

Executive Summary

California is in the middle of a massive transformation in the way electricity is produced and distributed. It has embarked on an ambitious plan to modernize its electricity system from one predominantly powered by fossil fuels to one in which more than a third of all electricity will come from renewable energy resources. It is a transformation embedded in policy and legislation, one that seeks to reduce greenhouse gas emissions to reduce the impact of global warming and shrink the state's reliance on energy imports.

In 2011, the California Legislature and Governor Edmund G. Brown, Jr. expanded on that vision, signing the nation's most aggressive Renewable Portfolio Standard. California already was on an aggressive path toward a greater reliance on renewable energy as a result of earlier legislation, but the 2011 law set the bar higher – 33 percent of all retail electricity sales will come from renewable resources by 2020.

The Commission takes these policies as a starting point. The Commission's recommendations are focused on ensuring that California succeeds in this transformation. In its assessment of the state's path to achieving these goals, however, the Commission has identified concerns, which left unaddressed, increase the risk of a policy failure that California cannot afford:

- In a short period, the state has adopted a series of transformative policy initiatives, any of which taken individually would take years of careful planning to implement. The policies were adopted one at a time without the benefit of a cohesive design. Now they are being implemented simultaneously without an overarching plan.
- The state has not produced a comprehensive assessment of the total cost of implementing this group of policies, inhibiting consumers and businesses in their ability to plan for this new future.
- The state lacks the ability to impose order on the multitude of proceedings that determine how these policies unfold, order which is essential to ensuring the state maximizes progress toward each of its policies goals.

Californians have benefited from cutting-edge energy policies in the past, succeeding spectacularly in energy efficiency programs that set statewide standards for buildings and appliances. If the state can take credit for its success in energy efficiency, however, it also has to acknowledge California's bungled attempt at electricity deregulation. The debacle produced soaring costs for ratepayers and rolling blackouts. Nationwide, it marked a major setback for other attempts to modernize electricity markets and a huge bruise to California's reputation as a policy innovator.

When it comes to energy policy, details matter. The flawed design of energy deregulation policies in the mid-1990s left the electricity system open to gaming. Not only did the failed policy cost the electricity ratepayers billions of dollars, it cost Governor Gray Davis his job. Faced with sharply higher rates and power outages, Californians reached for the recall process to remove their Governor from office, only the second time in U.S. history a governor was removed via recall.¹

In this review, the Commission's greatest concerns are reliability and a lack of clarity regarding the aggregated cost of implementing California's consolidated energy policy goals. Also not clear is the degree to which meeting renewable power targets will come at the expense of California greenhouse gas reduction goals, or to system reliability.

Reliability always is a concern, but one easier to manage when a large part of a system's baseload is generated by continuously operating power plants. By contrast, electricity generation from solar panels and wind turbines is intermittent. As the sun sets and the wind dies, these generating resources require back-up power, typically gas-fired plants that can ramp up quickly to replace the renewable resource on short notice. California's energy policy-makers face significant complexity in balancing the state's portfolio so that electricity remains reliable and affordable and utilities do not over-invest in new fossil-fuel powered back-up plants.

The Commission acknowledges this complexity. At the same time, however, it believes the state must provide greater clarity to California utility customers as to how implementation of the state's new energy policies, and attendant environmental policies, will affect their electricity bills.

New and intensified calls for renewable energy will continue, given increasing gasoline prices and the growing concern expressed by many regarding the effects of greenhouse gas emissions on global warming. Those who see a linkage between carbon dioxide emissions and global warming pointed to this year's Hurricane Sandy as a

consequence of changes to the earth's atmosphere. It has been used as an example of the growing stakes in the greenhouse gas debate.

No serious discussion concerning this linkage can occur unless all parties are willing to consider the costs associated with achieving greater energy independence and reduced reliance on carbon-based fuels, as well as the costs California is likely to suffer as a consequence of global warming. Nor can we avoid consideration of the reliability issues associated with dependence on renewable sources of energy. If anything, Sandy underscored the extent to which California's grid is vulnerable to extraordinary natural disaster.

Getting it right is far more important than speed: California will not be able to boast of its transformation to renewable power if after making significant investments in the rush to meet the 2020 deadline, the state is unable to achieve its clean air and clean water goals as well.

Such a failure would undermine Californians' confidence in state government. Its reverberations would weaken environmental stewardship and innovation nationwide and beyond.

Initial Focus on Governance

The Commission embarked on this study to focus on governance and organizational structure. Commission member and State Senator Mark Wyland asked the Commission to evaluate the agencies involved with implementing the Renewable Portfolio Standard to determine whether the current, diffused organizational structure would impede the utilities' abilities to achieve the goal by 2020. The Commission has a history of assessing California's energy governance structure going back to 1974, the year the California Energy Commission was established. The Commission repeatedly has found that California has a fractured policy-making process for energy and repeatedly has recommended reform.

The Commission's most recent assessment was in 2005 when Governor Arnold Schwarzenegger delivered a reorganization plan to the Commission that would have created a Department of Energy.

In that assessment, the Commission agreed with much of the proposal but ultimately could not endorse the plan as it included a provision that was deemed unconstitutional. The Commission, however, found that "the need for leadership on energy is essential and cannot be ignored."

The passage of numerous measures to promote independence from electricity producers outside California's borders and to reduce

greenhouse gas emissions in the years since 2005 only underscored the need for leadership.

The governance question, then, was whether California had the organizational structure in place to achieve these goals. The Commission held two public hearings in the fall of 2011, during which witnesses described a system structure that was not ideal, although all seemed to agree the Renewable Portfolio Standard could be achieved by 2020, despite shortcomings in structure. Some were confident the state could exceed that level by the deadline.

The Commission was told repeatedly that reorganization at this stage likely would disrupt progress that has been made, as it would generate litigation and additional uncertainty that would make it more difficult to attract financing for projects.

Though the Commission was assured that the existing organizational structure would not prevent the state from achieving its ambitious renewable goals, testimony from the witnesses sparked serious concern regarding costs and reliability of electricity as the state moves toward greater reliance on renewable energy.

The Commission learned that little has been done to assess and communicate the costs and benefits of the numerous laws that will affect electricity rates for years to come. As a result, the Commission scheduled a third hearing in February 2012 to focus on costs and reliability.

How Much Will It Cost?

The Commission is concerned that the Renewable Portfolio Standard is being implemented simultaneously with numerous other far-reaching policies, including greenhouse gas reduction and the associated cap-and-trade program; regulations to reduce the use of coastal water to cool power plants; the expansion of distributed electricity generation to 12,000 megawatts; and potential regulations dictating water flow from the state's hydroelectric facilities to improve the health of the Delta's ecosystem. On its own, each policy or regulation could influence electricity rates and reliability. Combined, the impact is far greater.

Until very recently, the cost of renewable energy has exceeded the cost of energy produced by plants powered by fossil fuels. Witnesses expressed concerns that in the rush to integrate renewables, the state, specifically, the California Public Utilities Commission (CPUC), was approving power purchase agreements that lock in peak renewable generating costs for

the three large investor-owned utilities that provide electricity to approximately three-fourths of all California customers. The power purchase agreements approved by the CPUC remain secret for three years and it will be a few years before the bulk of the already approved renewable projects come online and their costs are built into electricity rates. Until that time, consumers remain in the dark as far as how much the renewable energy contracts will affect their future electricity bills.

The CPUC Division of Ratepayer Advocates, which represents consumers during the power purchase agreement approval process, has publicly voiced concern over the costs of the long-term contracts. In a February 2011 report, the division expressed concerns that urgency to comply with the Renewable Portfolio Standard created inelastic demand for renewables that was driving very high prices.² In February 2012 testimony to the Commission, the acting executive director of the division said that the CPUC had accepted all but two of 170 contracts and that they were still looking at overpriced contracts.³

CPUC Commissioner Michel Florio expressed serious concerns about the value of three renewable energy contracts that were before the commission for approval in May 2012. “I am a strong supporter of California’s RPS goals, but at the same time I believe we can achieve those goals in a far more cost-effective manner,” Commissioner Florio wrote in his dissent to approve the contracts.

“I want to go beyond 33 percent, but we will not be able to do that if we break the bank beforehand.”

Michel P. Florio,
Commissioner,
California Public
Utilities Commission

Previous Estimates Out-of-Date

CPUC staff, working with outside consultants, earlier attempted to come up with a projection of what it would cost to implement the 33 percent renewable goal by 2020. A 2009 staff report indicated that total statewide electricity expenditures would be 10.2 percent higher if the state pursued the 33 percent goal rather than rely on additional investments in natural gas plants.⁴

Much has changed since the 2009 assessment. The costs of photovoltaic panels dropped dramatically in 2011 and 2012 as a result of a market glut from Chinese manufacturers. A February 2012 report from the CPUC, the first since legislation was passed in 2011 requiring reporting of aggregate costs of renewable contracts, indicated bids for power purchase agreements showed “significantly lower costs than bids from the past few years, which will be reflected in future IOU (investor-owned utilities) contracts.”⁵ At the same time, however, natural gas prices have plummeted, so even with the fall of renewable costs, the premium remains. While the Commission appreciates the difficulty in trying to model future fuel prices, the tools exist to incorporate different scenarios

and to illuminate the costs of trade-offs. What has been missing is the political will to develop and update an analysis that should be essential to a strategy for achieving the state's goals while avoiding unnecessary costs.

Most agree that utility customer rates will likely rise as a result of implementing the Renewable Portfolio Standard. Less clear is the significant risk that these rate increases will fall more heavily on some than others. Although low-income electricity customers and some with certain medical conditions are shielded from high costs, those who do not benefit from those protections and who use more electricity than others – particularly those in the Central Valley who run air conditioning more than do those on the temperate coast – effectively subsidize those who consume less. The California Public Utilities Commission has begun a proceeding to evaluate rate tiers in California. Without changes, some will unduly bear the burden of the inevitable rate increases more than others.

Demand response also can play a greater role than it has in the past to contain costs and rein in demand. Designing programs that empower electricity consumers to better manage their electricity use and control costs not only will help offset rising costs, but also can improve reliability and grid management.

Other cost drivers include trade-offs made in crafting the 2011 Renewable Portfolio Standard. The law favors in-state electricity production over potentially cheaper renewable energy produced outside of California. The goal was to bring new, green jobs to California to build, install and operate new power plants. Some contend that this preference for in-state renewable plants limits imports of renewable energy from other parts of the West while also limiting California exports.

Concerns also have been expressed that the utilities have not pursued and procured a diversified portfolio of renewable energy projects, and have paid scant attention to geothermal power, which offers greater reliability, as well as biomass generation.

Keeping the Lights On

Paramount in bringing such a large load of renewable energy onto the grid is keeping the lights on in California. The state's growing reliance on intermittent renewables presents an immense challenge for those operating the grid. The California Independent System Operator (CAISO), a public benefit corporation that manages electricity transmission for about 80 percent of California electricity customers, has noted swings of

as much as 800 megawatts in wind power in a half hour, power which must quickly be replaced by another energy source.⁶

Future technology breakthroughs in storage devices likely will provide a solution to some of the intermittency issues. Electric cars also can play a role, if charged in the mid-afternoon when solar peaks while electricity use is still low or at night when the wind picks up but consumption goes down.

Integrating an estimated 13,000 megawatts of new renewable energy coming online over the next decade is a highly complicated task. A senior CAISO representative also described the challenge of maintaining reliability when approximately 12,000 megawatts of fossil fuel-generated electricity is taken out of the system as utilities comply with recently-adopted water quality regulations.⁷

As the renewables are being brought online, California utilities are simultaneously complying with regulations adopted in 2010 by the State Water Resources Control Board. The new rules require either shutting down or retrofitting 19 coastal power plants (including the state's two nuclear plants) that use billions of gallons of ocean water every day to cool steam for generating electricity, a process harmful to sea life. The rules are designed to be implemented over the span of a decade, though the schedule can be modified if reliability is threatened.

Unexpected Complication

The CAISO has been highly effective at balancing power and avoiding rolling blackouts since the 2000-01 energy crisis, but the unexpected shutdown of both operating units at the San Onofre nuclear plant in January 2012 revealed California's continued vulnerability to power outages, particularly in coastal Southern California.

Radioactive leaks in steam generation tubes caused by premature wear forced the units' shutdown, taking approximately 2,200 megawatts of power, or enough to power about 1.4 million households, out of the system. Though no one had planned for an unscheduled outage of both San Onofre operating units, the CAISO partnered with numerous other state and local agencies to quickly to replace the lost capacity and restore voltage support for the peak-load summer of 2012.⁸ With San Onofre's fate still up in the air, the CAISO already is planning for its continued outage for summer 2013.

Although some light will be shed on renewable contract costs in the coming years, no one has yet attempted to assess, in the aggregate, the impact that all the recent laws and regulations will have on electricity

costs. The authority to guide and regulate California's energy transformation is diffused across several organizations. In places, their authorities overlap, yet gaps in authority exist as well. The members of the boards and commissions who implement these policies are appointed by the Governor, putting the ultimate responsibility for outcomes in the Governor's hands. Californians have a right to know what they can expect to pay for electricity as policies affecting electricity are implemented. The Governor must make this a priority or risk ratepayer revolt and the potential loss of public support for California's environmental policy goals.

Cohesive Strategy Needed

The Legislature has set an ambitious agenda for clean energy. But an agenda is not an action plan.

While California boasts separate policies for energy efficiency, greenhouse gas emissions, renewable energy, demand response initiatives and other environmental regulations, it has failed to take the important step of integrating and coordinating these policies.

State policies affecting electricity have been piled upon each other piecemeal, an accretion without design, a monument both to the state's lack of a comprehensive energy plan and the nature of the legislative process.

If the state has been lax in providing a public accounting of the cumulative costs of its policies, it also has failed to take an overarching view of how all these separate pieces might fit into a comprehensive, cohesive energy strategy. Such a strategy necessarily would include clearly delineated priorities to ensure that policies are not working at cross-purposes and that California achieves its environmental stewardship goals.

California has benefitted from the Energy Commission's "loading order" approach for meeting the state's energy needs. This loading order has helped avoid costly investments by seeking other less expensive energy sources first. At the top has been energy efficiency and demand response, yet the state is still grappling with electricity rate tiers designed a decade ago during the height of the electricity crisis. As structured, the tiers limit California's ability to move forward with time-of-use pricing for residential customers. The California Public Utilities Commission took important action to introduce a smart meter strategy to lay the groundwork for better customer demand response. The commission reacted to missteps in early deployment by giving residential

customers an opportunity to opt out of smart meter installation. In doing so, the CPUC lowered the potential energy savings that could be achieved through the program and, ultimately, a way for customers to better manage their energy use.

It's Time for a Timeout

Witnesses in the Commission's study process said repeatedly that they are working to implement the state's goals, but they complained that California energy regulators, utilities and stakeholders are trying to do too much at once under a deluge of new policies. The number and complexity of these new policies leave scant time to sift or prioritize actions to ensure success.

Since 2003, California's Renewable Portfolio Standard has undergone a major legislative re-write every two to three years. Such shifts in public policy makes investors wary. It can take five to seven years or more to bring a new generating plant online and seven to 10 years to develop new transmission. In testimony, the executive director of the Independent Energy Producers Association told the Commission, that "constantly changing public policies put projects at risk to investors which comes with an economic impact."⁹

The Commission was told repeatedly that the state needs to stop sprinting forward on so many fronts and take a moment to collectively catch its breath.

Bob Foster, mayor of Long Beach and currently the chair of the California Independent System Operator, told the Commission at a February 2012 hearing that what California really needs now is a "timeout" on new energy mandates. This sentiment was echoed by other witnesses at the Commission's public hearing.

To prioritize current and future energy goals, the Governor, through a public process, must lead an effort to develop an overarching energy strategy. Until such a plan is in place, the Governor and the Legislature should enforce a moratorium on new energy-related mandates.

Leadership Lacking

The Commission began this study not only to assess the roles of the California Public Utilities Commission, the California Energy Commission and the California Independent System Operator, but also those organizations whose actions influence energy, such as the California Air Resources Board and the State Water Resources Control Board

"Let's work on what we have and understand the consequences, get to a reasonable level and not add any new requirements right now."

Bob Foster, Mayor of Long Beach and Chair, California Independent System Operator

The Commission has had concerns with the state's energy organizational structure for decades. In a 1974 review of the California Public Utilities Commission, the Commission recognized the critical importance and need for close coordination between the CPUC and the then-new California Energy Commission.

Though a legal flaw forced the Commission to return Governor Schwarzenegger's 2005 reorganization plan, the Commission generally supported the plan's main concepts as it would have consolidated energy-related programs in a new Department of Energy led by a secretary reporting directly to the Governor.

Importantly, the structure proposed in 2005 would have filled a leadership void. Currently, the Governor does not have a senior energy representative with the authority and resources to guide policy, develop strategy and improve implementation. The essential importance of energy to the economy, environment and the safety and stability of California communities suggests the need for one official who is accountable and responsible for guiding executive decisions.

The Commission was told that since the 2005 reorganization plan proposal, coordination among key agencies has improved. Paul Clannon, executive director of the California Public Utilities Commission, told the Commission, "planning is about 100 percent better than it was seven years ago."

The progress made in communication and coordination was articulated repeatedly. Witnesses pointed to California's Clean Energy Future effort, which brought together the Office of the Governor, the Public Utilities Commission, the Energy Commission, the Air Resources Board, the California Independent System Operator and the California Environmental Protection Agency to develop strategies and targets to achieve the state's ambitious energy and environmental goals.

The Commission was told that much of the progress in coordination also has been a function of the long relationships those in leadership roles have forged over decades as California was establishing its reputation as an energy policy innovator. Basing expectations of continued successful cooperation upon personalities and the players currently in place takes for granted that they will always be there.

The state still lacks a permanent energy leader to ensure all the players with complementary, sometimes competing missions work together toward state goals.

The Commission applauds the efforts achieved to improve communication and coordination and recognizes the potential disruption of a structural reorganization. The current approach, however, lacks accountability, clarity and sustainability.

Ultimately, accountability for ensuring an affordable and reliable electricity supply lies with one individual in California – the Governor. Both Governor Schwarzenegger and Governor Brown, through a senior advisor with the authority of the Governor’s Office, have succeeded in corralling key energy players to help the state achieve its renewable energy goals.

Michael Picker, the Governor’s senior advisor for renewable energy projects, has led the Renewable Energy Action Team and shepherded dozens of projects through federal, state and local red tape to get the state on track to achieve its renewable energy goals, mainly by bringing key players into the room.

The Governor should expand his leadership role to ensure the state integrates implementation of its various initiatives, so that it both meets its renewable energy goals and maximizes progress on reducing greenhouse gas emissions. The state also must integrate its ongoing work to meet federal clean air and clean water requirements into this energy strategy. The Office of the Governor must lead the effort to assess the total cost of these policies for consumers and to ensure that California can both meet its environmental goals and guarantee reliability. As part of this effort, the Governor should direct the development of a plan that outlines the state’s energy strategy, prioritizes its energy goals and sequences implementation.

Managing a vital resource that affects the lives and livelihoods of all Californians, however, requires a permanent leadership structure. In the end, the Commission found organizational reform is still essential. The Commission recommends that the Governor and the Legislature develop a plan to modernize California’s energy governance and organizational structure.

Because so much is at stake and the consequences of failure so high, the Little Hoover Commission is committed to continued oversight of progress in achieving California’s energy and environmental goals. As such, the Commission has committed itself to holding public hearings and meetings in 2013 and beyond until its concerns and recommendations, outlined on the following pages, are addressed.

“The Model: Get everyone together. Cut through the red tape to get it done.”

Michael Picker, Senior Advisor to the Governor for Renewable Energy Facilities

Recommendation 1: The Governor, through executive order, should direct the California Energy Commission, the California Public Utilities Commission, the California Air Resources Board, the State Water Resources Control Board and other appropriate executive branch organizations to address the following concerns raised by the Little Hoover Commission in a timely manner, as indicated:

- How much in the aggregate will recent major policies related to energy affect electricity reliability and rates, and are these policies achieving California's stated environmental and economic goals? The assessment should identify and quantify trade-offs involved when aspects of one goal conflict with another. The major policies, and their implementing regulations, that should be assessed in the aggregate include:
 - ✓ California Renewable Energy Resources Act of 2011
 - Renewable energy plant development costs
 - Transmission costs
 - Back-up generation costs
 - ✓ Global Warming Solutions Act of 2006
 - ✓ State Water Resources Control Board Once-Through Cooling Regulations
 - ✓ Governor's goal to build 12,000 megawatts of localized electricity generation
 - ✓ The Commission requests that this assessment be completed in six months and updated annually.
 - ✓ Additional major policies, as they are implemented, such as the State Water Resources Control Board's flow criteria required for the Delta ecosystem sustainability, should be added to the annual assessment.
- What portion of consumers' electricity bills can and will be attributed to major repairs, upgrades and new construction of all electricity generating plants and electricity transmission in California?
 - ✓ The California Energy Commission should develop guidelines for all the publicly-owned utilities and the California Public Utilities Commission should require all of the utilities it regulates to provide and include an easy-to-understand chart with their customers' bills and posted on their websites that shows the breakdown of all the costs reflected in the retail price of electricity.
 - ✓ The Commission requests that these charts be completed in six months and updated annually.
- As the California Public Utilities Commission develops rules to transition ratepayers to time-of-use and dynamic pricing, the state should identify additional barriers that need to be overcome so that California consumers can better manage their energy use and take advantage of fiscal incentives to reduce and strategically time energy consumption. This assessment should include a roadmap and deadlines for implementation.

- ✓ The Commission requests that this assessment be completed in six months.

Recommendation 2: The Governor, through a public process, should establish a comprehensive plan to prioritize current and future energy goals. The plan should identify what actions need to be taken and in what order to maximize progress toward the stated goals.

- ❑ The plan should include guidelines to ensure that proposed legislation is consistent with the goals of the plan.
- ❑ Until the state develops a strategic energy plan, the Governor, through use of veto power, or the Legislature, through its policy committees, should enforce a moratorium on new energy-related mandates.
 - ✓ The Commission requests that this strategy be completed in 18 months.

Recommendation 3: The Governor and the Legislature should develop a plan to modernize energy governance. Organizational reform ultimately is essential if the state is to realize its manifold energy and environmental goals and reduce the risk of another profoundly expensive policy failure.

- ❑ The plan should identify what steps are necessary to restructure the state's energy governance, including options that can occur with and without a Constitutional amendment.
- ❑ The process should give careful consideration to the establishment of a Secretary of Energy, reporting to the Governor, and the consolidation of all energy policy under one agency or commission, with the Secretary of Energy serving as agency secretary or commission chair.
 - ✓ The Commission requests that this strategy be completed in 24 months.

