



[BLOG] UNION OF CONCERNED SCIENTISTS



Solar and Wind Need a Larger Electric Grid—and California Might Just Create One

LAURA WISLAND, SENIOR ANALYST, CLEAN ENERGY | MARCH 27, 2018, 12:19 PM EDT

Like 11

Tweet

SHARE

Over the past decade, thousands of megawatts of clean renewable energy have been installed in the West thanks to the declining cost of wind and solar power and state policies like the Renewables Portfolio Standard (RPS). Since solar and wind power are by their nature intermittent, large quantities of weather-dependent generation require new solutions to [maintain grid reliability](#) while keeping costs low.

Right now, California relies heavily on natural gas to back up the grid during the times of day or seasons of the year when solar and wind power are not as readily available. But that's not a sustainable solution both for climate change reasons, and

because ramping the gas plants up and down frequently is not good for air quality or the people breathing that air.

In California, one better option to improve grid reliability, which is getting **much attention** from proponents and opponents right now, is regional energy market integration—also known as the creation of a western grid.

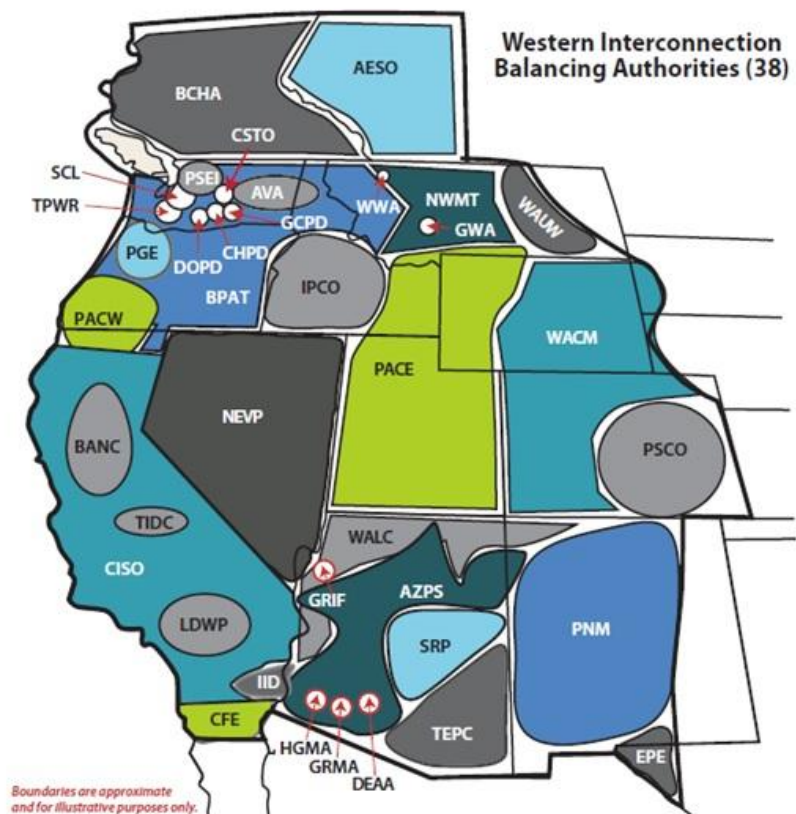
Who keeps the lights on today?

Grid reliability across the country is managed by entities called balancing authorities. These balancing authorities keep the lights on by balancing electricity supply and demand every four seconds. Regional reliability in the West is currently managed by 38 separate balancing authorities (Westerners like their independence, and that is reflected in the fragmentation of western balancing authorities).

Compare the West to the Eastern Interconnection, where the majority of the power east of the Rockies is managed by six regional transmission organizations (RTOs).

If balancing authorities can pool their resources together into one western grid, we will need fewer power sources to keep the system reliable. This has the added benefit of keeping costs low and making it easier to integrate more renewables into the electricity grid.

It's not that there is zero coordination in the West today among the balancing authorities. California currently receives about



*There are 38 balancing authorities just within the western interconnection.
Source: Western Electricity Coordinating Council*

30% of its electricity from outside the California Independent System Operator (CAISO), the largest balancing authority in California. But as we [increasingly rely more on solar and wind](#), the CAISO will need more tools in its toolbox to make sure we don't rely too heavily on the California gas fleet to keep the lights on.

A regional market looks good from several angles

The tool currently being discussed at the [California Legislature](#) is the integration of the CAISO with other balancing authorities in the West to create a western independent system operator. Combining the resources of several western balancing authorities into a larger, more integrated regional energy market will make it possible to go farther and faster with renewable deployment in three important ways:

1. **Bigger, cleaner supply:** A regional grid makes it easier to access flexible generation from a larger pool of resources, which will make it easier to meet electricity demands when renewables are not as plentiful (like when solar generation declines in the evening).
2. **Cheaper options:** A regional grid helps California take advantage of low-cost renewables in other states where solar and wind make environmental and economic sense to build. More states equal more clean energy.
3. **Less waste:** A regional grid helps California access a larger energy market to absorb the excess solar generation California customers cannot consume or is not cost-effective to store.

But is it a silver bullet?

There are lots of different ways California can create its low-carbon electricity future. There are efforts underway now to shift more electricity demand to times when renewables are most abundant, build more energy storage and local distributed resources to reduce congestion, make the grid more resilient, and reduce the need to rely on natural gas peaker plants, especially ones in disadvantaged communities. Efforts to establish a western regional energy market

should not detract from these important efforts. We need all of it. And in some ways these strategies are even more important than a regional market for accomplishing certain climate and clean air objectives, like reducing the need to rely on specific in-state natural gas plants that provide local capacity.

Regional integration is not a silver bullet to our energy woes. But every day that we add more solar and wind power and come closer to reaching our climate goals, we need more flexibility on our grid to show the rest of the country and world that a clean energy transition can happen.

None of those other clean energy strategies can provide the level of flexibility that a regional energy market can.

What would a western energy market mean for coal?

California enacted a policy in 2006 called the [Emissions Performance Standard](#) which has helped to dramatically reduce the amount of electricity California receives from individual coal plants in the West. But coal generation also makes it into California's power supply by way of unspecified market purchases for bundles of electricity, which is different than electricity purchases from specific plants. Unfortunately, today there's not much we can do about that through direct California regulations.

However, one thing we can do, which has been [the most important driver for coal plant retirements across this country](#), is expose that generation to more market competition from cheaper resources, like renewables. Having access to a western regional energy market is going to make it much easier for California to buy and build more renewables and help drive dirty coal off the market.

A regional grid also has the benefit of added transparency. Coal that currently makes it to California as unspecified power would have to be disclosed if the plants were located in a western ISO. Right now, our cap and trade program is forced to assign unspecified market purchases a carbon cost that reflects a lower carbon content than coal because we can't actually see which plants are providing that

generation. If we can see the coal, we can accurately assign its carbon value if that electricity is serving California load.

It's complicated

I don't want to give the impression that integrating western balancing authorities is an easy step. The CAISO board of governors is appointed by the governor of California and confirmed by the State Senate. If a western ISO is created, the board of governors will not all be California political appointees and that makes some people nervous.

But regional integration is a tool the CAISO needs. It will further expand the market for renewables and will help push California closer to our 100% clean energy goals.

Like 11

Tweet

 SHARE

Posted in: [Energy](#) Tags: [100 percent renewable energy](#), [California](#), [clean energy](#), [grid management](#), [renewable energy integration](#)

Support from UCS members make work like this possible. [Will you join us?](#) Help UCS advance independent science for a healthy environment and a safer world.

[Show Comments](#)