

What's Keeping Me Up At Night: Balancing the Importance of Natural-Gas-Fired Electric Generation with California's Assembly Bill 32 and the Renewable Portfolio Standard

By Timothy Alan Simon, Commissioner, California Public Utilities Commission

Published March 19, 2012, as the monthly essay in the National Regulatory Research Institute's newsletter

California leads the nation in renewable-energy mandates, focusing on reducing carbon emissions and generating electricity from renewable sources. But should this policy continue as natural-gas prices for electricity generation fall while electricity prices from renewable-energy fuel sources continue to be the most expensive choice? This is what keeps me up at night.

In 2006, California led the nation when Governor Arnold Schwarzenegger signed the California Global Warming Solutions Act of 2006, also known as Assembly Bill 32 (Nunez/Pavley), into law. This bill established the most aggressive carbon-reduction process in the nation, bringing California to 1990-level carbon emissions by 2020. The bill's passage was celebrated by Governor Schwarzenegger, British Prime Minister Tony Blair, and New York mayor Michael Bloomberg in a satellite feed with Virgin CEO Richard Branson. Indeed, the new act was so popular that people began to talk of a Bloomberg/Schwarzenegger presidential ticket.

Knowing that electric power generation was one of the largest sources of carbon emissions in California, a race began to meet 20% of California's power needs via renewable energy sources by 2010. The plan was further set in motion by the Renewable Energy Resources Act (Senate Bill 1X2 (Simitian)), which called for achieving 33% of California's electric generation from legislatively defined renewable sources by 2020. AB32 was met with considerable fanfare, not only in California but around the world. By virtue of California's sheer size and its 23,000 MW of baseload electricity demand and 50,000 MW of peak electricity demand (CAISO Department of Market Monitoring, 2010 Annual Report), clean technology became the subject of a venture-capital rush, and the dreams of a green economy sparked a robust carbon-trading market. Carbon offsets, tradable renewable-energy credits, and green attributes became the subject of cocktail-party chatter as a cultural phenomenon defined "green" as good and renewable energy rose in California to religious-cult status.

In 2006, when California accelerated its renewable-energy push, the estimated supply of natural gas in the United States was projected to last a maximum of 50 years given declining Canadian reserves (EIA Annual Energy Outlook, 2005). Given those facts, one of California's biggest energy challenges was the multiple failed attempts to

permit liquefied-natural-gas import facilities off the coast of Ventura and Long Beach. California had already banned coal-fired generation by way of the Greenhouse Gas Emission Performance Standards Act (Senate Bill 1368, Perata, 2006). Hence, the Golden State became the most vibrant market for carbon-constrained energy generation. California's focus on climate change and global warming and the bold steps it took to resolve these environmental issues catapulted Governor Schwarzenegger to a rumored Republican presidential front-runner status, pending the passage of a proposed constitutional amendment that would allow immigrants to the United States the ability to run for president. It should be noted that the proposed referendum never actually launched. Pundits may differ in their interpretations, but probably the recession and California's growing budget crisis served as this idea's Waterloo.

As the 2008 presidential election approached, Democratic and Republican candidates spoke of the immediate need for a national energy policy, with the only distinction being whether carbon cost should be administered via a tax or through cap and trade. Senator John McCain and then-Senator Barack Obama campaigned on platforms of cap and trade and the pursuit of a national carbon market.

But that was 2008. Now, in 2012, many in the energy-policy community are looking toward a different climate-change game agent -- natural gas. Natural gas became the transformative fuel source of modern energy history in 2008 when the introduction of horizontal hydraulic fracturing, or "fracking," became widespread in West Texas in the Barnett Shale find. Horizontal hydraulic fracking actually began in 2004. It became commercially feasible on a wider scale in 2008. With lower production costs per MMBtu, horizontal drilling let producers access far more natural gas from relatively thin shale deposits (EIA, Today in Energy, July 12, 2011) with lower capital cost due to reduced rig requirements. This development was followed by the massive Marcellus Field discovery. States seeking fuel sources cleaner than coal now began to rethink long-term carbon-constrained fuel choices. As natural-gas prices declined from the historic spikes of \$13/MMBtu in 2008, more unconventional reserve finds drove prices below \$4/MMBtu levels, so that today natural-gas prices are hovering below \$3/MMBtu.

One would expect that this transformation in our understanding of the available geological resources would cause a rethinking of fuel choices in California, but this is not the case. The legislative mandates in California have dictated a 33% renewable-energy requirement, despite the cheaper prices of natural gas. This six-year series of legislative bills arguably all but guarantees that California will reduce its contributed share of global warming but will also continue to lead the nation in the cost of electricity.

Energy efficiency is the number-one loading order of California's Energy Action Plan and is expected to reduce costs by encouraging conservation. However, the goal of the most meaningful efficiency measurements and valuations is to reduce heat

consumption, which is largely supplied by natural gas -- next to energy efficiency the cheapest fuel source, even taking into account the federal EPA regulations. Given this cost reality, as a regulator concerned with the economics of providing California utility consumers with reliable, efficient, and financially acceptable electric energy, I stay up at night concerned about how this golden state I love will be able to remain competitive with an uncompetitive electric-energy pricing model.

California's highly touted cap-and-trade program under AB32 has so far garnered only four Canadian provinces as subscribers (British Columbia, Manitoba, Ontario, and Quebec). Our neighboring states have fulfilled their renewable-portfolio energy goals while at the same time maintaining significant levels of cheap coal-fired electricity generation. So worrying about how California can keep its families and businesses growing if it has to get a third of its energy from the most expensive renewable fuel source causes me insomnia. (California has seen 1.09 million jobs slip away during the past four years, equaling a loss of 750 jobs each day since September 2007 (Sacramento Business Journal, October 25, 2011)).

Complicating matters, California only allows 25% of its Renewable Energy Credits qualified for Renewable Portfolio Standard generation to come from out-of-state sources. Renewable energy is generally cheaper outside of California because of lower permitting and construction costs, not to mention less aggressive environmental regulations. So not only has our state chosen to get a proportional third of its electricity from the most expensive energy-fuel sources, but in addition, 75% of that energy must come from the most expensive location. In addition, California governor Jerry Brown has called for including 12,000 MW of distributed generation of 20 MW or less from renewable sources.

Against such visible and daunting odds, can the California model work? My answer is, "It can, but it will largely hinge on how California will deal with natural gas." Senate Bill 1368's Greenhouse Gas Emission Performance Standards require that California emissions not exceed the rate of greenhouse-gas emissions for combined-cycle natural-gas-fired electric generation. Natural gas falls below this low-carbon-fuel standard of 1,100 pounds of CO₂ per megawatt hour. This technically makes natural gas a clean fuel source, even if our current standard does not classify it as "green."

My cautious optimism that California will make its energy-efficiency model work is driven by my strong belief in and support of improved natural-gas infrastructure. In other words, through investment in smart natural-gas technologies, greater efficiencies can lower overall electric-generation cost from renewable energy sources. With lower natural-gas prices, the cost of renewable generation using natural-gas-fired firmed and shaped electricity will arguably be cheaper, because gas supply is increasing and prices are dropping. We can improve gas transmission and distribution systems through the

safety upgrades we are putting in place in the post-San Bruno and -Allentown environment. Lower gas prices and improved gas technologies have created the environment necessary to approve just and reasonable gas-infrastructure upgrades. A smarter, and consequently safer, gas system will promote greater efficiency in core supply, storage, and distribution. A smarter infrastructure will also improve coordination between intermittent renewable sources for fast-ramp combined-cycle generation, mitigating the cost of the variable output of photovoltaic panels and wind-turbine resources.

While the previous legislative mandates focused on renewable energy sources will continue to drive California's energy-procurement policies, it will be the perhaps heretical reality of the reliability and cost-containment attributes of natural gas that will preserve the "green" gold in the Renewable Portfolio Standard of the Golden State.

And that, God willing, will give us all a good night's sleep.