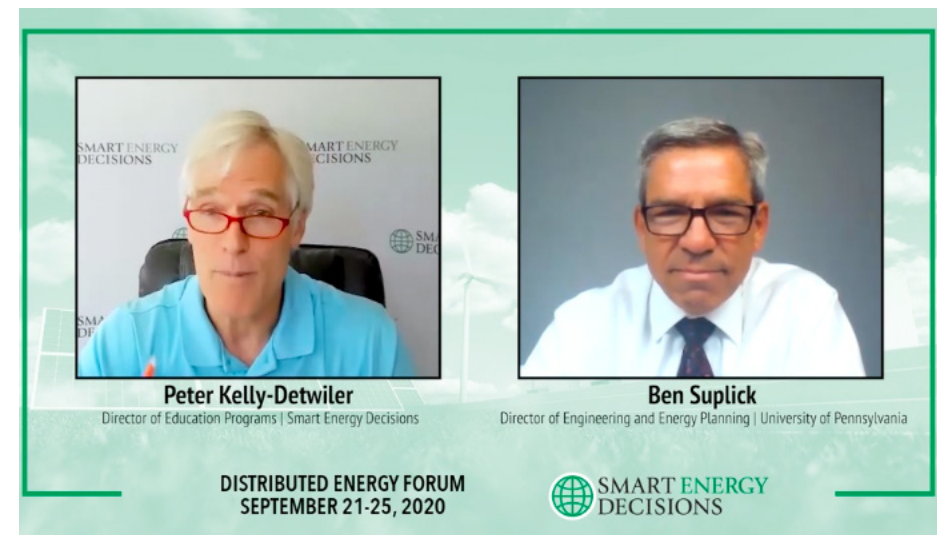
## Keynote: Strategies for Innovative Efficiency Financing

and what they're willing to do. I can only give them options and a bit of a sales pitch to encourage them to move forward with these efforts. My role is on the technical side to help determine the best options, working with outside consultants on estimated paybacks and then negotiating with the schools on what projects make sense for them—which ones they can afford and can be done in operational buildings without disturbing programs. There's a lot of moving pieces to get one of these projects done. We have a very practiced and experienced design and construction group that manages these projects. There's also an internal consulting group from one of our grad schools that helps us identify the buildings with the best opportunity for energy savings, which gives us additional information and data to make the decisions on where to go next.

**KELLY-DETWILER:** You mentioned you're responsible for assessing technology. How do you do that in such a dynamic global environment?

**SUPLICK:** One example is that, awhile back, we had T12 fluorescent light fixtures throughout a number of our buildings and started looking at the next iteration. We spoke with our peer schools that had done similar types of projects. We learned not to transition to LED yet. The technology was getting there but the quality and consistency weren't yet adequate. We upgraded to T8s instead. It doesn't sound like a big step forward, but we

saw about a 45% reduction in our energy lighting load. Since then, bigger manufacturers have entered the market with quality fixtures at affordable prices, so we have started to implement LEDs. Any new project must adhere to our lighting standards so we are using consistent vendors and fixtures on campus. With a college of our size, it's best to standardize as much as possible without taking away the creativity of the architects and designers working in your buildings. 🌐

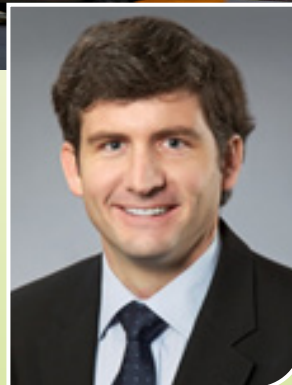


**“Sometimes you’re pressing the technology curve. We’re always willing to be the second or third user of a new technology but sometimes we have to take chances to get to the level that we need.”**

**—Ben Suplick, Director of Engineering and Energy Planning for Facilities and Real Estate Planning, University of Pennsylvania**



# Executive Interview: The Impact of COVID on DER Deployment



**Matthew Walters,**  
Director of Distributed  
Energy Systems,  
Siemens



**John Failla,**  
Founder and  
Editorial Director,  
Smart Energy  
Decisions

## Executive Interview: The Impact of COVID on DER Deployment

**FAILLA:** We're hearing about some companies where energy teams have become lean. There are large companies that you'd be surprised to see don't have a team at all. Sometimes, it's just one or two people in this environment. These companies may benefit from a partner who can bring a holistic approach to managing their energy. In the interest of making this real, could you share a particular case for this approach?

**WALTERS:** I would point to a current project that we're doing for the Javits Convention Center in midtown Manhattan. It's going to be the largest renewable energy project there to date. Javits started as a traditional Siemens customer. We had a relationship around our automation and control portfolio to optimize how they use energy. Looking at what they wanted to do concerning their sustainability and energy goals, we crafted a program for a microgrid including a solar and battery storage hybrid system that will cover the Javits Center and participate in the market. The solar canopies that we're constructing are the first of their kind to be built and designed to work with the landscape of midtown New York. This was an example of a customer with a sustainability goal who needed a path to get there. We have been able to come up with some innovative approaches to not only help them design and conceptualize but also finance. This project will be through a power purchase agreement with the ability to use the energy assets to support the grid edge, a key part of the Siemens strategy.

**FAILLA:** You mentioned demand-side management, greening the supply, and resiliency. What about the supply side? Is there a way to tie traditional supply into what you're doing for Javits?

**WALTERS:** Traditional grid supply is a key aspect of every project. Very few are ever pulled off the grid, so it requires a partnership with the utility.

The utility and the grid play a critical role in how the project comes together. It's all part of the procurement strategy. Whether the procurement comes from offsite renewables or from the market at the best price and terms, it has to be a key part of the overall strategy. Looking at all the different ways that you buy energy and the desired procurement sources, it's always going to be a big piece of the pie in terms of the energy spend.

**FAILLA:** We're seeing resiliency increasingly coming up as a priority for customers. You talked about a microgrid deployed at Javits. Could you speak more about microgrids and how you see those fitting into this holistic approach?

**WALTERS:** Microgrids are one of our key areas of expertise. We are deploying under a variety of different business models. One area where we've been seeing a lot of innovation is microgrid financing, especially how value is quantified. In some cases, it can be thought of as an insurance policy. You're buying insurance so your facility doesn't go down or have an outage. How much is an outage really worth, how do you value that resiliency?

Considering the current climate we're in, with our vulnerabilities around the grid and energy supply, the industry is taking a hard look at how valuable it is to have reliability when it comes to supplying our critical infrastructure. I think microgrids are going to continue to become a bigger part of the equation. Financing and funding structure will be an important aspect of how they get built. Regulation plays a huge role in how the market is shaped and prioritized. As our friends and colleagues are experiencing on the West Coast right now with wildfires, etc., these types of environmental and/or reliability issues will spur a creative purpose



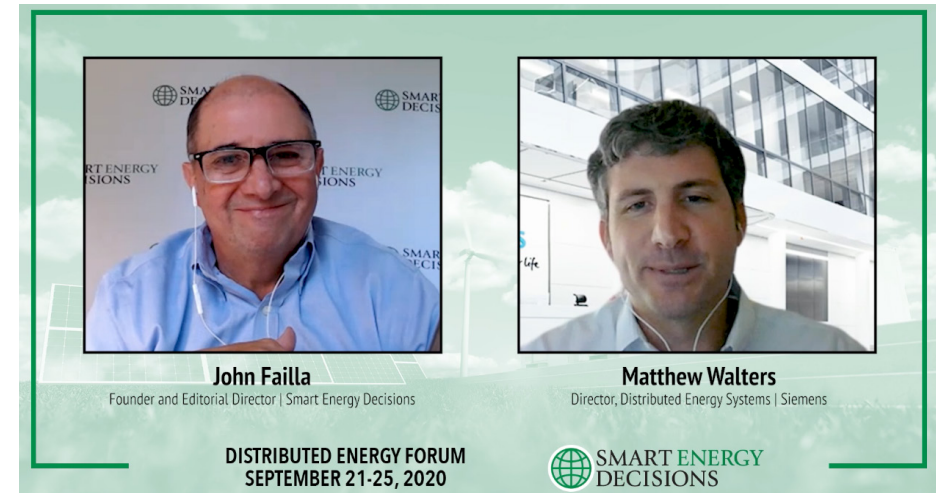
## Executive Interview: The Impact of COVID on DER Deployment

with regulation and working together to find out how we improve our infrastructure with financial instruments.

**FAILLA:** Innovation around financing and business models for deploying DERs seem like the big opportunity. You have this tremendous pressure on CapEx and operating budgets. How do you see customers exploring creative, off-balance-sheet financing programs?

**WALTERS:** We at Siemens, as many in the industry, offer energy as a service. What I think is important is not what we can offer in the market but the right financial offering that serves the customer's need—whether it's off-balance-sheet solutions or creative on-balance-sheet financing. It's important not to be pigeon-holed into an approach that may not be supported in the financial department. These financial structures take support across the C-suite and require buy-in and a partnership with your energy solution provider who can be with you every step of the way to help navigate. We take this very seriously when it comes to our financial partnerships and offerings. It's important that we're evaluating with the

customer in mind. With the changing environment, we need to match those two aspects together while overcoming challenges with the different economic drivers and the impact of the pandemic on the financial community. 🌐



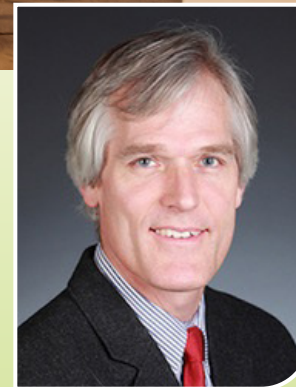
**“What I think is important is not what we can offer in the market but the right financial offering that serves the customer’s need.”**

**—Matthew Walters, Director of Distributed Energy Systems, Siemens**

# **Keynote:** A Modular Approach to Cogen: Stacking the Blocks



**Scott Bargerstock,**  
Global Energy and  
Innovation Senior  
Manager-Demand  
Side, Mohawk  
Industries



**Peter Kelley-Detwiler,**  
Director of Education  
Programs, Smart  
Energy Decisions



## Keynote: A Modular Approach to Cogen: Stacking the Blocks

**KELLY-DETWILER:** Mohawk Industries, one of the world's largest flooring manufacturers, has facilities all over the world with high demand for electricity and thermal load. In one particular plant, you had an opportunity for cogeneration with electricity and a good thermal load. Instead of going for one large unit, you opted for a modular approach using microturbines. What was the rationale behind that approach?

**BARGERSTOCK:** We've looked at combined heat and power (CHP) across a number of our ceramic tile and some of our other flooring manufacturing sites. We found the economics work best when you match your generation capacity to your thermal load. The more thermal load you can use, the better the return on the investment. Our installation currently has a load between 5 and 6 MW. There are some additional lines intended to be installed at this plant in the future. We figured that the plant load could increase to 8 or 9 MW at some point. We chose to focus on the existing equipment load and 5 to 6 MW was a good fit—the thermal load output from that generation was good. But then we started looking at the plant's load profile, which has large ball mills that grind the dirt into the high-tech mud that we use for the process. These required about 1 MW and they don't run 24/7—they typically run on campaigns, maybe a day and a half or less each campaign, followed by 6–8 hours for cleaning. So, we have a plant load that might be at 5 MW but when the mills aren't running we're down to 4 MW. We thought that a single-axial turbine wouldn't be a great fit due to the efficiency loss for the long periods of time at less-than-optimal operation.

Another consideration was the particular tariff we had with the electric supplier with some pretty significant demand penalties. To avoid them, we thought that the best fit may be a modular, incremental approach using microturbines. We installed 25 each 200-KW turbines because we can

balance their output to match the plant load. We have very little drop-off in efficiency as we cycle down one unit or add several to accommodate the load. Also, we were adamant that we were going to stay behind the meter but maintain the grid connection for redundancy. In our case, it ends up being a third redundancy because we have outlying capacity capability with this device to handle the occasional grid loss that has occurred since we started construction on that plant.

**KELLY-DETWILER:** Ceramic tile is not just a run-of-the-mill manufacturing process. As you mentioned, it's somewhat specialized. There's an engineering game involved in taking this modular approach with microturbines. How did you find the right partner to help you achieve this in a way that provides confidence in the end—not just saving money but providing consistency and quality?

**BARGERSTOCK:** First, we had to determine our exact priorities. No. 1 was that the process had to be completely and fully supportive of our production process. So, we knew we had to find someone with experience, engineers that had been there and done that.

A close secondary consideration was that we really wanted someone with microturbine experience. Our search in the U.S. wasn't very fruitful, so we went to Europe and talked with Italian and Spanish engineering firms. The Spanish firm happened to be the authorized distributor for a microturbine supplier. In addition, it had the CHP experience we wanted. We selected them and it ended up being a great fit. We really enjoyed working with them. They were very professional, and the experience that they brought to the table was outstanding. We felt very validated in our selection process. It was a nice give and take between different approaches, giving us some new angles on how to solve a problem. It was educational

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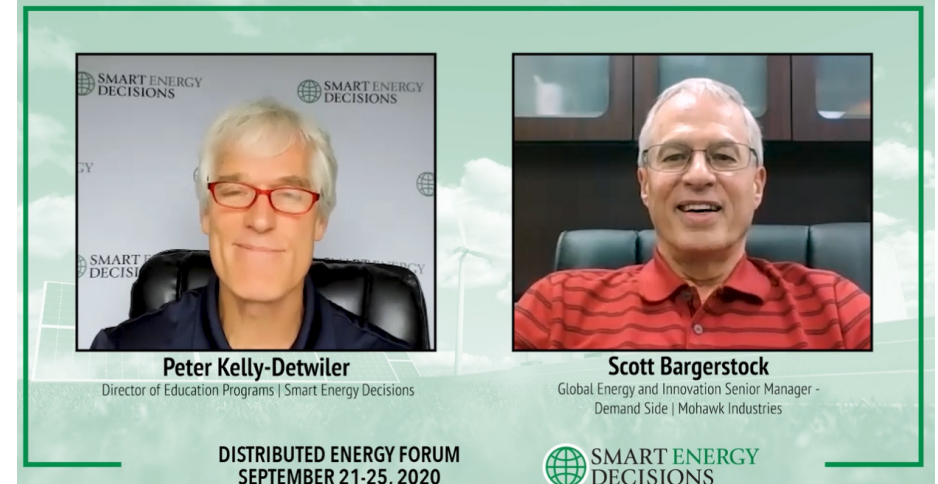
for both of us.

**KELLY-DETWILER:** You've dealt with and continue to deal with, these complex projects with different folks you have to satisfy in a fairly involved environment. What advice would you give to your peers if they're staring down the barrel of a similar type of complex project? How should they think about moving forward with something like that and what have you learned from your experience?

**BARGERSTOCK:** One, we did a lot of pre-planning to best understand how the CHP project would fit into the plant. We looked at the load profile. We looked at the heat necessary. We did that match between generation and thermal load. So, pre-planning and understanding the engineering technical side of it is exceptionally important.

Then, the next thing was assembling the team, which was very important to us. We ended up being our own project managers, so the team was only as strong as our selections. We spent a lot of time vetting and doing our due diligence walking through all the options that we had and we were very pleased with those selections at the end.

Lastly, we were spending a lot of time working with the plant to fine-tune the process and make sure that they're very comfortable with the process. We didn't want to be viewed as the outside people putting the project in. We wanted to work with them. And, as we told them, our job was to make them heroes with their bosses. That's the mantra we use. My boss often says we're the Navy SEALs. We go in and get the job done. Everybody recognizes that the job's done, but nobody's quite sure who got



**“We found the economics work best when you match your generation capacity to your thermal load. The more thermal load you can use, the better the return on the investment.”**

**—Scott Bargerstock, Senior Manager, Global Energy-Demand, Mohawk Industries**



# Inspiring Diversity in Energy: Getting from Statement to Action



**Carolyn Green,**  
Founder and  
Managing Partner,  
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Management



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Executive  
Director,  
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# Inspiring Diversity in Energy: Getting from Statement to Action

**CHANIL:** Let's begin with the events and changes we've seen since we met up in Philadelphia last December.

**GREEN:** In addition to George Floyd and Breana Taylor in Louisville, it seems almost every week there's another shooting of an unarmed African-American and a subsequent uprising. The younger generation is clearly saying, "We are angry. We are not going to accept this. Something has to change." We also see a number of companies, including some in the energy industry, saying, "Black lives do matter. We need to do a better job." The question is, how much of that is rhetoric and how much of it is real?

**PHILLIPS:** I have seen, even within my own organization, a renewed interest in diversity and inclusion initiatives. When everything first started happening, a lot of companies like mine came out with strong statements against racism. Something we continually asked ourselves is, "So, what do we do now?" We can't just come out with a strong statement. We had to think about what it really meant. Like many organizations, we refreshed our strategy around our diversity and inclusion efforts. There's more focus on understanding and having open conversations to move the ball forward with respect to how we're thinking about diversity and inclusion within our own organizations and in the broader community.

**GREEN:** The American Association of Blacks in Energy (AABE) has contributed by releasing a statement calling for five key actions that companies need to take to achieve success in diversity and inclusion. Companies need to add both equity and belonging. Equity means fairness and belonging means that people actually feel like they are part of the organization. I think those points are important for everyone. Companies must be focused on efforts to increase African American employment and develop a pathway to leadership for employees of color. They need to commit to equitable spending with African-American-owned businesses

that are ready to deliver value. Nobody's saying that you have to prop up a company that is not up to the challenge. There are businesses delivering goods and services that are beneficial for the energy industry and companies need to make an effort to work with them.

Finally, companies need to direct their resources to encourage and support African-American students in local universities and colleges, down to high school and junior high. It's important to engage with people early to move them into a STEM track. Three-quarters of African American STEM graduates still come from historically black colleges and universities, so it's important to support these institutions while working to integrate higher education. If we're really serious about getting more African Americans into the energy industry, our companies need to support the avenues by which those students travel.

**PHILLIPS:** I would encourage everyone to visit the AABE website and read its statement. We've brought some of its principles into our own strategy. We have three pillars: workforce diversity, workforce inclusion, and bringing it all together with community accountability. Sometimes people think about diversity but don't pay enough attention to inclusion. Anytime I'm talking about this to my colleagues or to others, I give an analogy. Diversity is like inviting someone to dinner. Inclusion is actually giving them a meal. You can't have one without the other. You have to finish the act to be successful. We make sure that we are backing up our diversity efforts to get folks in and making them part of the process. As managers, we can provide opportunities with each project, backing up that cultural shift by considering what inclusion means.

For example, after interviewing multiple candidates, one of my team members chose one they thought fit in. But what does "fit in" mean? To some people, it means they're like me or they are more comfortable with them. But that's not how we should make our decisions as a leadership team.



## Inspiring Diversity in Energy: Getting from Statement to Action

If we want the best people, folks to complement our team and diversity of thought to make better decisions for our company, our customers and the broader community, we must think differently. That's where these principles start coming together and why we needed community accountability. We must make sure that we are being accountable, not just to ourselves but to the broader area. How we measure that is important.

**GREEN:** Empirical data shows that companies are more successful when they have a diverse leadership team because people are bringing different skillsets and perspectives to the table, allowing for better, more universally applicable decision-making.

**PHILLIPS:** Absolutely. One of the things that we're starting to think through is how we make sure that everyone in our organization and around us understands that they have a role in this. It does start at the top. We have a new CEO who is absolutely supportive and driving diversity and inclusion. To make it sustainable, it has to reach throughout the organization. We all have to own our piece of it. I was talking to some colleagues just this week at PJM and trying to stress that while we as managers and leaders have a role in how we make decisions, how we hire, who we give opportunities to, who we mentor, and who we sponsor, everyone has a role. How do you think about your colleagues? Do you give the benefit of the doubt to

everyone? Do you ask for everyone's opinions? Who are your go-to people and why? We encourage folks to think about that and how they will commit to helping move the organization forward with respect to holistic inclusiveness.

**GREEN:** It can't be just one group of managers. Culture often is driven by what happens at those mid-manager and supervisory levels because there are so many more of them. They touch and usually hire the everyday rank and file. It has to be a cultural shift. 🌐



**“Diversity is like inviting someone to dinner. Inclusion is actually giving them a meal. You can’t have one without the other. You have to finish the act to be successful.”**

**—Darlene Phillips, Executive Director, Operations Engineering Support, PJM**

# Executive Interview: The Future of Utility Energy Services



**Robert Vary,**  
Senior Vice  
President of Sales  
and Relationship  
Management,  
Duke Energy



**John Failla,**  
Founder and  
Editorial Director,  
Smart Energy  
Decisions



## Executive Interview: The Future of Utility Energy Services

**FAILLA:** What are some of the trends that you see driving the market and influencing the change and mindset at Duke and its approach to dealing with large power customers?

**VARY:** Resiliency, sustainability, and reduction in carbon emissions are at the forefront of our customers' minds. Much is driven by their own corporate ESG goals. Many have signed up for RE 100 and commitments to reduce their carbon footprint. These are driving trends. We also see that customers don't necessarily see energy as a core competence of their business. There are some that do but many don't. We recognize this as we continue to drive our solutions forward.

Customers are saving money because the cost of renewables continues to come down. With the scale and scope of solar and the dropping cost of the panels, equipment, production, and building facilities, it's an economical solution. By implementing solar, customers can realize cost savings that allow them to focus that money on some of their other goals. For example, Kroger was able to invest extra funds from energy savings from a solar installation at its La Habra Bakery in California into its Zero Hunger Zero Waste program, a social impact plan that aims to end hunger in local communities and eliminate waste across the company by 2025. Helping them deploy solar is helping to drive other initiatives.

ESG investment continues to be a hot subject for commercial and industrial customers around the country. If you think about businesses like Google's parent company Alphabet, Visa, and Verizon, they're investing in their own ESG funds to drive more focus on the environmental portion. We're also seeing companies like Amazon invest in sustainability and decarbonization technology through VC funding. Amazon just recently announced a \$2 billion investment in new decarbonizing technology. The industry is generally focused on sustainability and decarbonization.

In the commercial renewable space, we worked with Ball Corporation to

sign a 15-year virtual power purchase agreement with our Duke Energy Renewables business. It included 161 MW of emissions-free wind power from our Frontier II project in Oklahoma. This helped Ball meet 50% of its current U.S. energy needs and cut emissions from every can or bottle they produce. It's also enabling the company to meet its ambitious corporate social sustainability goal of reducing absolute carbon emissions within its operations by 55%. It's a great accomplishment and we're proud to be a part of it.

The final part is looking at resiliency to both sustain business and as a competitive advantage. The number of storms and destructive events like wildfires is driving an increased need for resiliency and microgrids, particularly in areas frequently hit by these events. We've installed a variety of different solutions with backup generation from the East Coast all the way to Hawaii. It's a competitive advantage because of companies can keep their power on during storms and continue to serve their customers, possibly when their competitors can't. We've actually gone back and analyzed 700 saves from our resiliency platforms and we've saved our customers an average of 2.5 hours of downtime each.

**FAILLA:** We think customers are going to be more interested in energy as-a-service and third-party financing programs. I understand that Duke is looking at expanding in that area.

**VARY:** Absolutely. Obviously, with our long history, energy is our core competence. We have access to low-cost capital so we can provide solutions as a service, whether it be energy, energy efficiency, electrical infrastructure, backup generation or utilities like deionized/reverse osmosis water or steam. One of the benefits of working with us is that, with an operating or a capital lease, customers can invest capital in their core business competence rather than in energy, which, for most companies, isn't their expertise. Utilizing that capital for something that's much more available to them allows them to accelerate their growth.

## Executive Interview: The Future of Utility Energy Services


**FAILLA:** Looking forward, what do you think we'll be talking for about over the next 18 to 24 months?

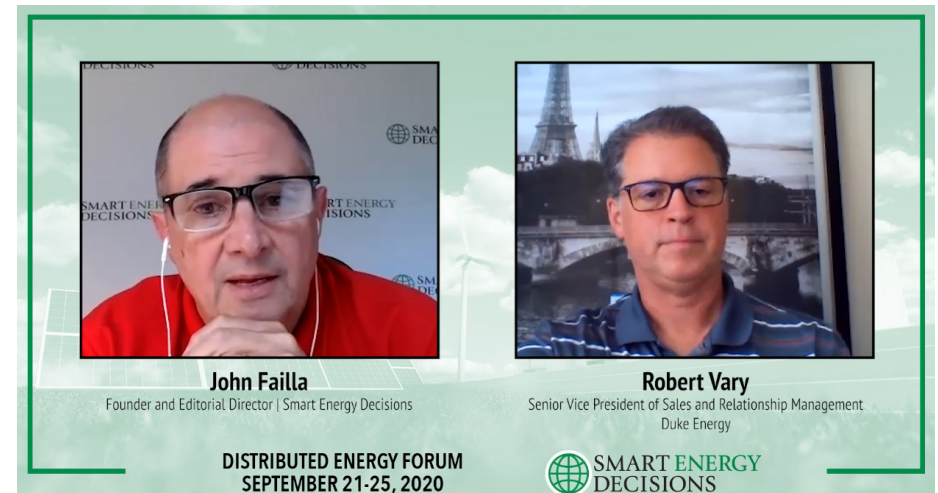
**VARY:** There are three emerging areas that we'll focus in on as we go forward: fleet electrification and EV charging infrastructure, solar storage and resiliency together, and energy efficiency as a service.

Electric vehicles have a lower operating cost than traditional internal combustion engines, which customers recognize. They also have a positive environmental impact because they don't have any direct emissions, which you can further enhance by using renewable power. Amazon is investing \$800 million in 100,000 electric vehicles. Also, Duke is committing a large investment to converting to an electrical fleet by 2030. We see this as an opportunity to provide customers with behind-the-meter solar coupled with electrification solutions that will charge their EV fleets.

Solar storage and resiliency is one area where we can provide a spectrum of solutions depending on what customers need. A large C&I customer might have different needs than a city or school or a large agriculture company. It starts with organizations understanding their cost of electricity and grid downtime. Then, we can look at solutions like solar to cut monthly energy bills and emissions. Energy storage can amplify those savings by shaving demand and controlling cost as we power and recharge those batteries. Generators and uninterruptible power supplies further

increase assurance that the power will be on when needed.

Through energy efficiency as a service, we're able to provide lighting and HVAC solutions for a number of benefits. These solutions allow customers to conserve their own capital while having a predictable budget and lower energy usage driving them toward achieving sustainability goals and reducing their carbon footprint. It also promotes a much safer and more productive work environment with better lighting, ventilation, heat, cooling, and air quality. These are all great ways a customer can deploy new technologies. 



**“There are three emerging areas that we’ll focus in on as we go forward: fleet electrification and EV charging infrastructure, solar storage and resiliency together, and energy efficiency as a service.”**

**—Robert Vary, Senior Vice President of Sales and Relationship Management, Duke Energy**





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