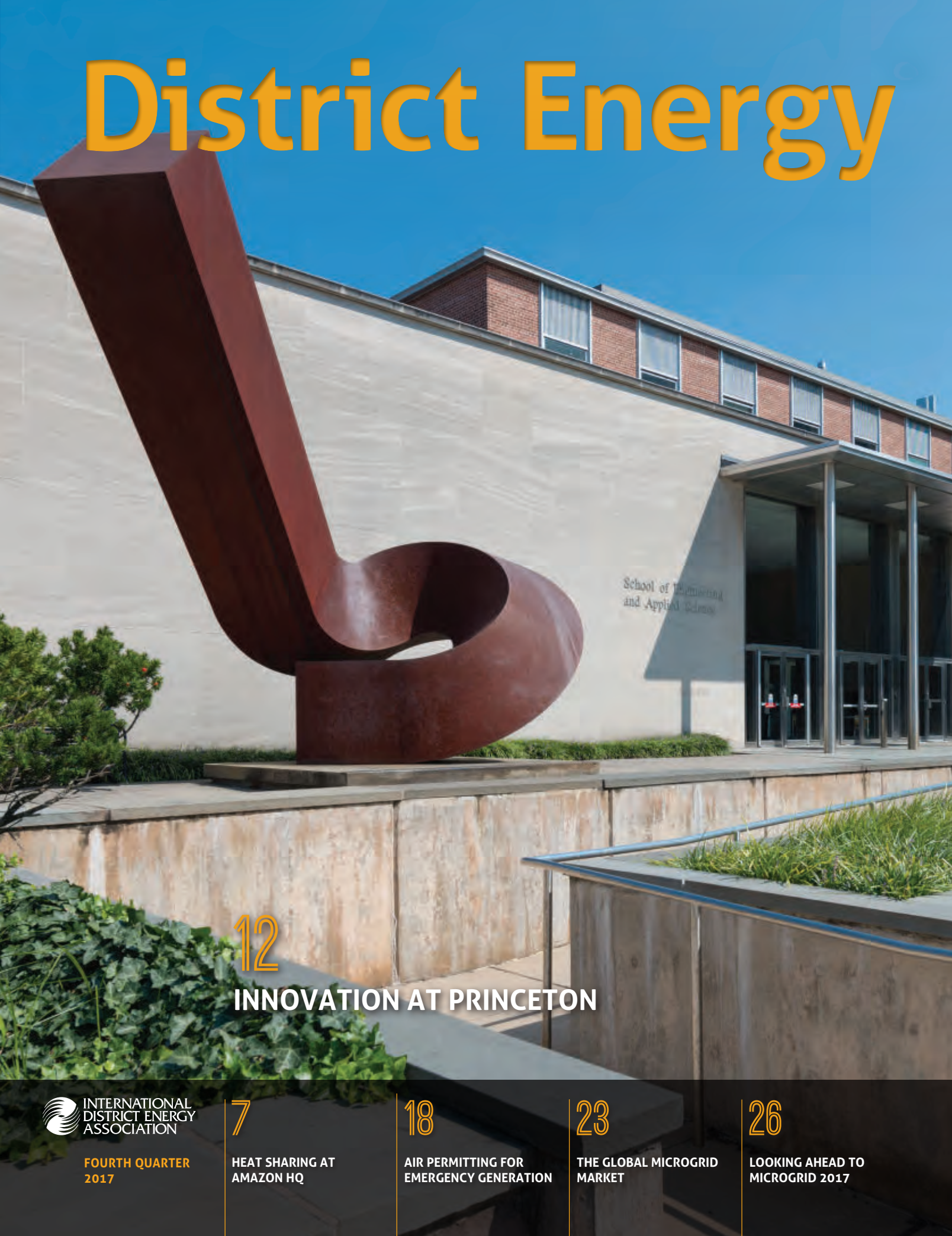


District Energy



12

INNOVATION AT PRINCETON



INTERNATIONAL
DISTRICT ENERGY
ASSOCIATION

FOURTH QUARTER
2017

7

HEAT SHARING AT
AMAZON HQ

18

AIR PERMITTING FOR
EMERGENCY GENERATION

23

THE GLOBAL MICROGRID
MARKET

26

LOOKING AHEAD TO
MICROGRID 2017

The battle for young minds

Tim Griffin, PE, LEED AP, IDEA USGBC Liaison

Editor's note: "LEED + District Energy" is a quarterly column providing information about the U.S. Green Building Council's Leadership in Energy and Environmental Design rating system and how it applies to buildings served by district energy systems.

Today I am moving my youngest daughter into college. Three down, one to go. Ah, it sure brings back memories of walking on campus every day, mixing with young peers and discovering a new world of knowledge. Our generation was once trained and prepared in universities like this very one to tackle the challenges society was soon to face. Today, this generation is being prepared as well and will over time be leaders in industry and government.

Fortunately for my daughter, she is attending school on a campus that many generations ago invested in district heating, has continued to expand and update its system since then and today reaps the benefits of reliability, energy efficiency and scale that district energy can provide. I know the facility's engineers well from working over the past 20 years on their campus and find them to be dedicated and committed to investing in and driving energy savings wherever feasible on campus.

In addition, reminders of sustainability are seen throughout the campus where educational displays pertaining to the topic are found in most buildings. As I write this article from the campus cafeteria (had to camp out somewhere while my wife and daughter decorate the room),

the napkin holders each have a note reminding everyone that "a napkin is a tree, only take what you need." Out the window, just over the hill, a wind turbine slowly turns in the distance. My daughter, who fortunately got her mother's intelligence, was invited by the university to be a Leadership Fellow. At her first meeting with other incoming freshmen in the fellows program, it seemed at least a quarter of her peers were pursuing some degree related to sustainability.

So, I wondered, what does this generation think about the role of district energy in solving the problems their world faces? More importantly, will our industry grow or shrink under their tutelage?

TIME FOR CAMPUS PROTESTS

Recently one of the great member universities that our firm has had the privilege of working with decided to invest in combined heat and power technology as part of its district energy portfolio. There were many reasons why. First, being able to self-produce significant amounts of electricity would greatly increase the reliability of campus utilities. Second, the ability to produce electricity at twice the efficiency of that purchased from the grid means half the amount of natural gas is required in the process and half the amount of carbon is released into the atmosphere. Third, half the fuel input means half the utility costs, which frees up capital to invest in other campus priorities.

All this should be appealing to those wanting a more sustainable future. In fact,

over the past decade this very campus invested significant amounts of capital to move completely away from total reliance on coal to cleaner-burning natural gas. The addition of CHP seems a next logical step in the march toward greater sustainability. However, when the plans became public, some of the students protested publicly. So, why would this generation's college students protest when their campus is willing to invest significant resources in making their system more sustainable? The answer, I believe, is found in their upbringing.

BILL NYE THE SCIENCE GUY?

I came across a new show on Netflix recently called *Bill Nye Saves the World*. I read in the newspaper that the show's goal was to use science to dispel myths. Sounded interesting to me, so I decided to tune in. Now, for our younger readers, "tune in" is an old expression that would translate today into "watch on my iPhone Netflix app." For my generation's benefit, Bill Nye had a popular show aimed at children when today's college kids were young that was designed to make science cool. So, he is someone that the millennial generation puts a lot of faith in.

Watching the show, I was quickly enlightened. The very first show's topic was climate change. Not surprising, as that is certainly a hot topic of the day where science is at center court, but the direction the show took surprised me. As part of the format, the host puts together an expert panel to discuss the topic toward the end. To be fair, or at least appear to be, the


goal is to have an expert on both sides of the argument. I have to say that on some of his shows, Bill appears to be successful in that goal. However, for this show one of the experts believed 100 percent renewable energy now was the answer, which was not surprising for one side of an argument. Yet, presenting the opposite side of that argument was an expert who believed nuclear energy along with renewable energy was the solution. Point being: The feasibility of eliminating fossil fuel now in any shape or form was accepted as fact. Here are two quotes from the panel discussion that caused me to question their accuracy:

- "We have the technology, and the costs are reasonable enough that you can power the entire world for all purposes with clean, renewable energy and have stable electricity."
- "Affordable technologies exist in all 48 states in the continental U.S. to store energy and keep a 100 percent renewable electric grid stable during periods where power is not generated from solar and wind technology."

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MILLENNIALS ARE BEING TAUGHT FOSSIL FUEL CAN BE REPLACED 100 PERCENT BY RENEWABLE ENERGY NOW IN A WAY THAT IS BOTH ECONOMICAL AND RELIABLE.
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Now, before going further, some may think I'm trying to make a political statement here or express my own opinions about a divisive topic. I wish to do neither. Instead, my desire is to reveal perhaps how and why today's college students think as they do with the goal of getting our members to think about how that may impact our future, as well as what we should do about it. My conclusion is that millennials are being taught that fossil fuel can be replaced 100 percent by renewable energy now in a way that is both economical and reliable. In addition, they are accepting that as fact. As an energy engineer, I don't believe that to be a true statement. While we are using

our engineering talents to find ways to continually increase the use of renewable energy efficiently, affordably and reliably, we are not there yet and have a long way to go. In addition, my engineering background suggests technology, like CHP using natural gas as in input fuel, is a great step in the right direction.

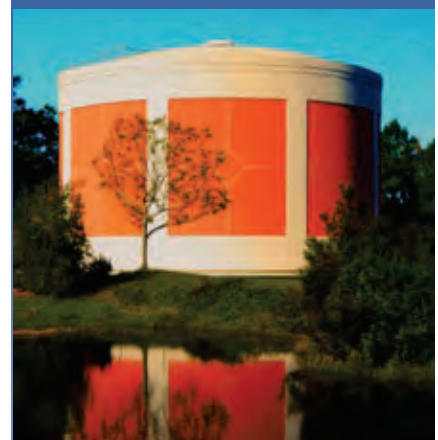
It will be interesting to see how current thinking impacts the future development of district energy. These systems are ideal for maximizing the value of energy-saving and sustainable strategies such as combined heat and power as well as large-scale thermal storage, which is one of the best large-scale options to store energy. In addition, district energy systems offer ways to utilize large-scale renewable energy such as wood chips that could not be accomplished otherwise. However, what may be logical to engineers within the industry may be foreign to society – especially as the generation trained by Mr. Nye and others with similar messages begins to move into positions of influence. We certainly have some educating to do and are fighting some influential voices. I would hate to see the baby get thrown out with the bathwater. 



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