

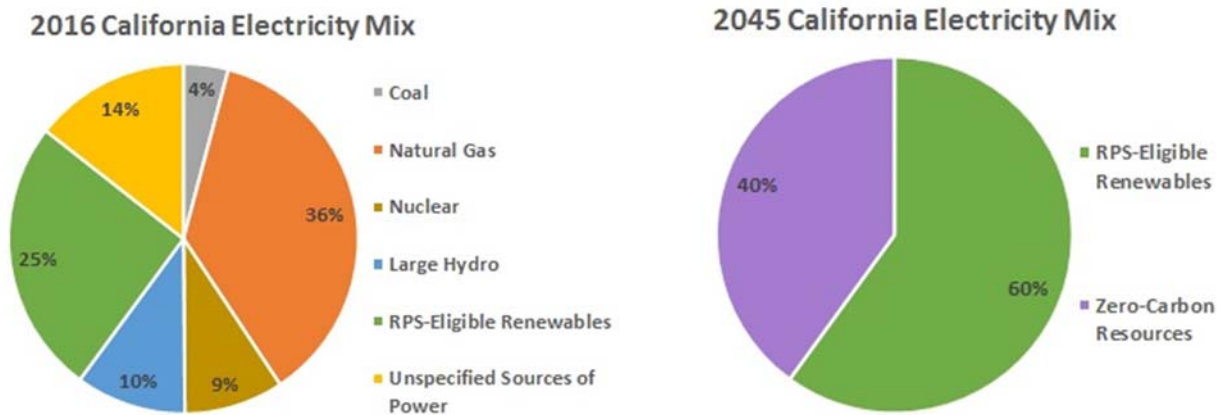
SB 100: Renewable and Zero-Carbon Electricity for California

The 100 Percent Clean Energy Act of 2017 (SB 100, de León) advances the state’s efforts to reduce greenhouse gas (GHG) emissions and toxic air pollution in two significant ways:

- **60% RPS by 2030:** SB 100 would accelerate the state’s primary renewable energy program—the Renewables Portfolio Standard (RPS)—by raising the current requirement from 50% to 60% by 2030.
- **100% zero-carbon by 2045:** SB 100 would establish a new policy that all electricity produced to meet end-uses come from zero-carbon resources by 2045. Since 2045 is so far in the future, SB 100 leaves open opportunities for new technologies and innovation and does not restrict what qualifies as zero-carbon.

California’s Current Electricity Mix

In 2016, California met 25% of its retail electricity needs with “eligible renewable energy resources” that, by law, qualify for the RPS. Those resources include solar, wind, geothermal, biomass, digester gas, municipal solid waste conversion, landfill gas, small hydropower with a generation capacity of 30 megawatts or less, ocean wave or tidal, and fuel cells using renewable fuels.



Source: California Energy Commission

SB 100 sets California on a path to meet at least 60% of its retail electricity needs through RPS-eligible resources. The remaining 40% could be met with additional RPS-eligible renewables, or non-RPS resources that do not emit GHGs during the process of generating electricity. For example, in 2016 California received about 10% of its electricity from in-state and other western large hydropower facilities. Large hydro is not RPS-eligible but would qualify as zero-carbon. In 2016, most nuclear power came from Diablo Canyon, which will be phased out over the next decade. A small amount of nuclear power is imported from a plant in Arizona, and that would qualify as zero-carbon.

How Do We Get to 100% Zero-Carbon Electricity?

Meeting 100% of California's electricity needs with zero-carbon resources is a bold goal, but achieving it is within reach. California is on track to exceed its current 50% RPS and we have the technology to run a flexible and efficient grid with even more renewables.

Key tools and strategies that put us on the pathway to 100% zero-carbon electricity include:

- **Better weather forecasting technology** that makes it easier for grid operators to predict precisely how much wind or solar generation they can depend on at any given time.
- **Declining cost of energy storage technologies**¹ that help us use renewables when the wind isn't blowing and the sun isn't shining.
- **Flexibility of large and small electricity users** to increase energy efficiency when renewable electricity is least abundant and shift usage towards times when it is most abundant (e.g., midday).
- **Better coordination of grid operators in Western states** that helps us gain access to more renewables and other flexible, zero-carbon resources.

It's impossible to predict what technological advancements will occur by 2045 that will make it easier and cheaper to achieve 100% zero-carbon electricity. SB 100 kickstarts the discussion and the research needed to understand how to reach 100% zero-carbon electricity. Every time California sets an ambitious clean energy policy, our state's ability to achieve the policy has far exceeded expectations.

Benefits of a Zero-Carbon Electricity Future

Global climate change is one of the biggest threats to California's economy and the health and well-being of its residents. Reducing GHG emissions and criteria air pollution by transitioning away from fossil fuels is one of the most important things our country and world must do to avoid the worst consequences of climate change. Even though California comprises only 1% of global GHG emissions, decarbonizing our electricity sector will set a global precedent and chart a path that other states and countries can follow.

Today, the cost to build wind and solar plants is cheaper than building new natural gas, coal, nuclear, or almost any other power option.² In addition, relying on larger amounts of zero-carbon resources will reduce California electricity customer's exposure to the price volatility of natural gas.³

Thanks to the RPS, installed renewable generation capacity in the state has nearly tripled since the first RPS was enacted in 2002. Most projects built in the last decade—almost three-quarters of the state total—are in counties with unemployment levels of 6% or higher. These new projects have created jobs and jump-started the revitalization of local economies.⁴

Let's Keep the Clean Energy Momentum Going

California—the world's sixth largest economy—has firmly established itself as a global clean energy leader by setting, achieving, and surpassing goals that at first seemed unattainable. By passing SB 100, we can keep our state's clean energy momentum going strong and show our country and the world a pathway to a healthy and sustainable future powered by 100% clean and zero-carbon electricity.

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¹ Lazard; Levelized Cost of Energy Storage; December 2016; <http://www.lazard.com/media/438042/lazard-levelized-cost-of-storage-v20.pdf>

² Lazard; Levelized Cost of Energy Analysis; December 2015; <http://www.lazard.com/perspective/levelized-cost-of-energy-analysis-100/>

³ Bollinger; Revisiting the Long-Term Hedge Value of Wind Power in an Era of Low Natural Gas Prices; 2013; <http://emp.lbl.gov/sites/all/files/lbnl-6103e.pdf>

⁴ U.S. Bureau of Labor Statistics (BLS). Unemployment rates by county: June 2015—May 2016 averages; www.bls.gov/lau/maps/twmcort.pdf