

CCST ARCHIVES

Policies for California's Energy Future: How to Choose a Climate Friendly Electricity System for the Future

Report Published **OCTOBER 2014**

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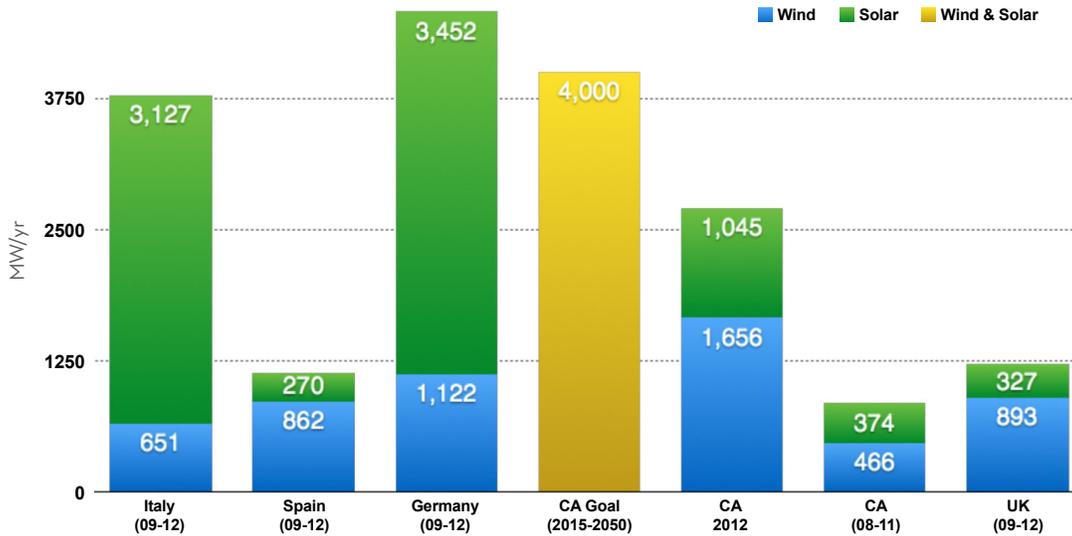


Figure: Wind and solar capacity additions: California goal vs. historic experience (MW/yr) normalized to California population. Modified from Figure 4, page 20 in the full report.

SUMMARY

This is the third publication produced as part of the California Council on Science and Technology's (CCST) **California's Energy Future - Policy (CEF-P)** project, a study designed to help inform the policy related decisions California state and local governments must make in order to achieve California's ambitious goals of significantly reducing total greenhouse gas emissions (GHG) over the next four decades.

The state can generate emission-free electricity in three ways: **renewable energy, fossil fuel with carbon capture and/or storage (CCS), or nuclear power.** There are challenges in adopting each of these approaches, including system requirements, the rate at which they can be built, and cost of building and operation. This report examines issues in **two possible scenarios**: one in which California switches to an all-renewables approach, and one in which the state adopts a mix of renewables, fossil fuel with CCS, and nuclear power.

BACKGROUND

In order to reduce GHG emissions in California by 80% below 1990 levels by 2050, electricity production would need to be almost completely emissions-free. CCST's 2011 **California's Energy Future (CEF)** study identified a number of electricity generation portfolios that would largely eliminate emissions from the electricity system while meeting expected growth in demand.

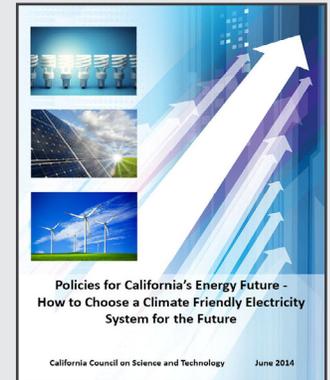
Although a wide variety of electricity choices is possible, the two most widely differing portfolios are one that is essentially all renewable

energy, and one that is roughly an equal mix of renewable energy, fossil energy with CCS, and nuclear power. The first portfolio would require that the electricity system be operated in a very different manner from today. The second would operate much like today's system, but require a concerted change in California policy on nuclear power and a new focus on CCS.

This report describes many of the issues that will impact power generation moving forward, and serves as a research agenda to support electricity choices in the future.



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For the findings, conclusions and recommendations, see the **FULL REPORT** on our website: ccst.us/publications-projects

This report is part of the **Policies for California's Energy Future** project.

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