



Maximizing California's Renewable Energy Resources: Curtailment & the Regional Grid

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Overview:

As California meets and surpasses its renewable energy generation targets, the state faces a growing problem: managing an oversupply of clean, pollution-free renewable energy. During an increasing number of hours every year, California produces more renewable electricity than it can use. That emissions-free electricity goes to waste ("curtailment") because western power grid fragmentation prevents it from reaching markets in other states. Enacting AB 813 (Holden) is essential to fixing the problem and easing California's path to a carbon-free future.

New data show that renewable energy curtailment in California has risen significantly over the past four years, resulting in major losses of opportunity to use and generate clean energy:

- Curtailment during the month of May has risen from 10,000 MWh (megawatt-hours) in 2014 to over 72,063 MWh in 2018. This is the equivalent of losing enough clean energy to power more than 130,000 homes in California for a month.
- In the first seven months of 2018 alone, California has already curtailed more than 315,000 MWh of renewable generation. That's enough to power San Francisco for 20 days.
- Unless conditions change, by the time California meets its 50% renewable portfolio standard (requiring half of the state's electricity to come from renewable resources), 5% of available renewable generation will be curtailed annually: almost 4.5 million MWh per year. If it displaced fossil generation instead, that energy could reduce greenhouse gas emissions by an amount equal to two-thirds of the output of a giant coal-fired power plant (500 MW).

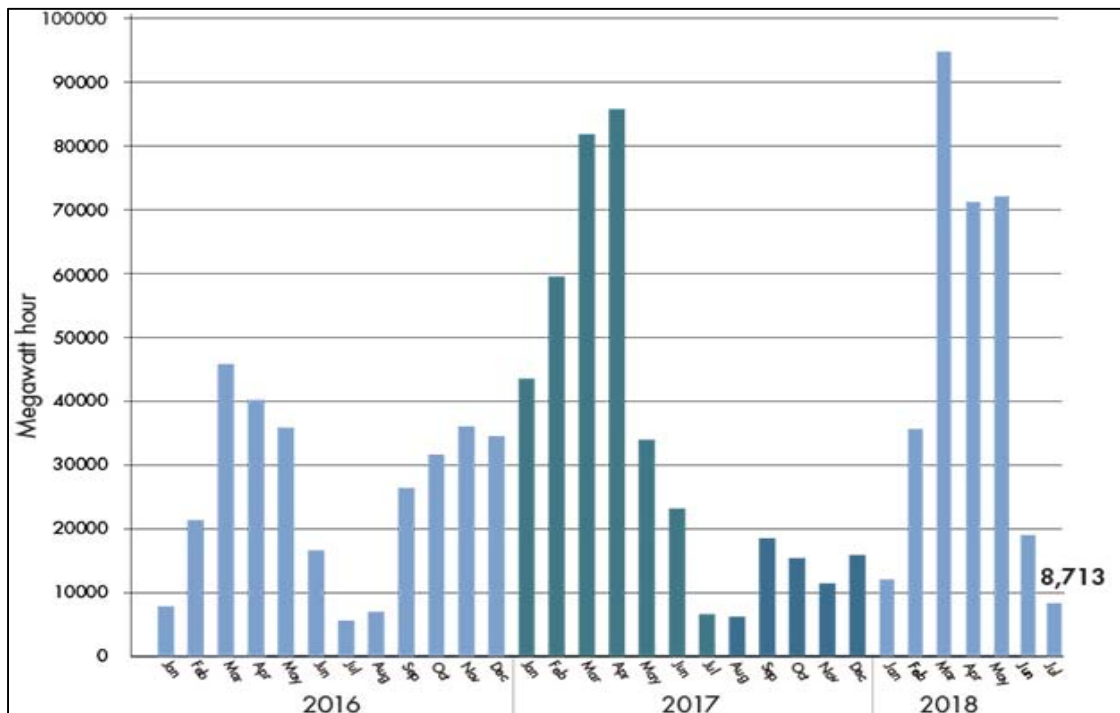
Given California's ambitious carbon reduction targets (40% by 2030), and a pending 100% zero-carbon electricity target by 2045, the state cannot afford to waste renewable generation by just turning it off. The more we can share with our neighbors, the more we can build in California.

A Western regional energy grid is the state's best immediate option for addressing renewable energy oversupply. The expanded market that a regional grid provides would allow California to maximize its renewable energy sources and sell excess energy to neighboring states – maintaining the economic and environmental benefits of the state's commitment to clean energy production. A fully integrated Western regional grid is integral to a reliable, efficient, and clean energy system.

The Problem: Renewable Energy Curtailment is on the Rise

Currently, the California Independent System Operator (CAISO) copes with oversupply by getting large-scale solar and wind generators to "curtail," or intentionally reduce, energy production. That is far from ideal even at a small scale – it represents a lost opportunity for the state and its neighbors to rely on clean energy resources, while making it harder to finance new solar projects in California.

Unfortunately, curtailment is rapidly increasing as California produces more solar and wind energy than ever, and energy management experts are wary of the consequences. CAISO data shows curtailment has grown in each of the past four years, reaching a new peak of over 94,777 MWh curtailed in March 2018. That represents the average monthly needs of more than 170,000 California households.



(Source: California Independent System Operator)

Additionally, a recent [Union of Concerned Scientists report](#) projects that about 5% of available renewable generation would be curtailed per year under a 50% RPS base scenario – which represents 2.14 million metric tons of carbon dioxide (CO₂) pollution that could be avoided annually if that energy replaces an emitting resource elsewhere, equal to two-thirds of the annual emissions from a 500 MW coal-fired power plant.

Curtailment and its associated environmental and economic costs are worsening every year. However, enhanced integration of the fragmented Western regional transmission grid serving California, 13 other states, and parts of Mexico and Canada offers a solution that benefits California’s renewable energy generators, consumers, and climate policy goals.

[The Solution: A Fully Integrated Regional Grid](#)

Renewable energy curtailment could be avoided by a voluntary phase-out of fragmented grid management across the western United States, which would help optimize use of renewable energy resources across California and the other participating states. Today there are 38 individual balancing authorities across the west – which is like 38 individual drivers attempting to steer a single vehicle.

A fully integrated western regional grid would prevent much of the curtailment that California is expected to experience, by expanding the market of electricity consumers that solar and wind generators serve – resolving the challenge of finding enough buyers during peak energy production hours. This would allow California to maximize the environmental and economic benefits of its investment in clean energy sources as it builds a reliable, efficient, and green electricity system for the future.

For more information:

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