

California's Grid Geeks: A beacon of hope

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Lighthouse on the California coast.

This is the last segment of an exclusive six-part series that takes an in-depth look at California's transition to over 50 percent renewable electricity. In the face of President Trump's apparent indifference to global warming, the state has become a beacon of hope for climate activists. The entire series appears [here](#).

The morning after the November election, Gavin Bade, an editor at [UtilityDive](#), a popular industry newsletter, captured many readers' dawning sense of what the voters had wrought:

"More important than any particular policy proposal is the paradigm shift that Trump's election represents for the power sector. The paradigm of de-carbonization that's guided utility-sector investments for the past decade is now up in the air."

Two months later, these words still ring true. Yet, at the La Jolla retreat, there was a strong sense that green energy was being driven by market forces that were, more or less, unstoppable. Steady falls in the cost of renewable generation, especially for solar PV and large wind turbines, has led utilities to favor them regardless of climate regulation.

This is what Jonathan Weisgall, vice president of legislative and regulatory affairs, Berkshire Hathaway Energy, said: "Our companies have invested over \$18 billion in wind and solar. We are not going to stop now; we are making investment decisions for facilities that last 30 or 40 years. Renewables provide a very big economic hedge — the fuel is free once you build them."

In a similar vein, Nicholas Akins, chief executive officer of American Electric Power, an Ohio-based utility that has a large fleet of fossil-fueled plants across 11 states, told the New York Times that, even without the EPA's Clean Power Plan (CPP), the main tool for curbing CO₂ emissions under the Obama administration, "there will be something in the future on carbon control. So there's no question that the industry is moving forward with cleaner energy," he said. "We will not be building large coal facilities. We're not stopping what we're doing based on the new administration."

At the retreat, White and others also stressed that Obama's CPP was never expected to have much impact on California. It only has a handful of coal-fired power plants (the plan's main target) and the state's own laws have already put its electricity sector on course to meet the CPP's national goal (a 32 percent reduction by 2030 from 2005 annual CO₂ emissions) at least a decade ahead of

schedule. Moreover, California's longer-term climate goals are twice as ambitious as the CPP.

In La Jolla, there was also speculation that Trump's political base actually may be less skeptical about climate change than they are about the ability of renewables to power a resurgent economy and deliver the investment and jobs needed to "make America great again." If so, then the California story should quiet some doubters.

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Sustained economic growth and strict controls on global warming pollution have gone hand-in-hand. Since 2010, when California's new carbon controls began to bite and utilities were saddled with rising renewable energy mandates, the state's GDP has grown from about \$1.7 trillion to \$2.5 trillion. The state also has added over 2 million jobs, with a large number of those coming from new work in the clean energy sector. Total CO₂ emissions also have fallen despite the addition of about 1.8 million new residents (the state's population is over 39 million), underscoring a steady decrease in GHG emissions per capita.

California's deep-green quest also has broad political support. The last legislative term put landmark new laws on the books. The November election also provided California's Democrats with a historic two thirds super-

majority in the state Senate as well as the Assembly. (By comparison, Trump won just under 32 percent of the vote in California.) That majority will ease the path for follow-on measures — for example, ratification of the state's current regulations for trading CO2 emission permits, now being challenged as an unconstitutional tax.

To gain a sense of California's purpose, it may be worth recalling the October 2015 ceremony at Los Angeles' iconic Griffith Park Observatory when SB 350, the state's 50 percent renewable energy mandate, was signed into law. On a warm hazy day, with the city's monochrome silhouette behind him, Gov. Jerry Brown insisted that California would remain in the front of climate action so that the fossil fuels that "have become the source of our prosperity" do not "become the source of our ultimate destruction."

The governor's sober message gave state Sen. Kevin De Leon (D-San Diego), the main author of SB 350 and an oft-mentioned future gubernatorial candidate himself, the chance to be celebratory: "California has planted a flag no less remarkable than the one the United States placed on the moon nearly half a century ago. We are demonstrating that it is possible for one of the great economies of the world to reduce greenhouse gasses and create new clean energy markets that sustain strong economic growth. And we're not done yet."

Fourteen months later, Mary Nichols underscored De Leon's sentiments as she released the ARB's draft 2030 scoping plan for reducing GHG pollution. "Now more than ever, the nation and the world are looking to California for leadership on climate change and air quality. Denial is not an option. We must plan, invest and transform."

Year-end appointments to the utility commission also signaled the state's resolve on greening the grid. In late December, Brown nominated two environmental policy experts from the executive branch, Martha Guzman-Aceves and Cliff Rechtschaffen, to replace two retiring

public utility commissioners in 2017. The nominations were welcomed by clean energy advocates. Greentech Media wrote: "The selection of Guzman-Aceves and Rechtschaffen sends a signal that the Golden State is committed to developing a low-carbon economy... Both CPUC appointees are registered Democrats with strong backgrounds in environmental protection."

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Yet, when it comes to the challenge of global warming, California cannot go it alone. There are economic considerations. As White cautioned in La Jolla, "If California remains something of a green island, then it will be that much harder and more costly. The ISO expansion project shows that." In political terms, he added, "it will also be much easier to be picked off... by those who want to see us fail." That could happen at any number of federal venues, suggested White — the EPA, FERC or Congress with budget decisions.

CEERT's own legacy — pioneering options for deep decarbonization — is also on the line. "We won't be able to use this expertise if we don't get to a much higher penetration of renewables in other markets. That may now be slowed," said Laura Wisland, an energy analyst at the Union of Concerned Scientists and the co-chair of the CEERT's board.

Then there is the science itself. By 2030, if the state succeeds in crafting a much lower carbon grid, halving current emissions from the electric sector, it would lead to an annual reduction of roughly 45 million metric tons of CO2 (ignoring, for the moment, further gains from electrifying other sectors). That would comprise about 4 percent of the tonnage that must be eliminated from the remainder of America's power sector to achieve an equivalent benefit. (The country's GHG emissions in 2015 from electricity production were roughly 2,100 million tons.)

Hence, in the years ahead, meaningful climate action will require the U.S. to register tens of California-sized success stories. Ditto for the rest of the world. It will be extremely hard otherwise to achieve the magnitude of total CO2 cuts needed to stop global temperatures from rising more than 2 degrees Celsius, as contemplated by the Paris climate agreement.

That is why today, in the face of President Trump's apparent indifference to global warming, California has become a beacon of hope for climate activists.

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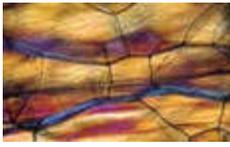
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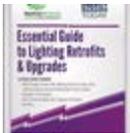
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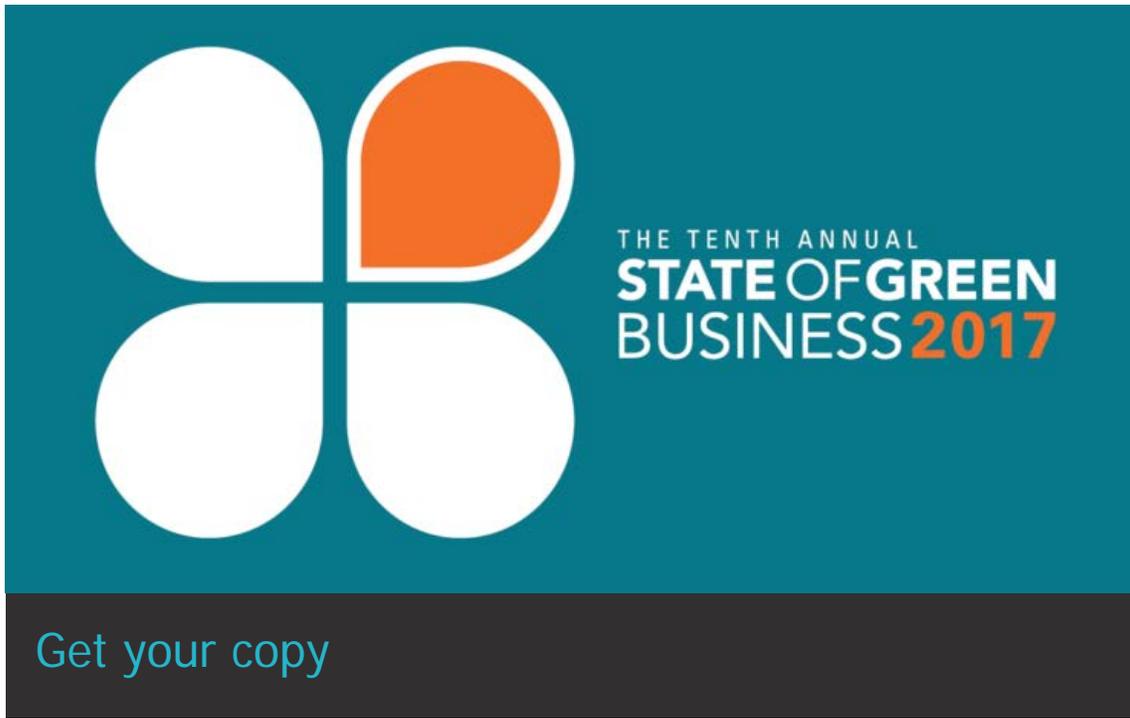
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