

# Journalist's Guide to California's Renewables Portfolio Standard

As the California Public Utilities Commission (CPUC) begins implementing the state's 50 percent Renewables Portfolio Standard (RPS), California Delivers is providing this background resource for journalists:

- An overview of the RPS
- An explanation of RPS benefits and what it will take to achieve large-scale integration of renewables
- Relevant data points
- A list of sources available for interviews

**The Sun**  **Reporter**

"In part because of the RPS program, California leads the nation in clean energy investment."

*The Sun Reporter,*  
August 20, 2015

## What is the RPS?

California's RPS, established in 2002, requires electric utilities to buy a specified percentage of their power from renewable sources such as wind, solar and geothermal. Prior to passage of the RPS, renewable energy comprised less than 11 percent of California's overall electricity mix. The initial goal of the RPS was achieving 20 percent renewables by 2017. The timeline to reach that goal was accelerated to 20 percent by 2010 through a bill passed in 2006. And in 2011, additional legislation raised the RPS to 33 percent by 2020. Most recently, in October 2015, Gov. Jerry Brown signed [Senate Bill 350](#), which requires all electricity providers in the state to procure 50 percent of their electricity from eligible renewable energy sources by 2030. Along with the 50 percent renewable target, SB 350 includes a requirement that the state [double energy efficiency savings](#) by 2030, and makes it a priority for California to accelerate the adoption of electric vehicles [to help displace petroleum as the dominant transportation fuel](#).

## How does the RPS work?

California's RPS requires all electricity providers to source 40 percent of retail electricity sales from renewables by 2024; 45 percent by 2027; and 50 percent by 2030. It also requires that at least 75 percent of the renewable electricity counting towards an electricity provider's RPS be generated by facilities that can directly deliver clean electricity to the California grid, and no more than 10 percent be met with renewable energy credits or "RECs" from generation elsewhere in the western grid.

The RPS is overseen by the CPUC for investor-owned utilities (Pacific Gas and Electric, San Diego Gas and Electric, and Southern California Edison), energy service providers, and community choice aggregators, and by the California Energy Commission (CEC) for municipal utilities. Each electricity provider must submit a procurement plan detailing how it will purchase renewable energy. The CPUC and CEC review plans to ensure that electricity providers comply with the law.

## Achieving large-scale renewables integration

Currently, California relies heavily on natural gas electricity generation to backfill energy and grid reliability needs when renewable energy is not available. To reach the state's 2030 greenhouse gas emission reduction goals that were codified by SB 32, grid operators will need to reduce dependence on natural gas, diversify the mix of renewables and leverage efficiency, storage and demand-response technologies to even out supply and demand fluctuations. Reducing dependence on natural gas also alleviates the harmful air quality impacts of energy production on environmental justice communities. What follows is a description of tools that can minimize integration challenges and maximize the benefit of clean resources.



“Smart renewables with advanced, system-supporting electronics can make wind and solar sources of reliability and flexibility, especially if they are matched with demand-response and large-scale storage.”

V. John White, Center for Energy Efficiency and Renewable Technologies,  
January 29, 2016

- **A diverse renewables mix** – Because different renewable resources generate power at different times depending on the location and technology, diversifying the mix of renewables to include more wind, geothermal and other renewable energy sources will create a more consistent flow of electricity, reducing the need to rely on natural gas to fill generation gaps.
- **Demand response** – Demand-response technologies enable electricity users to shift consumption to times of the day when renewable power generation is high, taking advantage of clean electricity that would otherwise be considered “excess” and reducing the need to ramp up gas plants during other periods of the day. This load shifting can happen manually, or smart technologies can send signals to industrial equipment, home appliances, and electric vehicles so that the shift in usage happens automatically. Time-of-use electricity pricing is a means to reward customers for shifting some of their energy use to times of the day when renewable energy is plentiful and electricity is cheaper.
- **Energy efficiency** – Energy efficiency investments targeted to reduce demand, especially in the evening hours when solar resources are not available, is one of the fastest and most cost-effective ways to reduce peak energy and gas use. Last year, California committed to doubling savings from efficiency programs and upgrades as part of SB 350, building on its successful history of promoting energy efficiency measures that have saved consumers billions of dollars and helped [reduce electricity demand](#) by more than 15,500 megawatts – equivalent to the output from more than 30 large power plants.
- **Energy storage** – Storage devices like pumped hydropower, compressed air, and advanced batteries can be used to “charge” or absorb electricity from renewable facilities when the power is flowing and “discharge” the electricity when it is needed. Unlike most natural gas plants, many storage devices do not have to generate a minimum amount of electricity to respond at a moment’s notice to a call from the grid operator. Therefore, they can provide grid reliability services without contributing to air pollution and greenhouse emissions.
- **Grid operator coordination** – By pooling power generation across a larger geography, grid operators can use natural gas assets more efficiently and integrate a more diversified mix of renewable power sources.
- **Grid-balancing services** – Allowing renewable power generators to provide the grid-balancing services that natural gas plants currently provide—i.e. quickly adjusting generation in response to supply/demand fluctuations—is a simple and straightforward way to reduce reliance on natural gas and increase the percentage of renewables on the grid.

## Relevant Data Points

- **Renewables:** The most recent data available (2015) shows that the total renewable power generation from facilities serving California is 65,800 GWh, which represents slightly over 25 percent of retail electricity sales in the state. This includes renewable generation derived from solar, including 23 percent from photovoltaics, which generate electricity from the sun, and 4 percent from solar thermal which concentrates the sun's energy to heat fluid and make steam. 37 percent is derived from wind. Geothermal makes up 20 percent of the mix and small hydro is 4 percent. Biomass provides 13 percent of the state's renewable energy portfolio.  
— Source: California Energy Commission [Progress Report](#), June 2016
  
- **Energy Efficiency:** Energy efficiency programs remain the most cost effective way to meet customers' energy needs, saving \$12 billion after costs between 2003 and 2013. Efficiency is also the largest segment of the California advanced energy economy, representing 70 percent (303,117) of clean energy jobs statewide. Advanced electricity generation of sources like solar and wind is the next largest segment, contributing nearly 95,000 jobs, or 22 percent of the total.  
— Sources: Advanced Energy Economy Institute, [California Advanced Energy Employment Survey](#), December 2014 and NRDC/E2 report [California's Golden Energy Efficiency Opportunity](#), August 2015
  
- **RPS Goal:** A National Renewable Energy Laboratory study shows that reaching (and surpassing) 50 percent renewables by 2030 is not only achievable, it will create “minimal rate impacts, uncompromised reliability, and widespread economic development.”  
— Source: National Renewable Energy Lab, [Low Carbon Grid Study: Analysis of a 50% Emission Reduction in California](#), January 2016.
  
- **Jobs:** For the period 2015-2030, increasing California's RPS to 50 percent by 2030 would create an additional 354,000 to 429,000 direct jobs from the construction of new renewable generation. Including job multipliers, we forecast a total of 879,000 to 1,067,000 job-years by 2030.  
— Source: UC Berkeley Labor Center, [The Link Between Good Jobs and a Low Carbon Future](#). July 2016.

### **“Least-Cost, Best-Fit” Proceeding**

The RPS statute requires utilities to select renewable resources that are the “least-cost, best-fit” with a view toward achieving a mix of renewables on the grid that minimizes integration challenges at the lowest possible cost for utility customers all while maintaining a balance between electricity supply and demand. This framework provides a means for utilities to consider additional factors in procurement decisions beyond the price per kilowatt-hour. The least-cost, best-fit procurement process is intended to encourage adoption of a more geographically and technologically diverse supply of renewable energy sources that can help ensure the state will be able to rely on clean energy sources, no matter the time of day or season of the year.

## Experts Available for Interview

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