ESNA 2017: How storage enables SCE to avoid siting new gas plants

Southern California Edison President Ron Nichols says battery advancements are reshaping how the utility thinks about generating resources new and old.

Two years ago, a San Diego Gas and Electric executive announced a bold aspiration at the Energy Storage North America conference.

“I see a future where there will be no more gas turbines,” said Jim Avery, SDG&E’s chief development officer. Avery told the conference that one day battery storage could become cost-effective enough to displace the need for gas-fired power plants. It was a striking prediction, particularly at a time before the Aliso Canyon gas leak, when California utilities proved that storage could be deployed in a matter of months to help manage peak demand.

Two years later, market and public policy drivers are pushing another major California utility to integrate that vision into its worldview, prioritizing renewables and energy storage over new gas-fired resources.

“We will constantly be looking at, every time we need a new resource — how can we avoid the need to add another gas-powered resource?” Ron Nichols, president of Southern California Edison, told Utility Dive in an interview at the conference. “Even if they are built, they’re not gonna run much. They’re going to be there exclusively for reliability, full stop. That would be the only reason they’re added.”

Nichols, the former general manager of the Los Angeles Department of Water and Power, reiterated that point in his keynote address at the event, saying that rapid advancements in energy storage are making batteries viable faster than he ever imagined.
“Five years ago, I would not have believed that we would run solicitations and come out with over 400 contracts for over 450 MW of batteries and other storage in the timeframe we have,” Nichols said. “I wouldn’t have thought we’d have contracted for 160 MW of [behind-the-meter] energy storage for our customers.”

Many of those contracts stem from SCE’s mammoth solicitation for local capacity requirements in 2015. At the time, the utility was mandated to contract for 50 MW of storage, but head-to-head comparisons with other resources resulted in five times that amount — more than 250 MW of storage received contracts.

That solicitation also resulted in PPAs for two new gas-fired plants, sparking criticism from some clean energy activists who said the storage deals were window dressing for the siting of more carbon-emitting resources.

Nichols said those critiques don’t appreciate the capacity situation SCE faced in 2015. New regulations on power plant cooling are set to push many old gas-fired generators offline, and SCE needed to replace them with new flexible generation.

“What people have to look at — and they regularly ignore — is the fact that the state is retiring thousands and thousands of megawatts of old, inefficient, once-through cooling, gas-fired generation,” Nichols said. “Like it or not, the system was built around those power plants and being able to run in the center of our load, which is on the West side of our system.”

SCE “needed resources that provided certain functionality in that location,” Nichols said. “There’s resources that are coming online there, but a fraction of what ultimately is going to be retired.”

How long those assets will stay on the system remains to be seen. California already has a 50% renewable energy mandate to meet by 2030, and lawmakers are discussing the addition of a 100% clean energy target by midcentury. Utilities are cool on the proposal, currently pending in the state Assembly, and Nichols said SCE is active in discussions on how that renewables target would be defined.

Regardless of whether that 100% target survives the political process, Nichols said he still expects to site a lot more storage in lieu of carbon-emitting resources.

“We’re going out for solicitations for resources to meet our peak requirements. We’re doing source-on-source comparisons saying the combination of solar and battery storage is winning in most locations,” he said. “In most locations, it’s winning.”

**Hybrid plants build a bridge**

In addition to renewable energy targets, California utilities also face a state target to cut greenhouse gases 40% below 1990 levels by 2030. The power sector is only a small part of that — contributing about 20% of the state’s GHGs — but that means wringing even more emissions cuts out of the system is a tough task.

One strategy SCE is deploying to cut emissions from new gas plants is to pair them with energy storage. In April, the utility completed its first hybrid gas turbine with GE, pairing a 50 MW generator with 4.3 MWh of storage. The project won ESNA’s innovation award at the conference for a centralized storage offering.

The addition of the battery means the plant will not have to consume fuel in standby mode, helping cut its emissions by up to 60% and accelerating its ramping time.

Pairing the two resources allows SCE to “maintain the ability to use a battery for a couple of hours where you may not even need to turn the turbine on at all, yet still have the ability to basically take credit for the full peaking capability of that plant,” Nichols said.

SCE is now assessing whether to add batteries to its three other peaker plants, Nichols said, and even to its century-old Big Creek hydroelectric project.

“The ability to add a battery to it actually makes those systems more flexible,” Nichols said. “It will operate more fluidly, no pun intended. It’s something we’re digging into pretty deeply right now. We haven’t come out with a hard and fast plan on it, but I’m pretty sure we will.”

Moving forward, Nichols said SCE and other California utilities will face further challenges in reducing carbon-emitting
resources from the system.

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Ron Nichols
President of Southern California Edison

"Now the big question that still exists … how quickly and how extensively can you eliminate rotating mass for inertia in the system to be available to meet really big loads as they come up?" he said. “Can that be done with smart inverters only? No one’s ever done it at the scale of 20,000 megawatts [that] Southern California has.”

That’s an issue that will be “continually evaluated,” Nichols said, to see if there are more options to “ultimately displace old traditional [generation], irrespective of what the fuel is that spins the turbine.”

“I don’t see a date specific by which you don’t have any gas-powered power plants,” he said. “I do think it’s not terribly likely that there’s gonna be much more in California.”

CaliforniaGeo Responds—
This story is another case of robust state policy for advancing renewable electric energy sending a strong market signal to innovators within industry. Research and development sectors of industry have advanced industrial-scale, two way inverters and large battery arrays in very little time. Utilities now have the viable and economic choice to begin stepping away from fossil generation.

Utilities can also better utilize their central generation and peaking units by hybridizing them with battery storage to help meet the Duck Curve ramp during the waning hours of a solar collection day. The incorporation of grid scale battery/inverter systems into their mix also improves their emissions footprint.

Extending this point to the geo heat pump industry, our thermal resource (underground) is carbon-free, available 24/7, and is always sized to handle the individual building's load for which it was designed. All we need is electric power, which can come from the utility and/or from on-site solar PV.