Better Alternatives

What major power providers are doing with their efficient operations and how companies can utilize renewable energy solutions

By Belinda Sharr

Legacy energy producers and distributors have been the target of disruptive business models and technology for decades.

Adapting to competition and increased demand for low-carbon power, even the largest electric utilities and multinational gas and oil giants are behaving like innovative startups in today's economy, engaging with one-time foes and leaning on corporate responsibility and sustainability practitioners in an increasingly chaotic political atmosphere.

CR Magazine spoke with sustainability experts at Exelon, ExxonMobil, Pacific Gas & Electric Company (PG&E) and NRG Energy for details on how they are retooling and repositioning alternative energy.

At PG&E, the 112-year-old San Francisco-based utility company, nearly 33 percent of the electricity delivered to customers in 2016 came from renewable energy sources. That's more than double the U.S. national average, according to the U.S. Energy Information Administration.

"The majority of PG&E's clean energy comes from a large and expanding supply of renewable sources, including solar, wind, geothermal, small hydroelectric and various forms of bioenergy," says Christopher Benjamin, who is the company's director of corporate sustainability. "PG&E's electricity mix is nearly 70 percent greenhouse gas free, and it's going to get cleaner ... We remain on track to meet or exceed the state's clean energy goals, and we have committed to a 55 percent renewable energy target in 2031."

William Holbrook, corporate media relations senior advisor at ExxonMobil Corporation, says that their company is funding a broad portfolio of advanced biofuels research programs, which includes joint research collaborations focused on algae-based biofuels, and is also looking at biomass conversion processes and the use of wind turbines in offshore operations. Since 2000, ExxonMobil has spent about $8 billion to develop lower-emission energy solutions.

"We have a robust set of processes designed to improve efficiency, reduce emissions and contribute to effective long-term solutions to manage climate change risks," Holbrook says.

In May 2016, ExxonMobil announced an agreement to pursue new technology in power plant carbon dioxide capture through a new application of carbonate fuel cells, which could substantially reduce costs and lead a pathway toward large-scale application globally.

"Advancing economic and sustainable technologies to capture carbon dioxide from large emitters such as power plants is an important part of ExxonMobil's suite of research into lower-emissions solutions to mitigate the risk of climate change," says Vijay Swarup, vice president for research and development at ExxonMobil Research & Engineering Company. "Our scientists saw the potential for this exciting

technology for use at natural gas power plants to enhance the viability of carbon capture and sequestration while at the same time generating additional electricity. We sought the industry leaders in carbonate fuel-cell technology to test its application in pilot stages to help confirm what our researchers saw in the lab over the last two years."

NRG, as a renewable energy leader, has been entering new markets for utility-scale solar projects.

"Faced with clear scientific and business drivers to address the impacts of greenhouse gas emissions, the power sector is marching toward a sustainable energy future," says Bruno Sarda, vice president of sustainability at NRG. "This involves a multidimensional approach: in addition to working with policymakers at both the state and federal level to ensure that electricity markets are designed to solve for low-carbon outcomes, we organize our sustainability efforts across five key areas: Sustainable business, operations, suppliers, customers and workplace. In each of these areas, we prioritize activities, set goals and measure progress."

Exelon's focus on zero-carbon sources directly ties to the company's vision to produce energy that is clean, reliable, affordable, and safe—four elements that are all integral to sustainable power.

"We have an opportunity to further innovate renewable energy sources such as wind and solar, so that they're more cost-competitive and produce energy when needed at any time. We are collaborating with MIT, Northwestern University and Argonne National Labs on the research and development of new clean energy technology in various areas, including generation, power storage, and customer-focused solutions," the Exelon team said.

Benjamin notes that, especially in California, the clean energy economy has boomed and the government is interested in providing incentives for companies who utilize solar power.

"New markets created through state-mandated contracts between electric companies and developers of large-scale solar and wind-power projects have helped pave the way for commercially-viable technologies, which have become much cheaper to manufacture and buy," he says. "Generous subsidies have sparked demand for private rooftop solar arrays, driving prices through the floor and installation numbers to the sky. Smart investments in the energy grid have made it more resilient, flexible, and able to support new technologies."

So what can companies do to make the most of environmentally-viable power sources?

"Companies can consider purchasing renewable energy credits, which are certificates that represent the production of a certain amount of renewable power, from wind, solar or other alternative energy sources," the Exelon team advises. "In fact, most solar and wind energy is purchased through long-term contracts with specific renewable energy facilities. These agreements replace a portion of a company's total electricity spend and are competitively priced, factoring geography, weather conditions and state subsidies."

Companies today have a variety of options when it comes to energy procurement—some of them with little up-front cost.

"The cost of renewable solutions has come down dramatically over the last decade. [There are now] customizable choices when it comes to affordable, clean, reliable power solutions. For some this means

on or offsite renewables projects, for others it's simply purchasing 100 percent renewable power directly from the grid," Sarda says.

NRG works collaboratively with commercial and industrial clients on their power plan. "We seek to understand their needs and offer solutions that align with those needs," Sarda says. "A significant percentage of businesses now have sustainability goals of their own, and we help them understand how their energy choices can help in that regard."