

[This is the second post in a series expressing my view of why California's actions on climate change are so important and how they will change the world. The [introductory post](#) provides an overview and some general context.]

[SB 350 \(2015\)](#) requires that California's investor and municipal owned utilities provide 50% of their customer's electricity from renewable sources by 2030, excluding power generated by nuclear and large scale hydro. Already, San Diego Gas and Electric has reached 40%, and all three investor owned utilities will meet the 33% requirement before 2020.

California has some built-in advantages for renewables - good wind, excellent solar, significant geothermal, and a relatively mild climate for much of its population. Nonetheless, the State's switch to renewable power has been swift, effective, and impactful worldwide. We are on track to have over 60% of power generated be from zero GHG sources (with nuclear and large scale hydro) in 12 years.

California passed its first renewable portfolio standard (RPS) in 2002 - an annual increase in renewables until they reach 20%. The utilities [opposed the law](#), and said that they could not meet the standard. A lot has changed. When California passed SB 350 and the 50% RPS, utilities supported the measure. In the 14 years between the two laws, utilities, the California Public Utilities Commission, the California Energy Commission, and the Independent System Operator learned a great deal about integrating renewables into the electricity grid. Wind and solar companies learned how to provide large and medium scale projects, and the price of wind and solar energy [dropped](#) by over 80% with more price reductions likely.

Germany and Spain in particular initially helped drive demand and price reduction with feed-in tariffs, but the likely biggest factor worldwide was California and the RPS. Now, solar pv prices have apparently hit [65 cents](#) a watt in India. That is world-changing. Solar and wind are competitive with coal and natural gas, without factoring in the cost of pollution generated by fossil fuels.

The next technological piece for the renewable revolution is storage. Electricity is an odd commodity. For the most part, demand and supply must be kept in constant balance, and flow in an electrical circuit. Electricity is not usually stored like wheat or soy. Power plants run when power is needed. Sun and wind are periodic and may not match the timing of electrical demand. As a result, the ability to store excess power - like in the middle of a sunny spring day - becomes essential for grids with high percentages of renewables.

In 2010, then-Attorney General Jerry Brown sponsored [AB 2514](#), authored by then-

Assemblymember Nancy Skinner, creating the first storage procurement requirement in the world. The requirement is modest, requiring 1300 megawatts by 2020 in a system with a peak of about 65,000 MW. Nonetheless, it has started yet another revolution, with dozens of companies and individuals with different storage solutions (from batteries to forced air to pumped water and beyond) vying in California for initial contracts. Other jurisdictions around the world have added similar procurement requirements, and the cost curve for storage technology has started on its sharp downward trend.

As California's and other jurisdictions' RPS requirements increase, storage will expand and prices will fall. Of all of the actions California needs to meet its 40% greenhouse gas emissions reduction requirement by 2030, we are most confident of meeting our goals in the electricity sector. And that will help the electricity sector worldwide.

Next blog: Energy efficiency in buildings.

*Ken Alex is the Director of the Governor's Office of Planning and Research, and serves as Senior Policy Advisor to Governor Jerry Brown and the Chair of the Strategic Growth Council.*

[Post slightly revised to describe opposition to California's original RPS]