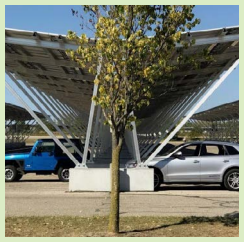
www.SmartEnergyDecisions.com

Insights from the June 2022 Edition

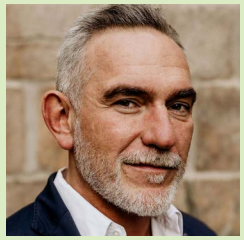
SMART ENERGY DECISIONS

RENEWABLE ENERGY FORUM














Ponte Vedra Inn & Club
Ponte Vedra Beach, Florida
June 6–8, 2022

Collaborating for a Net Zero Future

The Smart Energy Decisions 2022 Renewable Energy Forum/Summer Edition once again gathered our community of energy customers and suppliers to explore best practices in renewable energy strategies.

The event featured general sessions, buyer-only peer-to-peer gatherings, and exclusive one-to-one meetings between buyers and suppliers, as well as networking opportunities to strengthen existing relationships and create new ones. This Insights report, part of our continuing series, offers excerpts from our general session to give you a taste of the thought-provoking content and the spirit of collaboration evident throughout the event.

We're extremely grateful for the ongoing support of the SED Advisory Board, as well as our speakers, sponsors, and, of course, our energy customer attendees in making this event a success.

We're also looking forward to the 11th Edition of our Renewable Energy Forum. We'll return to Ponte Vedra Beach, June 5-7, 2023, where energy customers and solution providers can once again connect, learn, and conduct business to accelerate renewable energy goals. Energy customers can click here for an application to attend. Suppliers can click here to explore sponsorship opportunities.

We look forward to welcoming you as part of the Smart Energy Decisions community!

Cordially,

Debra Chanil

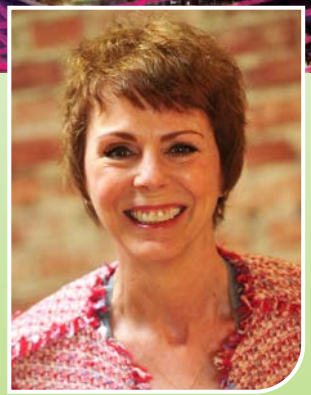
Debra Chanil
Editorial and Research Director
dchanil@divcom.com

SMART ENERGY DECISIONS
RENEWABLE ENERGY FORUM

TABLE OF CONTENTS

Spring Renewable Energy Forum 2022

Opening Keynote: Leading from Within



Amy Bond
Energy and Sustainability Program Manager, T-Mobile

Opening Keynote: Leading from Within

T-Mobile is America's fastest and largest 5G network. We are the second largest telecommunications provider with 109 million customers. If you're one of them, thank you so much. We love our customers. Our mission is to be the best in the world at connecting our customers to their world.

We are headquartered in Bellevue, Washington, with additional corporate offices in Kansas, Texas, Georgia, and Virginia. We're supported by about 75,000 full-and part-time employees, 60% of whom are people of color and 11% of whom self-identify as veterans, individuals with disabilities, or LGBTQIA+.

We are the first and only U.S. wireless company to have set a goal to have 100% of our electricity sourced from renewables by 2021, which we achieved. We've signed renewable energy contracts for 3.5 million megawatt hours and spend about $3 billion every year with diverse suppliers.

All those great stats didn't just happen. I had the opportunity to work on a variety of energy projects and can tell you that every single one of them had obstacles. A common one is miscommunication. I'd like to illustrate this one with a personal story. When my two youngest children were 4 and 6, they watched TV one evening as I was cleaning up from dinner. They were watching an episode of a show in which a female cheerleader is kissing another female cheerleader. My son slowly turns his head toward me and asks, "Why are those girls kissing?" I saw this as a teachable moment, so I said something like, "You know, sweetie, it's like vegetables. Grandma loves brussels sprouts, but I like lima beans. But grandma enjoying brussels sprouts in no way interferes with my enjoying lima beans." Then, he answers, "Grandma's gay?"

Do you see the miscommunication that happened there? My audience already had some information of which I was unaware. This happens in business all of the time, especially when you're trying to lead a project.

For example, I was trying to get my management excited about community solar programs. When I joined the sustainability team, we only had one in our portfolio. I thought that if we could optimize our approach, we could realize some significant savings toward purchasing our renewable energy certificates (RECs). T-Mobile has an all-of-the-above approach to renewable energy procurement. We built a large portfolio of different technologies, geographies, and sizes. We have eight virtual power purchase agreements (VPPAs), 19 retail agreements, and one green direct power agreement. Our vast VPPA is from our wind farms in Illinois, Texas, Kansas, and Oklahoma. We have giant wind farms in Virginia and Texas. These projects alone are contracted to provide enough electricity to T-Mobile to power 313,000 homes a year. But there is still a gap between the RECs generated by these projects and what we need to meet our renewable energy goal.

That leaves us purchasing non-project RECs to fill that gap. Why not use community solar savings to offset the cost? Initially, I received considerable pushback on my enthusiasm, because my company's previous experience had been one of lengthy negotiations from a weak negotiating position for relatively small results. Like my son, my audience already had some information and opinions. I considered how to address those concerns. What if we designed a community solar template and sent out a multi-market RFP that required respondents to use that template? What if we requested them to include non-project RECs with their offers? What if we partnered with a trusted consultant to manage this new strategy?

That was new information, a new approach that worked to dispel initial

resistance. The execution timeline was cut by more than 50%. It had taken 14 months to deal with one supplier in one state for five projects. Now, in just six months, we worked with five developers in six states for 32 additional agreements that deliver $25 million in savings and an additional $5 million in non-project RECs.

To reduce the impacts of miscommunication, listen for pre-existing bias and find workarounds for projects that you believe in. In his CNN show, *Searching for Italy*, host Stanley Tucci recently declared that Venetians always see challenges as opportunities. I don't know about you, but I'd like to be a little more Venetian.

The renewables market is only getting more complicated. Continuing education is essential. We must learn to navigate interconnection issues, pandemics, supply chains, equity, environmental justice, and so much more. I challenge you to pull your team together and be prepared to lead wherever you live on the organization chart. Practice active listening for constructive feedback on your project. Hear objections and challenges as opportunities for growth and improvement.

"To reduce the impacts of miscommunication, listen for pre-existing bias and find workarounds for projects that you believe in."

—Amy Bond, Energy and Sustainability Program Manager, T-Mobile

Keynote: City of Cincinnati's Renewable Energy Journey

Michael Forrester
Director of Environment and Sustainability, City of Cincinnati

Keynote: City of Cincinnati's Renewable Energy Journey

The City of Cincinnati has ambitious climate goals. We create a climate action plan every five years called the Green Cincinnati Plan. Our most recent plan was completed in 2018. It lays out 80 recommendations for reducing our carbon emissions by 80% by 2050. It is our third iteration of the plan and, really, it's a community document; it is not something my office hides in a room. It's an engaging process in which we go out into the public and work with community stakeholders and technical experts to build a document that reflects what the community is looking for in its climate action plan.

For the 2018 plan, we participated in more than 30 different public meetings and received more than 1,400 public comments before providing our recommendations. One, specifically, was to contract for a 25-megawatt (MW) solar array for city operations. Of our 80 recommendations, we have accomplished, or are on the way to accomplishing, approximately 85% of them.

I like to stress to my community, policy leaders, mayor, and city council that the Green Cincinnati Plan truly is a plan of action, and that when we make a recommendation, we work hard to make sure that it happens. The 15% of those recommendations that were not implemented were due to state policy restrictions or potential technologies that weren't quite ready.

For example, five years ago, everyone thought we would have 100% automated vehicles, so we put it in the plan, but that didn't quite happen. That's OK, because the purpose of the plan is to be ambitious and all-encompassing. We know we're not going to hit everything out of the park, but overall, we're seeing our plan make a real impact.

The City of Cincinnati has reduced its carbon emissions by about 37% in the past 10 or so years through the Green Cincinnati Plan. If you do the math and consider the goal of having an 80% reduction by 2050, that will put us at a reduction of 2% per year. The City of Cincinnati is actually on its glide path to achieving its climate action goals.

Why are we doing this? Being a municipality, I have to be responsive to my residents who are being impacted by climate change in a very real way. In Cincinnati, climate change is now resulting in hotter summers; we've already risen two degrees, and we can expect that it will probably rise as high as approximately six to seven more by century's end. The Cincinnati that our residents' parents grew up in is no more. By the the end of the century, we will resemble Little Rock, Arkansas, in the summer and Washington, D.C., in the winter. We know that the environment our city was originally built for is no more.

We also know that climate change is causing intensifying rainstorms. In the past 10 years, we've had ten 100-year rainstorm events. I'm not a meteorologist, but that doesn't sound right to me. We're seeing increased flooding as those storms contain 37% more water, and, frankly, our sewers can't take it. We had a 12-foot sewer main with so much water running through it that it blew out the side and flooded the Xavier University soccer field with 12 feet of water.

Cincinnati is a city of seven hills and we're seeing them move. There is no real bedrock and when the clay soil becomes saturated. It slumps. It's having a real impact on my residents and on my city budget. Our sewer department has spent more than $150 million in the past 10 years cleaning up sewer backups in people's basements. We literally took the budget for a new police station to repair a hill through our main transportation artery—that's a $17 million hill. As a result, we don't have a new police station.

Our Green Cincinnati Plan is an effort to reduce our carbon footprint to mitigate these impacts on our residents. We hope that, through our efforts,

Keynote: City of Cincinnati's Renewable Energy Journey

we can also be regional and national leaders. We have a number of policy initiatives, 28 solar installations (1.8 MW of solar power for city facilities), the nation's first net-zero police station, and all of our municipal buildings running on 100% clean energy.

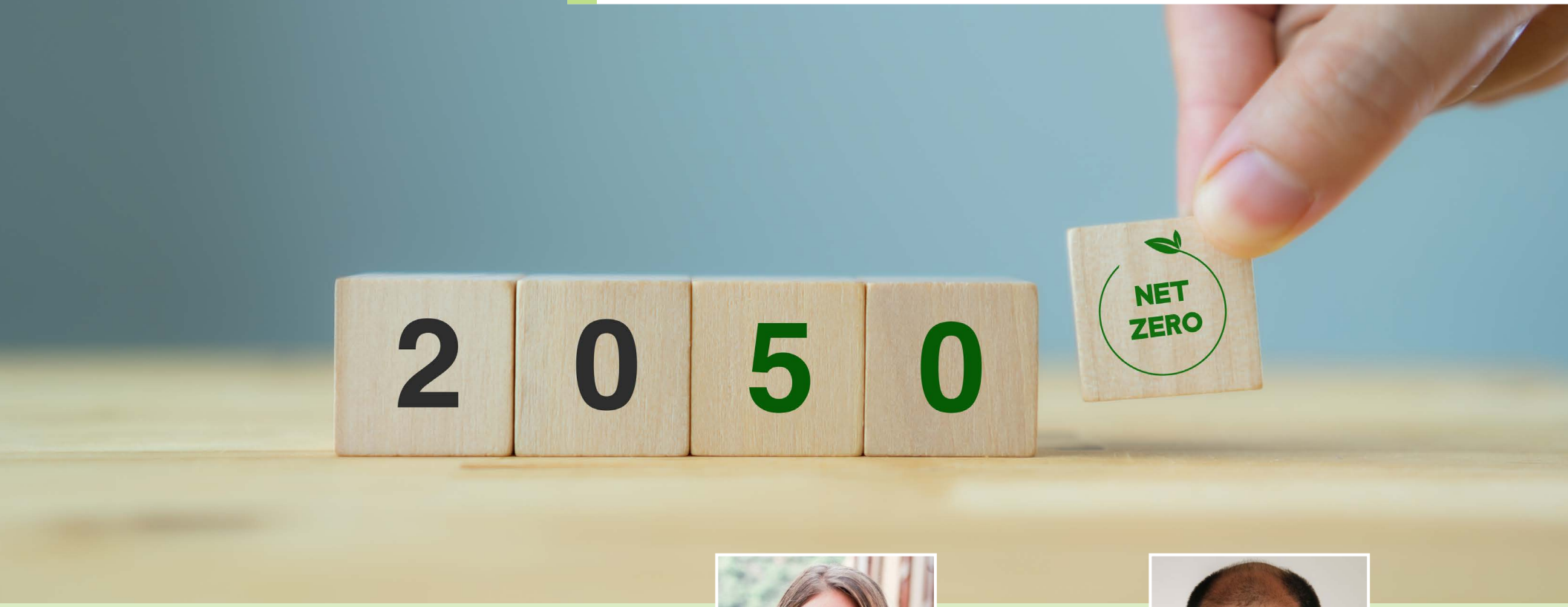
Our residential aggregation program is essentially a "Sam's Club for energy" in which we bundle our residents, go to the market, and try to secure a lower price. We have more than 83,000 residential accounts participating in this program who save approximately 16% over buying power from our local utility—and it's 100% green. We're the fourth-largest green energy aggregation program in the country. We also do a residential Solarize program, a bulk buying model for residents in which we also pool them together, go to market and get a low price for a solar installer so that they can put solar on their houses.

It's interesting to look back about five years, when former Cincinnati Mayor John Cranley called me into his office and said, "Michael, I went to a Paul Simon concert and Paul Simon asked me what I was going to do about climate change." When Cranley answered, Simon said it wasn't big enough and challenged him to go bigger. Driving home from the concert, Cranley drove past our large water and sewer facility, which consumes about 70% of our overall electricity load, and decided right then and there to begin our solar journey. Looking at corporate models, I believed we would be able to do it, and that's how our ongoing efforts were born.

"Being a municipality, I have to be responsive to my residents who are being impacted by climate change in a very real way."

—Michael Forrester, Director of Environment and Sustainability, City of Cincinnati

Q&A: Optimizing Your Energy Procurement Strategy



Kendall Aubert
Senior Vice President of Direct Commercial Sales, Shell Energy

John Failla
Founder and CEO, Smart Energy Decisions

FAILLA: Kendall, what's your take on what customers are looking for, both in the short-and long-term?

AUBERT: There really isn't a customer we speak to who isn't at least inquiring about renewable energy or expressing interest in some carbon reduction goals—it's always a fixture in the conversation. My next question is usually, "What does that mean to you?" Their response helps set the pace of the conversation and where our team focuses its efforts. We sometimes work with customers who have never made any renewable energy purchase decisions and are in an exploratory phase, learning about options and costs. Others may say they've done several PPAs in different markets and want to progress toward something that more closely matches their footprint or load profile on a real-time basis. Perhaps they're interested in branching out to solutions focused on their Scope 3 supply chain emissions.

FAILLA: Yes, so meeting the customer where they are is part of your strategy. It sounds like you get a different response every time you ask your question.

AUBERT: That's right, but some commonalities in their responses are an urgency and earnest desire to take action. Then, while some customers have been at it for decades, those just starting need to understand where they are in their planning processes and whether their budgets captured their carbon reduction efforts. Do they have knowledgeable staff in the space? If not, what are they doing to get there?

FAILLA: They are united in the goal of reducing their carbon emissions and meeting specific targets, but their progress in that journey is very unique. As you're talking to customers and gaining a sense of where they are and what's important to them, what are the key challenges and obstacles you hear about most often?

AUBERT: I think the challenges in the renewable space are tied to the challenges in the conventional space. Is now the right time to buy? Where should I buy? And how much? What risks should I mitigate? What risks are wise to take and how do they fit within my budget? There's market volatility for commodity and renewable pricing and challenges with supply chains, which further complicate those decisions.

FAILLA: The challenges around budget restraints and achieving goals are interesting. Two or three years ago, you never heard about someone getting budget approval to go beyond financial guidelines to execute a renewable purchase because those financial guidelines were sacrosanct. Now, some customers are paying a 30% premium because they need to hit a goal in a region, and the only way to do so is to buy a product that falls outside of their traditional guidelines. How are you seeing them achieve that balancing act between budget constraints and achieving goals?

AUBERT: I'm seeing it vary depending on the customer and where they are on their journey. We have clients with procurement and sustainability staff with us at the table, so those decisions are made jointly. If they are years into their journey, then it's easier to budget because there's a better foundational understanding of costs. I find those who are just starting can benefit from seeing charts with prices of voluntary attributes and how they

have changed during the last year or two in contrast to some of the attributes used to meet RPS obligations in different markets—it can be really eye-opening. These charts often prompt the customer to take a step back and learn more. We have seen customers who have the budget for voluntary attributes and more asset-specific solutions, and even some customers who have bought expensive attributes in the PJM market and held them for their full footprint.

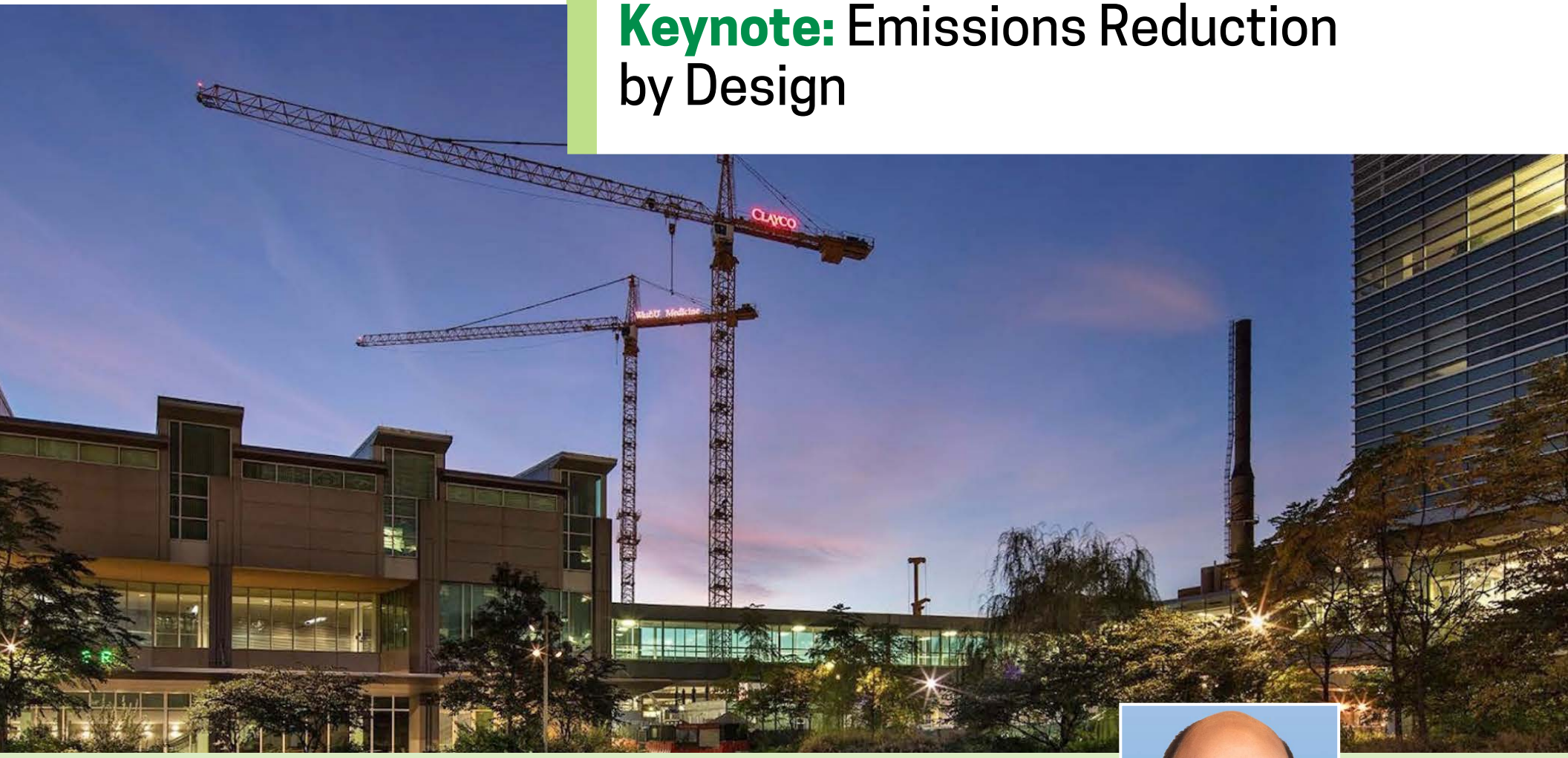
FAILLA: Are there key commonalities or differences between the goals companies are setting?

AUBERT: Companies are aligned in reaching net zero by 2050. For the nearer-term targets, they're planning for the 2025-2030 range, but they vary in how ambitious they are in reaching them and whether they are leading with Scope 3 targets or initially focused on Scope 1 and Scope 2 emission reductions.

"The challenges in the renewable space are tied to the challenges in the conventional space. Is now the right time to buy? Where should I buy? And how much? What risks should I mitigate? What risks are wise to take and how do they fit within my budget? There's market volatility for commodity and renewable pricing and challenges with supply chains, which further complicate those decisions."

—Kendall Aubert, Senior Vice President of Direct Commercial Sales, Shell Energy

Keynote: Emissions Reduction by Design



Ryan Spies
Vice President, Sustainability, Clayco

Keynote: Emissions Reduction by Design

At Clayco, we want to walk the talk with our customers. As one of the greenest contractors in the country, our enterprise is committed to designing all of the buildings we deliver to customers to have net-zero operations by 2030.

Why? The built environment accounts for 40% of the planet's energy and emissions. Operational carbon has been the primary focus for many years and accounting for 28% of those emissions, and now building materials and construction are becoming more critical and under more scrutiny.

Of course, we build "cool" buildings. For example, Zurich's headquarters was the largest LEED Platinum Core & Shell building in the country. Many of your headquarters are awesome, right? They have lots of glass and they're highly efficient. You're thinking about how to use energy in intelligent ways, and that's great. We want you to continue to do that and to support more aggressive designs. But, while pretty headquarters will get you press, we are also building an absolute ton of million-square-foot distribution centers. Retail and e-tail have continued to grow aggressively and need space to do so. These buildings use as much energy as your headquarters, sometimes even more.

Think about the opportunity here: You can influence your procurement department by just having a conversation about those buildings. You have 2030 and 2040 goals, so why deliver a building that's going to be there for 50 years and put natural gas in it? I encourage you to step out in front and say, "Let's electrify." We know that adding renewables is easier than renewable natural gas or offsets. We can do that in a lot of markets fairly easily. Heat pumps are in high demand and geothermal makes sense in many markets. Sure, it can be a higher upfront cost, but it decreases operational expenses and allows you to decarbonize. You can also throw plenty of solar panels onto a million-square-foot roof. Even if you're not using all of the power produced, you can take advantage of community solar programs in certain regions of the country.

I encourage you to engage your procurement team, because I guarantee they're not thinking about this. We don't see many RFP requirements for electrification or decarbonization; most of the time it's just about getting the walls up and running. But including these standards could really make a dent in the industry.

I also want to talk about embodied carbon. I've been discussing operational carbon, such as how to offset the energy used in air conditioning and lights. Don't lose focus on this because it's critical that we keep solving these issues and making our buildings more efficient. However, the embodied carbon piece has really taken off in the last few years. Embodied carbon encompasses all of the energy it takes to make the building materials, such as drywall or concrete, and transport them to the site. It's all of the energy in the building footprint, typically related to Scope 3 goals.

When we think about climate change and how emissions affect the climate, everyone should know that a pound of carbon in the atmosphere today is a lot worse than a pound five years from now, 10 years from now, or 20 years from now. If we can influence embodied carbon in the buildings we're designing, we can make a bigger impact right off the bat.

Manufacturers can now better measure environmental impact. For example, manufacturing a door involves extraction, transportation, and disposal at the end of life. This all adds up. We use life cycle assessments (LCA) to determine this. Also, an environmental product declaration (EPD) is basically the cheat sheet for your product's carbon footprint. Since about 2012, manufacturers have been asked for more data. LEED included

it in its new requirements, so now most manufacturing companies are putting this data out there. The USGBC was smart to include these in LEED, because you can't manage what you can't measure. Of course, the intention was always to start comparing materials against their peers and averages. It all adds up. Concrete and steel are the big bad boys of building materials because of their frequent use and high energy requirements, so their manufacturers are being pushed. They're looking for solutions and engaging many of us.

At Saint-Gobain, where I worked prior to my current position at Clayco, we did a pretty awesome VPPA, and I know they're continuing to do incredible work. In fact, they just announced a $90 million investment in taking their drywall manufacturing plant in Montreal to net zero. They're electrifying the entire drywall process to lower the embodied carbon in the product. People are making investments in reducing embodied carbon, and I think that's awesome.

How do we measure all of this? Our modelers can take the data from EPDs, run them through EC3, and build models to highlight our hot zones. This allows us to see where we can make changes today, such as making smarter material choices or using a different supplier. With today's options, a standard building using average drywall, concrete and steel has the opportunity to reduce its carbon footprint by 50%, just by making smarter choices.

I encourage you to think about your industrial buildings like you would your headquarters. You can make huge impacts with millions of square feet of space.

"A pound of carbon in the atmosphere today is a lot worse than a pound five years from now, 10 years from now, or 20 years from now. If we can influence embodied carbon in the buildings we're designing, we can make a bigger impact right off the bat."

—Ryan Spies, Vice President, Sustainability, Clayco

Keynote: Michigan State's Renewable Energy Journey

Dr. Wolfgang Bauer
University Distinguished Professor, Michigan State University

Keynote: Michigan State's Renewable Energy Journey

Michigan State University is more than just a football and basketball team—even though I'm a season ticket holder, so I like that aspect too. We're the largest university in Michigan. We were founded in 1855, which means that we're older than electricity. What's most important for the purpose of my talk here is that we are a land-grant university with a contiguous campus of more than 5,500 acres, and so we can use this as our energy playground. We're a living-learning lab with our own co-gen plant and microgrid. Even though Michigan is a regulated state, we retained the right to generate our own electricity.

My daytime job is being a professor. Theoretical physicists always want to develop a theory of everything. Einstein tried to do that. The idea is to condense all of our world into one equation that explains everything. I will tell you the theory of everything condensed into one equation for free today: Energy is money. In the previous discussion, we just heard that some customers are paying a premium for green energy, and I would argue that this is the opposite of what we want to do. Green energy has to be cheaper than brown energy. Otherwise, with this equation, if you're overpaying for your energy, then you're wasting energy and you're harming the planet in the process.

Most of the world still runs on fossil fuels. Energy is money, after all. Burning those fossil fuels emits carbon dioxide among other pollutants to the tune of 30 billion tons per year. This is the main cause of global warming. Since we are a world-leading university, a few of us got together and said, "What good is leadership if you don't execute it?" So, in 2012, we wrote this energy transition plan that would get us out of our coal-fired power plant that makes our electricity and heats the buildings into a green future. We proposed the steps to transition to 100% renewable energy with five-year targets of renewable energy contribution to our campus and greenhouse emission reductions. That was approved in 2012 by our board of trustees, and so this has been the guideline that we have been following since then. There is a laundry list of the kinds of things we have done; it's not just about electricity and reduction of fossil fuel consumption. It's also recycling. We have a recycling and reuse center. You know, reduce, reuse, recycle; we take that seriously. We have an organic waste composting facility, and we put in a geothermal array that heats our College of Nursing. We put an anaerobic digester in that processes our cafeteria food to make some electricity through biogas production, and it also produces organic fertilizer that we spread out on the farm fields that are part of MSU.

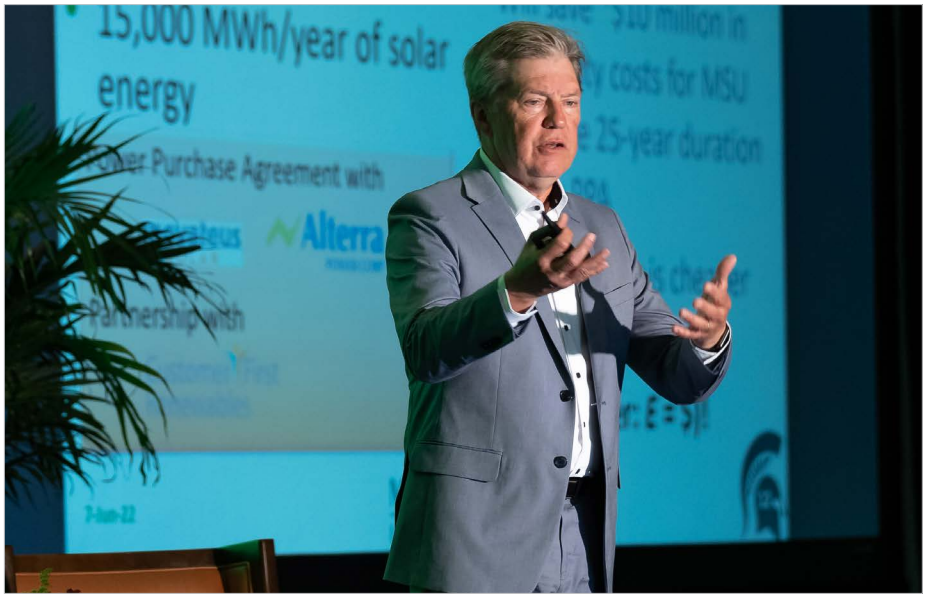
What I mainly want to talk about is our solar arrays. But before I do that, I just want to make sure that I get this message across: Demand reduction is perhaps more important than the installation of renewable energy resources, because the greenest energy is simply the energy that you do not use. So we decided to invest on the order of $10 million per year in these energy conservation measures. The idea was that we would approve pretty much everything that had an ROI time of five years or less. We participated in the DOE Better Building Challenge and the DOE Data Center Challenge. We also created Spartan Treasure Hunts together with GE, heavily borrowed from the Toyota approach.

You may ask, why do solar in the northern part of the country where it snows and winters are cold? Looking at a map of usable solar radiation, you see that in Arizona and Florida it works really well. But Michigan is only at a disadvantage of 10% or less, which to many people is very surprising, right? We're almost as successful in capturing the sun in Michigan as you could be here in Florida. Now, looking at the efficiency of solar cells, both that are commercially deployed and that are in research environments, they're all going up as a function of time. So PV cells are

getting more and more efficient. Even better news is that they're getting vastly cheaper. And notwithstanding the recent hiccup due to this filing with the Department of Commerce, if you look over the last 50 years, solar cells have fallen per watt produced by a factor of 200, and there is no end in sight right now. PV cells themselves are not dominating the cost anymore, but it's the other physical infrastructure—the support structure, transformers, and cabling—that provides a lower limit for the price of PV.

In 2016, we started this process of constructing MSU solar carport arrays. The power purchase agreement is for 25 years. We're not afraid of long lifetimes of PPAs, because we've been around for over 150 years and we firmly expect to be around at least another 500 years or so. It may sound long to you, but the University of Giessen in Germany—where I got my Ph.D.—has been around for over 600 years.

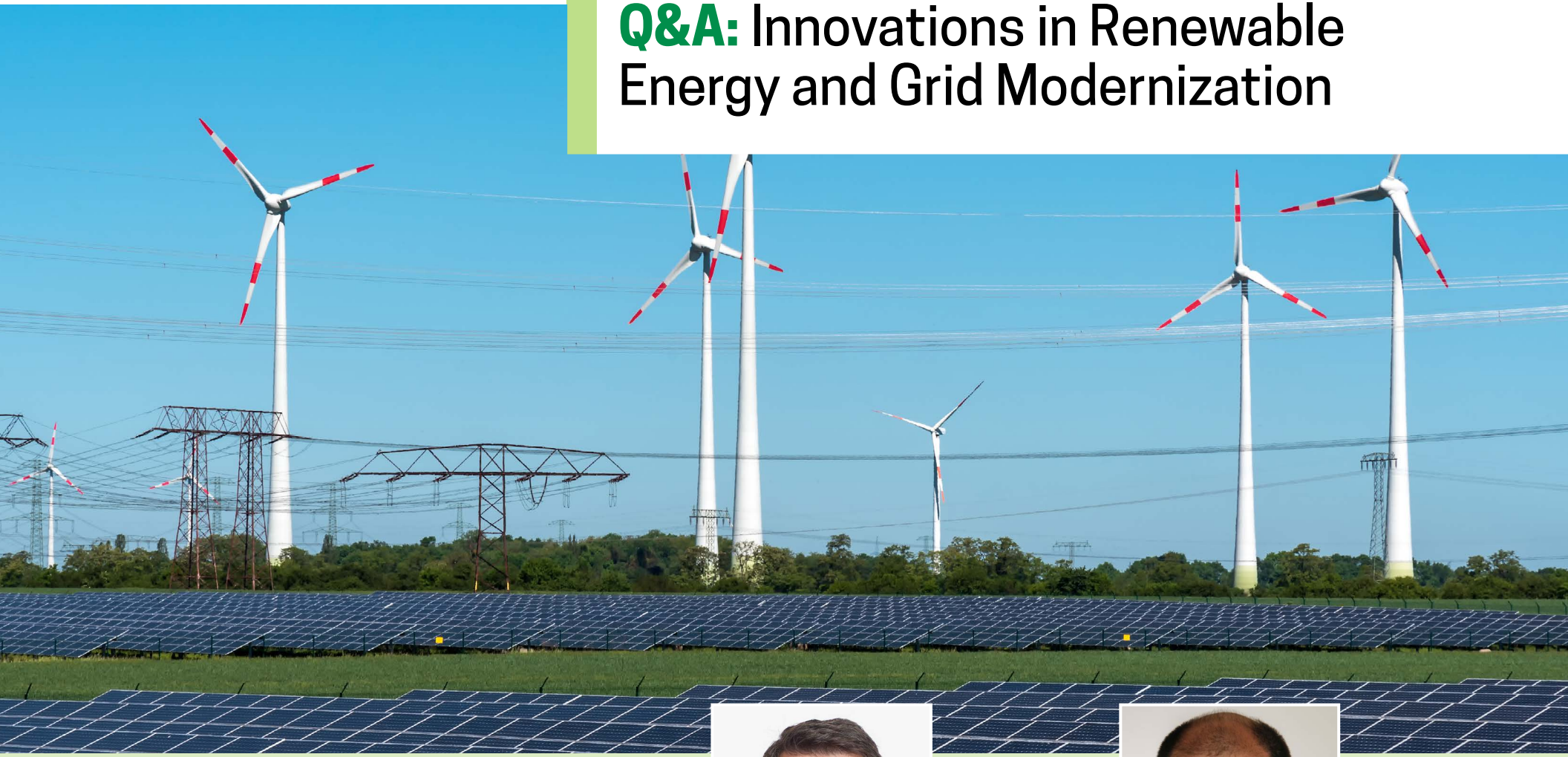
Our carport arrays cover 5,000 parking spots on 45 acres of parking lots. We use 40,000 solar panels. The AC peak power is almost 11 megawatts, and we are harvesting 15,000 megawatt hours per year of solar energy. Since it has a 25-year lifetime with the fixed cost per kilowatt hour written into the contract, this project will save over $10 million in electricity costs for MSU over the duration of the PPA. And I calculated that assuming a gas price of $2.50 per 1,000 cubic feet, which is so low that it's now a joke, so this $10 million is an extremely conservative estimate. It will probably be much more if the current gas costs are any indication. Remember, my central theory of everything: Energy is money. This project shows that green power is already cheaper than brown power.



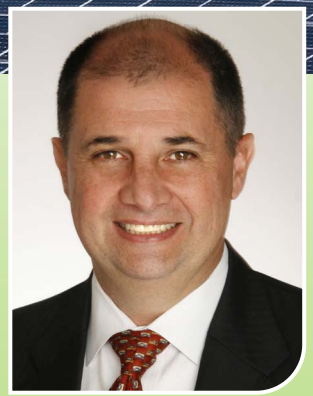
"I will tell you the theory of everything condensed into one equation for free today: Energy is money…Green energy has to be cheaper than brown energy. Otherwise, with this equation, if you're overpaying for your energy, then you're wasting energy and you're harming the planet in the process."

—Dr. Wolfgang Bauer, University Distinguished Professor, Michigan State University

Q&A: Innovations in Renewable Energy and Grid Modernization



Scott Hart
Senior Vice President/Head of Sales, NRG Business



John Failla
Founder and Editorial Director, Smart Energy Decisions

FAILLA: Give us an overview of what NRG is currently doing in the renewable sector.

HART: We have a goal to be net zero by 2050, with a 50% reduction by 2025. Many years ago,, we were a top-five polluter with almost 58 GW of mainly fossil fuel generation. Since then, we've made dramatic efforts to move forward. More recently, we've heavily invested in power purchase agreements, primarily in the Texas solar market.

While we're involved with VPPAs and PPAs, we're converting much of that power into retail products suited for customers who aren't looking to enter complex structures. We simplified into standard retail products, but we are providing the physical relationship with the project as well as the environmental attributes, so they get the same value designed specifically for retail needs. We found that to be popular and cost-effective until recently.

Our desire to have a heavy portfolio of renewable drives our efforts. We're running our RFOs across North America, looking for opportunities to participate in a variety of options in addition to renewables. Renewables are a way to scale quickly and meet a demand in the market. We found it to be attractive and a good fit for us in developing an "all-of-the-above" approach.

FAILLA: What's your take on what customers are looking for in renewable energy today, and how it's affecting development?

HART: ESG goals have been a big driver. We have companies, especially the large industrials, whose conversations three to five years ago were more focused on cost-effectiveness than renewables. That seems to have changed. I think the sustainability industry and related internal teams have succeeded in blending energy with sustainability considerations to accomplish both goals. Until six months ago, we had mainly cost-effective markets. Customers are still looking to be cost-effective while also delivering on their sustainability and carbon emissions commitments. That's driving innovation, which we've been able to make the most of ourselves while also helping our customers.

FAILLA: You referenced industrials. I want to spend a couple of minutes on that sector. Three years ago, these companies didn't want to get involved in emissions reduction unless it penciled out. Now, they're rapidly adopting emissions reduction goals and taking action. Can you expand on some of the developments you're seeing in the industrial sector?

HART: Industrials are definitely looking at VPPAs and PPAs. Our retail product is popular because of our position in ERCOT. It gets much more difficult to define renewable asset availability outside of ERCOT. California has nearly sold out and the tariff issue has caused delays, so the RPS markets have supported developments but also sucked up energy credits. Outside of Texas, it's back to national RECs, which are more cost-effective, bundled with just grid power at that point. It may be a physical relationship with something in the power zone you're serving. We've pivoted to physical relationships with environmental attributes in the power zone where there is consumption. We're seeing a little bit of load following the 24/7, trying to completely cover the consumption at the retail level with renewable assets. That'll be an interesting next step. We're working on a couple of projects right now with that aspiration.

FAILLA: The industrial sector generally was late to the game because there's so much activity. Commercial customers were driving forward. Once they

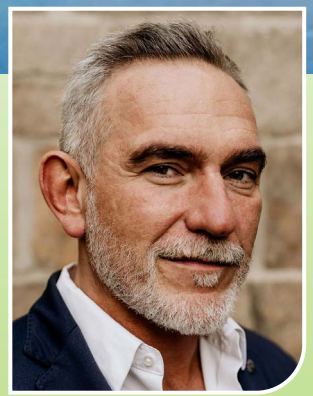
make emissions reduction commitments, then they look at their footprints. It's not so much electricity, but the thermal, heating, chillers, cooking, and manufacturing of food products. The industrial representatives dominated our Net Zero Forum Steering Committee content planning meeting pleading for help with the decarbonization of their natural gas loads. It comes down to electrification. As they look to electrify more of their on-site assets, how do you see that impacting demand or interest in renewables?

HART: Electrification is a global issue. Western economies are electrified while emerging countries are catching up on consumption. There seems to be no end to human appetite for electricity. The trend we're going to continue to see is pivoting away from fossil fuel-sourced electricity. That's going to require a massive transition away from the 19th to the 20th-century grid design in North America with large-scale fossil fuel transmission and distribution lines. The University of Michigan is experiencing a variety of issues associated with introducing renewables into a traditional grid mix. Texas and California are also both struggling with how that's going to play out over time. There's no magic cure. We're going to need massive infrastructure upgrades, including transmission and distribution, substations, transformers, and more to meet the level of electricity consumption required for fleet electrification. Load growth is through the roof in industrial states like Texas and other areas with data centers and electric vehicles. It's a fascinating time to be involved in our industry.

"Electrification is a global issue. Western economies are electrified while emerging countries are catching up on consumption. There seems to be no end to human appetite for electricity."

—Scott Hart, Senior Vice President/Head of Sales, NRG Business

Keynote: Progressing Energy Sustainability in a Time of Volatility



George Deljevic
VP Energy Services,
AEP Energy

Keynote: Progressing Energy Sustainability in a Time of Volatility

I'm excited to be at this venue in Ponte Vedra. I got a chance to get down to the sea last night to observe some wildlife. It really reinforced what we're all here for, which is to progress energy sustainability and expand access to renewable energy resources while preserving our natural world. But we're all in a tough environment, so I want to commiserate a little, talk about the issues we are all dealing with and offer some ideas. That's what we are here to do—to collaborate as sustainability professionals and work toward solutions.

There are forces on both the demand side of decarbonization commitments and the supply side of available solutions. We have an increasing sense of urgency around the need to address climate change and trying to prevent and mitigate impacts. We're seeing more direct evidence like rising temperatures, raging wildfires, and intense storms creating this greater sense of urgency.

We have goals for 2030, but that is getting here quickly, It's already 2022. Next thing you know, it's going to be 2025. Then, at 2030, 2050 doesn't seem so far. Time to develop solutions is getting away from us.

Also, investors, customers, and other stakeholders are all demanding disclosure. There's competition for projects, resources, and customers. We have supply chain challenges, inflation, international pressures and conflicts, a whipsawing regulatory and policy environment, and the legacy of the COVID-19 pandemic. That all makes solution delivery much more challenging and adds pressure on our plans, expectations, and goals.

We're transitioning from a linear environment to a nonlinear environment. I think the early days of doing things in say 2008 were pretty tough, but 2015 to 2020 was a bit of a golden age of expanding access to renewable energy with rapidly declining costs and stable energy markets. Developers were competing for your business in a stable market. When I gave another market talk just a few years ago, the theme was that everything was kind of boring, but we learned that everything can change quickly.

Now we're in a whole new world in which, all of a sudden, we have higher raw material costs for solar and wind, supply chain issues, economic challenges, and interconnection issues as we hit constraints. The grid can only do so much, and those designing it are limited, too. We have long-term queue issues. Those are very difficult issues to solve.

Many of you are buyers, and you're now competing for projects. Instead of the lowest common denominator, returns that developers are now willing to accept include a premium. That increases costs and project scarcity and means that developers can be more assertive on price and terms and more selective on who they're selling to.

We have a tremendous amount of volatility in the energy markets. Another part of our business is retail commodity energy services, which tracks daily volatility. Traditionally, every now and then, you would get a volatile day, but now volatile days are the norm. I'm an energy guy; I've been in the business for more than 25 years, and I've never seen this kind of environment, but here we are. It's challenging, so what do you do?

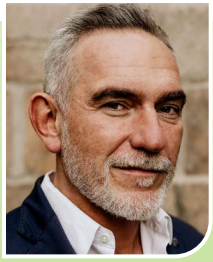
I think a lot of the folks in this room are ahead of the curve, but as you work with peers down in your supply chain, you may need to help people along as they face these challenges. Not everyone is going to be able to meet all of their goals. You know, 80% reductions by 2030 sounded great a few years ago, but at this point, it's becoming a problem.

So, what do you do? We have to face reality at some point and revise plans based on what is happening now. Let's think about how to create

systems that advance and progress sustainability in this very difficult, volatile environment. It's important to think about contingencies and to systematically think about decarbonization as a whole. Having strong strategic collaborations is key. This means moving beyond the basic supplier or vendor relationship. We need broader views, more connections, and more relationships to expose us to more ideas and possible solutions.

We've come up with an alliteration guide: define, delineate, direct, and disclose. Start with defining your values and broad strategic directives. Delineate with planning frameworks and approaches. Direct with agile execution, feedback, and adjustments. And finally, disclose with radical transparency.

For the first step, you need to ask: What are your values? What are your broad strategic objectives? This is not so much about your goals but more to think about what you are really trying to accomplish. It comes down to this: We are trying to decarbonize and allocate resources in the best, most effective way possible to sustain and conserve.



"I think a lot of the folks in this room are ahead of the curve, but as you work with peers down in your supply chain, you may need to help people along as they face these challenges. Not everyone is going to be able to meet all of their goals."

—George Deljevic, VP Energy Services, AEP Energy

Panel Discussion: Creating Your Sustainability Roadmap

Bob Kinscherf
Executive Director, National Sales, Constellation NewEnergy

Ben Chadwick
Executive Director, Renewables, Constellation NewEnergy

John Failla
Founder and Editorial Director, Smart Energy Decisions

FAILLA: We did a poll in March with more than 100 respondents from a broad cross-section of the Smart Energy Decisions energy customer base. We asked, "What best describes your focus on implementing sustainable energy solutions?" It was interesting to see that nearly one-third of those surveyed hadn't started to procure renewable energy. If this was a baseball game, we're probably in the third or fourth inning with a long way to go. What are your thoughts on the number of customers already pursuing sustainable solutions, and those that haven't yet begun?

CHADWICK: It is not uncommon for us to talk with customers who are wondering how to get started. I've recently noticed that those who do have plans in place have significantly increased the quality, rigor, analytical horsepower, and accountability. They have progressed from having a couple of people in their offices developing goals and trying to get approval from senior leadership, to seeking help from a variety of service providers and large accounting firms. More impactful goals are being achieved, resulting in growth for the industry.

KINSCHERF: We find that most smaller companies haven't started yet. We still talk to customers who are in sectors where they feel immune from this, but even they are quickly understanding the message. Sometimes, we speak to a customer, and within a few months or even weeks, they call us back saying their biggest customer is looking at how they can decarbonize their supply chain. Customer and investor pressure is moving the needle, even for smaller companies.

FAILLA: We also asked about organizational goals and what companies are doing to pursue sustainability. The results included a lengthy list. What are your thoughts on their answers?

CHADWICK: My role at Constellation includes helping customers meet their needs through innovative products and services. When I see results like this, it scares me because I would expect to see something more heavily weighted toward the top three, i.e., efficiency upgrades, analytics, and electrification. Then, as a solutions provider, we could start trying to determine how to address that need in the marketplace. These results tell you a lot about what customers are looking for, from onsite solutions like storage and renewables to offsite solutions and efficiency offsets.

KINSCHERF: I do see that number two on the list is facility and data analytics. That's become so much more important in organizations. Data acquisition still has big challenges. No one has come up with a magic wand yet, but people are demanding more readily available and frequent data. I think this will drive efforts forward much faster. It's important to have candid conversations with customers and set expectations about what you can help them with and where you can introduce partners to additional solutions you don't have in-house. Customers are looking for those advisory services from solution providers.

FAILLA: I want to pick up on facility analytics. In a short time, the conversation has evolved from getting utility bills off of spreadsheets, to energy tracking programs for energy management and understanding energy utilization. I'm hearing more customers talk about the need to measure their carbon emissions from their facilities. There's a lot of work happening in data; I think the sector is really going to flourish.

KINSCHERF: I couldn't agree more. Going back to your baseball analogy, we may be in the third inning but, to a certain extent, there isn't an end to this game. The obligation to report on your actual emissions, how

they've improved, and how you've achieved your goals will be ongoing. There is no finish line. After more than five years of huge growth, corporate and institutional carbon-free procurement folks are saying it's time to start reporting in an auditable, verifiable, and consistent way across organizations. You're right, there is a growing sector to support those needs.

FAILLA: Next, we wanted to get a sense of what was happening with barriers. Which barriers to implementation are greatest? We see that it's all about budget, lack of capital, and projects that don't pencil. What are your thoughts on barriers to implementation?

KINSCHERF: Every time it seems as though a major barrier is overcome, two or three others sprout up. We've seen a lot of organizations that stumbled into their first VPPA during their first renewable deals, trying to seek help with championing and gaining approval. Others are now on their second and third generation of projects and have it down pat.

The good news is that there is sharing of best practices between customers and sectors. People aren't starting from a blank sheet of paper anymore. That's been helpful in terms of price and cost. One of the reasons I like this business is because every day is different. Every day, there's a new challenge, something that catches you by surprise. The whole game has changed, including who's in the driver's seat. We've moved from a buyers' to a developers' market. Developers are now dictating terms. In almost every PPA that we review, there are reopen errors, and escalation clauses and hatches that we didn't see three or four years ago because the buyer had the power. I don't know when that's going to swing back around, but that's the big challenge for customers right now.

"The good news is that there is sharing of best practices between customers and sectors. People aren't starting from a blank sheet of paper anymore. That's been helpful in terms of price and cost."

—Bob Kinscherf, Executive Director, National Sales, Constellation NewEnergy

SMART ENERGY DECISIONS

CONNECTIONS & INSIGHTS THAT POWER PROJECTS

- Productive 1:1 business planning meetings with top industry suppliers
- Small-group networking for cross-sector knowledge sharing
- Curated keynote addresses and educational sessions for insight into challenges, solutions, and opportunities
- Simplified hosted buyer registration includes travel and accommodations

LEARN MORE

2023 EVENT CALENDAR

RENEWABLE ENERGY FORUM

June 5-7
Ponte Vedra Inn & Club
Ponte Vedra Beach, Florida

NET ZERO FORUM FALL

September 18-20
Hilton Phoenix Tapatio Cliffs Resort
Phoenix, Arizona

SMART ENERGY DECISIONS

SALES DIRECTOR, CLEAN ENERGY
Marjorie Ferris
207-842-5631
mferris@divcom.com

DIRECTOR OF RESEARCH & CONTENT
Debra Chanil
207-842-5653
dchanil@divcom.com

www.SmartEnergyDecisions.com