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Why California Failed to Meet Its RPS Target

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Deborah Behles *

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I. Introduction

Congress and states are developing and implementing plans to mitigate the impact of climate change through measures that reduce greenhouse gases. Many of these efforts are focused on the electrical generation industry since approximately 40% of carbon dioxide emissions in

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the United States are created from burning fossil fuels to generate electricity.¹ To reduce the greenhouse gases produced by the electrical industry sector, many greenhouse reduction plans have required increased generation of electricity through renewable, less-polluting, resources.² In fact, the majority of states have now enacted a "renewable portfolio standard" ("RPS"),³ which mandates electric utilities to obtain a percentage of their power from renewable resources.⁴ Congress has attempted to follow suit by proposing several different versions of legislation for a national RPS.⁵

One of the most aggressive RPS requirements is in California, which requires 20% of the state's energy to be generated from renewable resources by 2010 and 33% by 2020.⁶ Although California has expended significant resources towards meeting its RPS, it did not meet its 20% goal by 2010.⁷ Despite failing to meet its RPS targets, California utilities have justified continuing to build many new natural gas facilities by arguing that more natural gas capacity is necessary to backup renewables. California's large natural gas capacity, however, was not necessary for meeting its 20% RPS target. Indeed, this building rush has resulted in California currently operating at an extraordinarily high reserve margin, which is forecasted to be 34.5% during the summer's peak of 2010 (only 15% to 17% is necessary for

1. See Energy Info. Agency, *Electricity and the Environment* (Dec. 9, 2010), http://www.eia.doe.gov/energyexplained/index.cfm?page=electricity_environment.

2. See B. Metz, et. al., INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, SUMMARY FOR POLICY MAKERS, CLIMATE CHANGE 2007: MITIGATION, CONTRIBUTION OF WORKING GROUP III TO THE FOURTH ASSESSMENT REPORT OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE (2007) (recommending that policy makers reduce reliance on fossil fuel generated electricity as part of any climate change mitigation plan).

3. See, e.g., Pew Center for Climate Change, *Renewable and Alternative Energy Standards*, http://www.pewclimate.org/what_s_being_done/in_the_states/rps.cfm (last updated Dec. 14, 2009) (noting that some states refer to their standards as Alternative Energy Standards rather than Renewable Portfolio Standards).

4. See U.S. Dep't of Energy, *States with Renewable Portfolio Standards*, http://apps1.eere.energy.gov/states/maps/renewable_portfolio_states.cfm (last updated June 16, 2009); see also Pew Center for Climate Change, *Renewable and Alternative Energy Standards*, available at http://www.pewclimate.org/what_s_being_done/in_the_states/rps.cfm (last updated Dec. 14, 2009).

5. See American Clean Energy and Security Act of 2009, H.R. 2454, 111th Cong. §§702-03 (2009); see also H.R. 3221, 110th Cong., Subtitle H, § 9211 (2008). The 2007 national RPS bill passed the House of Representatives on August 4, 2007, but a similar version did not pass in the Senate.

6. See *infra* at Section I (summarizing California's requirements); see also Cal. Pub. Utils. Comm'n, *California Renewable Portfolio Standards*, <http://www.cpuc.ca.gov/> (last visited Mar. 13, 2011).

7. See Cal. Pub. Utils. Comm'n, *Renewables Portfolio Standard Quarterly Report*, (4th Q. 2010) at 2, available at <http://www.cpuc.ca.gov/NR/rdonlyres/CFD76016-3E28-44B0-8427-3FABIAA27FF4/0/FourthQuarter2010RPSReporttotheLegislature.pdf>.

backup).⁸

Not only is this large natural capacity expensive for California ratepayers, it inhibits renewable development. To meet its RPS in the future, California will need to change course and stop doing business as usual. California is not alone in its failure to meet its renewable requirements. Other states will also likely fail to meet their renewable standards⁹ and can learn from California's experience.

This article will examine and describe some reasons why California did not meet its renewable target in 2010. California's failure is attributable to the confluence of several factors that resulted in the procurement of large amounts of new natural gas facilities despite not meeting renewable requirements and already high reserve margins. Three prominent reasons for California's failure to meet its RPS are decentralized administration of its RPS program, the lack of strong enforcement provisions, and California's extensive reliance on utility information instead of an independent analysis. Moving forward, California should enact enforceable clear requirements that are administered by one centralized agency, which conducts an independent assessment of renewable policies and goals.

II. Background

A. Renewable Portfolio Standards Generally

Renewable Portfolio Standards require that a certain percentage of electricity production be generated from renewable energy sources.¹⁰ Initial discussions related to developing and designing a RPS began in California in 1995.¹¹ Although California's RPS was not adopted until 2002, these initial discussions spurred national interest and several states adopted RPS requirements in the late 1990s.¹²

8. See Cal. Indep. Sys. Operator, 2010 Summer Peak Forecast, <http://www.caiso.com/2793/2793ae4d395f2.pdf>.

9. See B. RABE, PEW CENTER ON GLOBAL CLIMATE CHANGE, THE EXPANDING ROLE OF U.S. RENEWABLE PORTFOLIO STANDARDS (2006) (discussing how Massachusetts and Nevada were behind in compliance with their renewable standards).

10. See U.S. Dep't of Energy, *States with Renewable Portfolio Standards*, http://apps1.eere.energy.gov/states/maps/renewable_portfolio_states.cfm#chart (last updated June 16, 2009).

11. See Cal. Pub. Utils. Comm'n, *Renewables Working Group to the California Public Utilities Commission*, CPUC No. 50-96-08 (Aug. 1996). Minnesota and Iowa had renewable policies that predate this discussion, but they were only later labeled RPS policies. See R. Wiser & C. Namovich, Lawrence Berkeley Nat'l Lab., *Renewable Portfolio Standards, A Factual Introduction to Experience in the United States 1-2* (Apr. 2007) (discussing the history of RPS development), available at <http://eetd.lbl.gov/ea/ems/reports/62569.pdf>.

12. *Id.*

RPS policies have been promulgated mostly through legislation.¹³ The majority of states in the United States now have some form of a RPS with various requirements and enforcement provisions.¹⁴ As of October 2010, thirty-five states had some sort of RPS requirement or goal.¹⁵ Some states, however, only have voluntary requirements.¹⁶

RPS requirements can vary greatly in their structure, size, application, coverage of types of renewable energy, and administration.¹⁷ For example, some RPSs specify that renewable energy must be based on total generation while others are calculated on installed capacity.¹⁸ RPS policies also differ in the types of renewable resources that are covered. Some renewable resources such as wind, solar, and geothermal, are eligible in the majority of states, but others, such as biomass and hydropower, vary greatly from state to state.¹⁹ RPS requirements generally apply to investor owned utilities and sometimes also to publicly owned utilities.²⁰

A number of purposes have been suggested for RPS policies including lowering energy prices and encouraging innovation.²¹ The primary stated purpose of RPSs is motivating renewable energy development to achieve

13. *Id.* (noting that a few states have also adopted RPS policies through regulations and voter initiatives).

14. See C. Fischer & L. Preonas, Res. for the Future, *Combining Policies for Renewable Energy: Is the Whole Less than the Sum of Its Parts?* at 5 (Mar. 2010).

15. See Pew Center for Global Climate Change, *Renewable and Alternative Energy Portfolio Standards*, available at http://www.pewclimate.org/what_s_being_done/in_the_states/rps.cfm (last updated Oct. 27, 2010).

16. For example, North Dakota, South Dakota, and Utah have voluntary requirements. See U.S. Dep't of Energy, *States with Renewable Portfolio Standards*, http://apps1.eere.energy.gov/states/maps/renewable_portfolio_states.cfm#chart (last updated June 16, 2009).

17. *Id.* R. Wiser & C. Namovich, Lawrence Berkeley Nat'l Lab., *Renewable Portfolio Standards, A Factual Introduction to Experience in the United States* (Apr. 2007) (describing how these design differences are important because they allow the states to serve as laboratories).

18. See, e.g., U.S. Dep't of Energy, *States with Renewable Portfolio Standards*, http://apps1.eere.energy.gov/states/maps/renewable_portfolio_states.cfm#chart (last updated June 16, 2009) (noting that Texas's RPS is based on total capacity while California's RPS is based on generation).

19. R. Wiser & C. Namovich, Lawrence Berkeley Nat'l Lab., *Renewable Portfolio Standards, A Factual Introduction to Experience in the United States* (Apr. 2007).

20. See U.S. Dep't of Energy, *States with Renewable Portfolio Standards*, http://apps1.eere.energy.gov/states/maps/renewable_portfolio_states.cfm#chart (last updated June 16, 2009); R. Wiser & C. Namovich, Lawrence Berkeley Nat'l Lab., *Renewable Portfolio Standards, A Factual Introduction to Experience in the United States* (Apr. 2007).

21. See, e.g., Nat'l Comm'n on Energy Pol'y, *Energy Policy Recommendations to the President and the 110th Congress* (Apr. 2007).

environmental enhancement and increased energy security.²² Studies have shown that RPS standards can achieve this goal by motivating renewable energy development.²³

California's RPS is one of the most aggressive in the United States, which is not that surprising since California has often taken a leadership role in energy issues.²⁴ Indeed, California has already enacted multiple measures that require reductions in emissions of greenhouse gases. In particular, it requires new power plants to meet an emissions performance standard for carbon dioxide.²⁵ In addition, California's climate change requirements are considered more detailed and comprehensive than the requirements in other states.²⁶

B. California's Renewable Portfolio Standard

In 2002, the California Legislature established California's first RPS, which required that 20% of energy from its investor-owned utilities come from renewable resources by 2017.²⁷ This initial RPS was later accelerated in 2006.²⁸ California's RPS now requires that 20% of energy come from renewable resources by the end of 2010.²⁹ Renewable resources include solar, wind, small hydro, and biomass facilities.³⁰ The RPS Program also requires utilities to increase procurement from renewable energy resources by at least 1% of their retail sales annually, until they reach 20% by 2010.³¹ California law further mandates a reduction in greenhouse gas emissions to

22. See D. Hurlbut, Nat'l Renewable Energy Lab., *State Clean Energy Practices: Renewable Portfolio Standards* at 2 (July 2008).

23. See M. Fredric & S. Vachon, *The Effectiveness of Different Policy Regimes for Promoting Wind Power: Experience from the States*, 34 ENERGY POLICY 1786 (2006).

24. See, e.g., Ann E. Carlson, *Energy Efficiency and Federalism*, 107 MICH. L. REV. FIRST IMPRESSIONS 63, 70 (2008) (discussing California's energy efficiency decisions to go beyond federal requirements).

25. S.B. 1368, 2005-06 Leg., Reg. Sess. (Cal. 2006); see also Cal. Energy Comm'n, *Discussion of Senate Bill 1368*, available at http://www.energy.ca.gov/emission_standards/index.html.

26. See B. RABE, STATEHOUSE AND GREENHOUSE: THE EMERGING POLITICS OF AMERICAN CLIMATE CHANGE POLICY 141-43 (2004). Other states, however, have adopted requirements for greater reductions than in California.

27. See S.B. 1078, 2001-02 Leg., Reg. Sess. (Cal. 2002).

28. S.B. 107, 2005-06 Leg., Reg. Sess. (Cal. 2006).

29. *Id.* (allowing utilities to have a three year compliance period if they fail to meet the target).

30. CAL. PUB. UTIL. CODE § 399.12 (2010).

31. CAL. PUB. UTIL. CODE § 399.11 (2010).

1990 levels by 2020.³² The cornerstone of the state's plan for meeting this greenhouse gas requirement is the RPS.³³ Consequently, achieving the RPS has been called a central goal of California and its agencies.³⁴

In November 2008, Executive Order S-14-08 further accelerated California's 20% RPS goal by requiring that "all retail sellers of electricity"³⁵ serve their load with 33% of energy coming from renewable energy by 2020.³⁶ Consistent with these requirements, California has enacted an energy action plan, which prioritizes energy efficiency and renewable energy over fossil fuel generation.³⁷

The California Public Utilities Code articulates a wide range of purposes of the RPS requirements including promoting stable electricity prices, protection of public health, improvement of environmental quality, stimulation of sustainable economic development, creation of new employment opportunities, and reduced reliance on imported fuels.³⁸ California agencies have articulated other reasons for increasing renewable procurement including concerns about the reliability and price fluctuation of

32. CAL. HEALTH & SAFETY CODE § 38500, *et. seq.* (2010); *see also* Press Release from Office of the Governor: Gov. Schwarzenegger Signs Executive Order to Advance State's Renewable Energy Portfolio Standard to 33 Percent by 2020 (Sept. 15, 2009).

33. Cal. Pub. Utils. Comm'n, *Decision Re Integration of Greenhouse Gas Emissions Standards into Procurement Policies*, D.08-10-037 at 3 (Oct. 16, 2008), *available at* http://docs.cpuc.ca.gov/published/FINAL_DECISION/92591.htm ("We emphasize that the foundation for success to reduce GHG emissions in the electricity sector is more energy efficiency and further development of renewable energy sources such as wind, solar, geothermal, and biomass."); *id.* at 4 ("Renewable resources are essential for reducing GHG emissions and reaching AB 32 goals, and are a crucial aspect of the future low-carbon economy that will be required to meet California's 2050 climate goals.").

34. CAL. PUB. UTIL. CODE § 701 (2010); *see also* § 701.3; § 701.4 ("It is the policy of the state and the intent of the Legislature that state and municipal electric resource acquisition programs recognize and include a value for the resource diversity provided by renewable resources."); Cal. Pub. Utilities Commission, *Decision D.07-12-052* at 42, 74 (Dec. 20, 2007), *available at* http://docs.cpuc.ca.gov/word_pdf/FINAL_DECISION/76979.pdf (recognizing the importance of achieving the renewable standards).

35. In contrast, the 20% requirement only applies to investor-owned utilities. CAL. PUB. UTIL. CODE § 399.11 (2010).

36. Cal. Executive Order S-14-08 (Nov. 17, 2008), *available at* <http://gov.ca.gov/executive-order/11072>; *see also* S.B. 2X1, 2010-11 Leg., Reg. Sess. (Cal. 2011) (bill currently under consideration by the California legislature that would mandate the 33% RPS requirement).

37. Cal. Pub. Util. Comm'n, *Integrate and Refine Procurement Policies Underlying Long-Term Procurement Plans*, Rulemaking 08-02-007 (Feb. 14, 2008), *available at* http://docs.cpuc.ca.gov/word_pdf/FINAL_DECISION/78966.pdf.

38. CAL. PUB. UTIL. CODE § 399.11(b) (2010).

natural gas.³⁹ For example, the RPS mitigates “the risk of relying heavily on natural gas by reducing demand for natural gas for power generation through greater reliance on renewable generation.”⁴⁰ Thus, lowering the reliance on natural gas through a higher RPS “would mitigate consumers’ exposure to natural gas price risk likely to come as demand for natural gas intensifies and supply diminishes.”⁴¹

Furthermore, increased procurement of fossil fuel resources could crowd out renewables. The California Public Utilities Commission has warned that a utility should not “crowd out preferred resources and/or systematically over procure.”⁴² As it further stated, “AB 32 and Senate Bill (SB) 1368, California’s Climate Change laws, provid[e that] . . . procurement must now consider carbon risk when filling net short positions with fossil resources, so as not to ‘crowd out’ preferred resources.”⁴³

Several agencies have responsibilities related to the implementation of the RPS including the California Public Utilities Commission, the California Energy Commission, and the California Air Resources Board. The California Public Utilities Commission (“CPUC”) has authority to take all “appropriate action” to ensure that utilities meet the RPS goal.⁴⁴ As part of its responsibilities, California law requires the CPUC to “ensure that the most cost-effective and efficient investments in renewable energy resources are vigorously pursued.”⁴⁵ In this pursuit, the CPUC’s long term goal is “a fully competitive and self-sustaining supply of electricity generated from renewable sources.”⁴⁶ In pursuit of this goal, the CPUC started incorporating the 33% target as a policy goal in 2009.⁴⁷ For local publicly owned electric

39. Cal. Pub. Utils. Comm’n, *Decision Re Integration of Greenhouse Gas Emissions Standards into Procurement Policies*, D. 08-10-037 at 3 (Oct. 16, 2008).

40. Cal. Pub. Utils. Comm’n, *Decision Re Policies and Cost Recovery Mechanism for Generation Procurement and Renewable Resource Development Respondents: Pacific Gas and Electric Company, et. al.*, D. 04-01-050 at 65 (Jan. 22, 2004), available at http://docs.cpuc.ca.gov/word_pdf/FINAL_DECISION/33625.pdf.

41. Cal. Pub. Utils. Comm’n *Decision, Re Integration of Greenhouse Gas Emissions Standards into Procurement Policies*, D. 08-10-037 at 42 (Oct. 16, 2008).

42. Cal. Pub. Utils. Comm’n, *Decision 07-12-052* at 42 (Dec. 20, 2007).

43. Cal. Pub. Utils. Comm’n, *Rulemaking 08-02-007* at 1 (Feb. 14, 2008).

44. See CAL. PUB. UTIL. CODE §§ 399.13, 399.14(e), 399.15(a) (2010).

45. CAL. PUB. RES. CODE § 25740.5(a) (2010).

46. CAL. PUB. RES. CODE § 25740.5(b) (2010).

47. Cal. Pub. Util. Comm’n, *Rulemaking 08-08-009* (Dec. 17, 2009); Cal. Pub. Util. Comm’n, *Decision 09-12-041* (Dec. 17, 2009), available at http://docs.cpuc.ca.gov/word_pdf/FINAL_DECISION/111795.pdf; see also Cal. Pub. Util. Comm’n, *Final Opinion on Greenhouse Gas Regulatory Strategies*, *Decision 08-10-037* at 92 (Oct. 16, 2008) (“We pledge to use our best efforts and to support the efforts of others to achieve 33% renewables by 2020.”).

utilities, their own governing body, rather than the CPUC, enforces the RPS.⁴⁸ These local publicly owned electric utilities and investor owned utilities are both required to submit annual reports detailing their progress toward meeting the RPS to the CEC.⁴⁹

Despite its efforts, California has consistently failed to meet its RPS goals, and did not meet its 20% target by the end of 2010.⁵⁰ Recent estimates show that only around 18% of California's electricity came from renewable sources in 2010.⁵¹ In addition, renewable deliveries in California only increased 1.4% since the RPS was promulgated in 2003 and 2009.⁵² Notably, between 2002 and January 2007, only 242 megawatts ("MW") of additional renewables came on-line.⁵³ Consequently, there were "several years of fairly static energy production from renewable resources."⁵⁴ More recently, the percentage has increased because California utilities have signed short-term contracts with out of state resources.⁵⁵ In the event that a utility fails to meet its RPS mandates, the California Public Utility Code requires the utility to "procure additional eligible renewable energy resources in subsequent years to compensate for the shortfall."⁵⁶

48. CAL. PUB. UTIL. CODE § 387(a) (2010) ("Each governing body of a local publicly owned electric utility, as defined in Section 9604, shall be responsible for implementing and enforcing a renewable portfolio standard that recognizes the intent of the Legislature to encourage renewable resources, while taking into consideration the effect of the standard on rates, reliability, and financial resources and the goal of environmental improvement.").

49. See CAL. PUB. UTIL. CODE § 387(b) (2010).

50. See Cal. Indep. Sys. Operator, *Integration of Renewable Resources, Operational Requirements and Generation Fleet Capability at 20% RPS*, at 1 (Aug. 2010); Cal. Pub. Utils. Comm'n, *Renewables Portfolio Standard Quarterly Report* (Apr. 2008) at 11, available at http://docs.cpuc.ca.gov/word_pdf/REPORT/85936.pdf; see also Cal. Energy Comm'n, *Report On Progress Of Publicly Owned Utilities In Implementing Renewable Portfolio Standards* at 30, 33 (Dec. 2008), available at <http://www.energy.ca.gov/2008publications/CEC-300-2008-005/CEC-300-2008-005.PDF>; Cal. Pub. Utils. Comm'n, *Renewables Portfolio Standard Quarterly Report*, (4th Q. 2010) at 2, available at <http://www.cpuc.ca.gov/NR/rdonlyres/CFD76016-3E28-44B0-8427-3FAB1AA27FF4/0/FourthQuarter2010RPSReporttotheLegislature.pdf>.

51. See Cal. Pub. Utils. Comm'n, *California Renewables Portfolio Standards*, <http://www.cpuc.ca.gov/PUC/energy/Renewables/index.htm> (last visited Aug. 31, 2010).

52. Cal. Pub. Utils. Comm'n, *Renewables Portfolio Standard Quarterly Report* (2d Q. 2010), available at <http://www.cpuc.ca.gov/NR/rdonlyres/66FBACA7-173F-47FF-A5F4-BE8F9D70DD59/0/Q22010RPSReporttotheLegislature.pdf>.

53. See Cal. Energy Comm'n, *Integrated Energy Policy Report, 2006 Update*, Report 100-2006-001-CMF at 4 (Jan. 2007).

54. Cal. Indep. Sys. Operator, *Integration of Renewable Resources, Operational Requirements and Generation Fleet Capability at 20% RPS*, at 3 (Aug. 2010).

55. See Cal. Indep. Sys. Operator, *Integration of Renewable Resources, Operational Requirements and Generation Fleet Capability at 20% RPS*, at 3 (Aug. 2010).

56. CAL. PUB. UTIL. CODE § 399.15(b)(4) (2010).

III. Reasons Why California Failed to Reach Its 20% Goal by 2010

Several factors contributed to California's failure to meet its 2010 target. California agencies largely blamed independent factors for its failure to meet RPS goals rather than taking a closer look at the RPS program itself. In a report to the Legislature, the CPUC cited transmission, permitting issues, and developer inexperience as reasons why it was failing to meet RPS goals.⁵⁷ Although each of these reasons likely was a factor in the failure, there are more central reasons why California's RPS has not been effective.

In general, most authorities believe RPS standards are associated with higher renewable development.⁵⁸ Failing to develop renewable energy and meet renewable goals can be due to a variety of factors unrelated to RPS design.⁵⁹ For example, other factors such as grid enhancement or contractor licensing can play a role.⁶⁰ In particular, a study by the National Renewable Energy Lab concluded that "two external factors [that] have the most impact on what an RPS can accomplish on a large scale: available resources (e.g., wind, solar radiation, geothermal potential, or biomass stocks); and available transmission capacity."⁶¹ Other studies have similarly found that RPS results depend on transmission policy.⁶²

California's RPS, however, likely did not increase renewable development since California only has increased development by a small percentage over the life of its RPS.⁶³ Thus, the design of California's RPS is likely a central, but not the only, reason for California's shortfall.

57. See Cal. Pub. Utils. Comm'n, *Renewables Portfolio Standard Quarterly Report* (Jan. 2008).

58. See E. Brown & S. Busche, Nat'l Renewable Energy Lab., *State of the States 2008: Renewable Energy Development and the Role of Policy* (Oct. 2008), available at <http://www.nrel.gov/docs/fy09osti/43021.pdf> (finding that the "existence of an RPS is also significantly correlated to higher renewable percentages of overall electricity generation").

59. See D. Hurlbut, Nat'l Renewable Energy Lab., *State Clean Energy Practices: Renewable Portfolio Standards* at 2 (July 2008).

60. See E. Brown & S. Busche, Nat'l Renewable Energy Lab., *State of the States 2008: Renewable Energy Development and the Role of Policy* (Oct. 2008), available at <http://www.nrel.gov/docs/fy09osti/43021.pdf>.

61. D. Hurlbut, Nat'l Renewable Energy Lab., *State Clean Energy Practices: Renewable Portfolio Standards* at 3 (July 2008).

62. *Id.* at 1 ("States with an RPS that have significantly increased renewable resources either have available transmission, or have developed strategies to build it.").

63. See Cal. Pub. Utils. Comm'n, *Renewables Portfolio Standard Quarterly Report* (2d Q. 2010), available at <http://www.cpuc.ca.gov/NR/rdonlyres/66FBACA7-173F-47FF-A5F4-BE8F9D70DD59/0/Q22010RPSReporttotheLegislature.pdf>.

California's RPS design has fundamental shortcomings that contributed to California's failure to meet its target because it has no central authority and lacks strong enforcement provisions. Experience has shown that if a RPS is not appropriately designed, it is unlikely to lead to increased in renewable generation.⁶⁴ In addition to its design issues, California has relied extensively on utilities rather than independent assessments to its detriment.

A. California's RPS Has Overlapping and Unclear Lines of Authority

California's RPS program is administered by several different agencies with overlapping authority. The California Public Utilities Code contemplates that the California Energy Commission ("CEC") and the California Public Utilities Commission share responsibilities for implementing the RPS.⁶⁵ The Code also acknowledges that the RPS Program and the Renewable Energy Resources Program administered by the CEC are two overlapping programs that are intended to be complementary.⁶⁶

In addition to the Code having overlapping authority, Executive Orders S-14-08 and S-21-09, which established the 33% renewable target, also create overlapping authority. In particular, Executive Order S-14-08 directs the CEC and requests the CPUC and the California Independent System Operator ("CAISO") to work together with stakeholders to identify how and where renewable energy can be developed.⁶⁷ Executive Order S-21-09 also requires the California Air Resources Board ("CARB") to work with the CEC and the CPUC to ensure that a regulation requiring renewable energy sources is adopted.⁶⁸ S-21-09 further requires the CPUC and the CEC to "provide advice and assistance to, and cooperate with" the California Air Resources Board in its implementation of a RPS related regulation and, in doing so, the CARB can delegate policy related responsibilities to these agencies.⁶⁹

64. See O. Langniss & R. Wiser, *The Renewables Portfolio Standard in Texas: An Early Assessment*, 31 ENERGY POLICY 527, 528 (2003).

65. CAL. PUB. UTIL. CODE § 399.11 (2010).

66. CAL. PUB. UTIL. CODE § 399.11(d) (2010).

67. Cal. Exec. Order S-14-08 at Paragraphs 14, 15 and 17 ("In conjunction with its work with DFG to develop the DRECP pursuant to number 7 above and any work it performs to facilitate the siting and permitting of renewable generation and transmission projects, the CEC shall coordinate with BLM, CPUC, the Cal. Indep. Sys. Operator, and other interested federal, state, and local agencies, work closely with interested stakeholders, and utilize input from RETI.").

68. Cal. Exec. Order S-21-09.

69. *Id.* ("The ARB may delegate to the PUC and the CEC any policy development or program implementation responsibilities that would reduce

Transmission related issues are also handled by several agencies. The CAISO has primary responsibility for managing transmission.⁷⁰ But this responsibility is shared with the CPUC, which requires utilities to obtain a certification of public convenience and necessity to use ratepayer generated money for transmission projects.⁷¹ Transmission planning responsibilities also overlap with a number of regional planning initiatives examining transmission issues including the California Renewable Transmission Initiative, the California Transmission Planning Group, and the Western Renewable Energy Zones initiative.

Due to the structure of the statute and executive orders, virtually every aspect of RPS implementation involves multiple agencies. For example, the CPUC handles renewable procurement issues,⁷² and it requires utilities to submit renewable procurement plans to it for review and acceptance, modification, or rejection.⁷³ Other agencies like the CEC and the CAISO do, nevertheless, make procurement related recommendations to the CPUC. In fact, the CEC made recommendations in its Integrated Energy Policy Report during the 2006 Long Term Procurement Plan.⁷⁴ The CEC also generates the demand forecast that is intended to be the basis of procurement related decisions.⁷⁵

In addition, multiple agencies often opine on the same issue and publish overlapping, and at times inconsistent, reports and recommendations. For example, in a recent CPUC planning proceeding, the CPUC, the CAISO, and a utility presented models to attempt to predict

duplication and improve consistency with other energy programs such as demand response, energy efficiency and energy storage.”).

70. See CAL. PUB. UTIL. CODE § 345.5(b) (2010).

71. See CAL. PUB. UTIL. CODE § 1001 (2010) (this is a requirement for jurisdictional utilities).

72. See Cal. Pub. Utils. Comm’n, *RPS Program Overview*, <http://www.cpuc.ca.gov/PUC/energy/Renewables/overview.htm> (last modified Sept. 22, 2009) (describing CPUC’s interpretation of its authority).

73. See CAL. PUB. UTIL. CODE § 399.14; Cal. Pub. Utils. Comm’n, Decision D.03-06-071 (June 19, 2003), available at http://docs.cpuc.ca.gov/PUBLISHED/FINAL_DECISION/27360.htm.

74. See Cal. Pub. Utils. Comm’n, Decision 07-12-052 at 12 (Dec. 20, 2007); Cal. Energy Comm’n, 2005 Integrated Energy Resource Plan, available at <http://www.energy.ca.gov/2005publications/CEC-100-2005-007/CEC-100-2005-007-CMF.PDF> (describing CEC’s recommendations, which include implementing the Energy Action Plan and requiring more transparency in energy planning and procurement).

75. See CAL. PUB. UTIL. CODE § 454.5 (2010) (specifically mentioning the CEC forecasts for use in long term procurement plan proceedings); see also Cal. Pub. Utils. Comm’n, Decision 07-12-052 (Dec. 20, 2007) (discussing its use of the most recent CEC forecast).

renewable needs.⁷⁶ Multiple agencies have also issued their own reports on particular aspects related to the RPS such as energy storage.⁷⁷ In addition to overlapping authority being resource intensive, different agencies may make decisions on the same matter, which causes inconsistent results and makes compliance difficult to monitor.⁷⁸ Inconsistent positions in overlapping areas have the potential to cause serious conflicts.⁷⁹ In the past, the CEC and the CPUC have almost competed against each other by creating similar overlapping greenhouse gases related policies.⁸⁰ This can still be seen today in the various competing reports issued by the agencies.

To attempt to deal with overlapping authority issues, agencies have signed memoranda of understanding to explicitly delineate the responsibilities of agencies. For example, the CAISO and the CPUC signed a memorandum of understanding to work together and coordinate on resource and transmission planning issues.⁸¹ The CPUC believes that this coordination and consistency between assumptions is desirable to reduce the risk of legal challenges to determinations of need for a transmission line.⁸² In addition to memoranda of understanding, California agencies have committed that: “[w]here appropriate, inter-agency collaboration will be

76. See Cal. Pub. Utils. Comm’n, Rulemaking 10-05-006; Cal. Pub. Utils. Comm’n, History of LTTP, http://www.cpuc.ca.gov/PUC/energy/Procurement/LTTP/Ltpp_history.htm (providing links to models provided in proceeding).

77. See, e.g., Cal. Pub. Utils. Comm’n, *Electric Energy Storage: An Assessment of Potential Barriers and Opportunities* (July 9, 2010), available at <http://www.cpuc.ca.gov/NR/rdonlyres/71859AF5-2D26-4262-BF52-62DE85C0E942/0/CPUCStorageWhitePaper7910.pdf>; Cal. Indep. Sys. Operator, *Integration of Energy Storage Technology: White Paper - Identification of Issues and Proposed Solutions* (May 22, 2008), available at <http://www.caiso.com/1fd5/1fd56f931140.pdf>.

78. See, e.g., D. Hurlbut, Nat’l Renewable Energy Lab., *State Clean Energy Practices: Renewable Portfolio Standards* at 5 (July 2008).

79. See T. Duane, *Greening the Grid: Implementing Climate Change Policy Through Energy Efficiency, Renewable Portfolio Standards, and Strategic Transmission System Investments*, 34 VERMONT L. REVIEW 711, 748, 750 (2010) (arguing that the largest coordination issue arises “in the arena of meeting California’s ambitious RPS and ensuring that adequate transmission is available to ship renewables power to markets.”).

80. See J. Malaczynski & T. Duane, *Reducing Greenhouse Gas Emission from Vehicle Miles Traveled: Integrating the California Environmental Quality Act with the California Global Warming Solutions Act*, 36 ECOLOGY L.Q. 71, 105 (2009).

81. See Cal. Indep. Sys. Operator and Cal. Pub. Utils. Comm’n, Memorandum of Understanding (May 13, 2010), available at <http://www.caiso.com/2799/2799bf542ee60.pdf>.

82. See Cal. Pub. Utils. Comm’n, *Renewables Portfolio Standard Quarterly Report 10-11* (3d Q. 2010), available at <http://www.cpuc.ca.gov/NR/rdonlyres/6472286E-6372-47CF-9F3D-2D2C3100BF6D/0/Q32010QuarterlyRPSReporttotheLegislature.pdf>.

deepened to advance these and other policy goals.”⁸³ Problematically, however, these memoranda of understanding are not enforceable and are only followed if an agency is willing. The overlapping authority inherent in California’s RPS design will continue to cause issues related to inconsistencies, control, and wasted resources, hampering the achievement of the RPS’s goals.

B. California’s RPS Lacks a Strong Enforcement Mechanism

States have promulgated a variety of mechanisms to administer RPS policies such as compliance verification, filing requirements, certification of renewable generators, contracting standards, and flexibility mechanisms.⁸⁴ Flexible compliance measures have been enacted largely as a response to risk and cost arguments.⁸⁵ Many states are also creating renewable energy credits to ease compliance.⁸⁶ Some of these have been effective enforcement mechanisms while others have weakened the ability of states to ensure compliance.

California’s RPS administrative provisions include some weak provisions such as flexibility instruments and other, stronger provisions which require compliance verification and certification of eligible generators.⁸⁷ The California Public Resources Code states a clear intent to “increase the amount of electricity generated from eligible renewable energy resources per year, so that it equals at least 20% of total retail sales of electricity in California per year by December 31, 2010.”⁸⁸ The CPUC summarized the RPS requirements for load serving entities as: “(1) 20% by 2010, (2) increase in annual procurement by 1%, (3) report on progress; (4) use of flexible compliance; and (5) uniform penalty provision.”⁸⁹ Although

83. Cal. Energy Comm’n, *California Clean Energy Future Implementation Plan* at 23 (Sept. 2010), <http://www.energy.ca.gov/2010publications/CEC-100-2010-002/CEC-100-2010-002-PLAN.PDF>.

84. See R. Wiser & C. Namovich, Lawrence Berkeley Nat’l Lab., *Renewable Portfolio Standards, A Factual Introduction to Experience in the United States* (Apr. 2007).

85. See, e.g., R. Wiser, K. Porter, & R. Grace, *Evaluating Experience with Renewable Portfolio Standards in the United States* (Mar. 2004).

86. See R. Wiser & C. Namovich, Lawrence Berkeley Nat’l Lab., *Renewable Portfolio Standards, A Factual Introduction to Experience in the United States* (Apr. 2007).

87. See Cal. Pub. Utils. Comm’n, *RPS Program Overview*, available at <http://www.cpuc.ca.gov/PUC/energy/Renewables/overview> (last modified Sept. 22, 2009).

88. CAL. PUB. RES. CODE § 25740.

89. See Cal. Pub. Utils. Comm’n, *Decision Re: Conditionally Accepting 2009 Renewables Portfolio Standard Procurement Plans and Integrated Resource Plan Supplements*, D.09-06-018 at 8 (June 8, 2009), available at http://docs.cpuc.ca.gov/word_pdf/FINAL_DECISION/102099.pdf.

the list contains several concrete requirements, the RPS program does not have a strong mechanism to force compliance because several provisions allow the standards to be relaxed. Indeed, the CPUC has called its compliance approach “flexibility with accountability” because it has “granted RPS-obligated utilities considerable flexibility in the way they satisfy RPS Program goals.”⁹⁰ The result of these various provisions is that the compliance program is not stringent.

California’s flexibility provisions are included in the RPS legislation, which states that the CPUC shall adopt “[f]lexible rules for compliance including, but not limited to, permitting electrical corporations to apply excess procurement in one year to subsequent years or inadequate procurement to one year to no more than the following three years.”⁹¹ These flexible rules can apply to any year, even years after the 20% standard has been met.⁹² In addition, the RPS legislation calls the annual procurement numbers “targets” rather than requirements.⁹³

California agencies further assume that utilities will be responsible for implementation of the RPS requirements. The CPUC has summarized this compliance approach stating: “each utility may apply its own reasonable business judgment in running its solicitation, within the parameters we establish and the guidance we provide. Utilities ultimately remain responsible for program implementation, administration and success, within application of flexible compliance criteria.”⁹⁴ In other words, utilities are primarily required to meet the procurement targets set forth in the flexible compliance criteria, which is different from the actual target under the statute.⁹⁵ If a seller fails to procure sufficient renewable energy under this flexible regime, the CPUC can impose a penalty of five cents for every kilowatt hour the utility is short of the requirement with a cap of \$25 million per year, but the CPUC has never imposed a non-compliance penalty on a utility.⁹⁶

The verification requirements under the RPS program also do not provide for a strong enforcement mechanism. Verification is completed by the CEC not the CPUC.⁹⁷ The CPUC has used contracted numbers rather

90. See *id.* at 8-9.

91. CAL. PUB. UTIL. CODE § 399.14(a)(2)(C).

92. CAL. PUB. UTIL. CODE § 399.14(a)(2)(C)(i).

93. CAL. PUB. UTIL. CODE § 399.15(b).

94. Cal. Pub. Utils. Comm’n, Decision 09-06-018 at 22 (June 8, 2009).

95. See Cal. Pub. Utils. Comm’n, Compliance Reporting, <http://www.cpuc.ca.gov/PUC/energy/Renewables/compliance.htm>.

96. *Id.*; CPUC, Renewables, Compliance and Reporting, <http://www.cpuc.ca.gov/PUC/energy/Renewables/compliance.htm> (last updated Feb. 11, 2011).

97. See S.B. 1078, 2001-02 Leg., Reg. Sess., Leg. Counsel’s Digest (Cal. 2002) (“The bill would require the Energy Commission to certify eligible renewable energy

than the actual verified number in its reports to the legislature.⁹⁸ Yet, the CEC believes that its verification is not legally required,⁹⁹ and its verification does not occur until years later.¹⁰⁰ The CEC's verification also has little practical use since the CEC does not hold itself responsible for catching double-counting,¹⁰¹ and it does not determine compliance.¹⁰² Thus, the verification exercise only produces limited results.¹⁰³

The penalty provisions under the California RPS program also failed to provide a strong enforcement mechanism and thus likely contributed to its failure. Strong penalty levels for noncompliance are an important part of a strong RPS design.¹⁰⁵ The legislative counsel's digest for the original RPS bill recognized the need for strong penalty provisions stating: "[b]ecause a violation of the Public Utilities Act or an order of the PUC is a crime under existing law, the bill would impose a state-mandated local program by creating a new crime."¹⁰⁶ The next bill, however, deleted this language.¹⁰⁷

Additionally, there are also not adequate enforcement provisions to prevent procurement of unviable projects.¹⁰⁸ In other words, bidders are not deterred from proposing projects that are unlikely to be built.¹⁰⁹ This has become a significant issue since many projects in California are predicted to fail and ultimately have failed.¹¹⁰ These failures are the result of various

resources, to design and implement an accounting system to verify compliance with the renewables portfolio standard by retail sellers.").

98. See, e.g., Cal. Pub. Utils. Comm'n, *Progress of the California Renewable Portfolio Standard, Report to the Legislature, First Quarter 2007* at 2 (Jan. 2007), available at <http://docs.cpuc.ca.gov/published/GRAPHICS/63854.PDF>.

99. Cal. Energy Comm'n, *Renewables Portfolio Standard 2006 Procurement Verification 2* (July 2010), available at <http://www.energy.ca.gov/2009publications/CEC-300-2009-006/CEC-300-2009-006-CMF.PDF>.

100. For example, the 2006 verification was not finalized until July 2010. See *id.* at 2.

101. *Id.* at v.

102. *Id.* at 2.

103. *Id.*

105. See e.g., D. Hurlbut, Nat'l Renewable Energy Lab., *State Clean Energy Practices: Renewable Portfolio Standards* at 5 (July 2008).

106. S.B. 1078, 2001-02 Leg., Reg. Sess., Leg. Counsel's Digest (Cal. 2002).

107. See S.B. 107, 2005-06 Leg., Reg. Sess., Leg. Counsel's Digest (Cal. 2006).

108. See Langniss & Wiser, *supra* note 64, at 530.

109. *Id.* at 528 (contrasting California's requirements with Texas's requirements).

110. See, e.g., KEMA, Inc., *Building a Margin of Safety into Renewable Energy Procurements* (Jan. 2006), available at <http://www.energy.ca.gov/2006publications/CEC-300-2006-004/CEC-300-2006-004.PDF>.

impediments including transmission, financing, siting, and permitting.¹¹¹ A common reason for projects to fail is the difficulty of securing adequate transmission capacity,¹¹² which should have surfaced and been resolved in the request for offer stage. Notably, the Public Utilities Code requires that the criteria for the ranking and selection of resources include “needed transmission investments and ongoing utility expenses resulting from integrating and operating eligible renewable energy resources.”¹¹³

Strong regulatory enforcement mechanisms are an important component of a successful RPS program. California’s experiment with deregulation, in the late 1990s, showed why regulatory enforcement authorities are necessary. Deregulation demonstrated that “light-handed regulation combined with the entrepreneurial profit-maximizing behavior of private participants in electricity markets does not serve the public well.”¹¹⁴ Specifically, as one commentator articulated, “California’s failed ‘deregulation’ experiment arose largely from the failure of California to create properly functioning market rules, lack of diligence in market oversight, and the expectation that antitrust law would cure that which it was not designed to cure: market ills cultivated by regulatory rules that legitimized anticompetitive conduct and made that conduct the norm.”¹¹⁵ Put another way, markets “cannot be trusted to work without a high degree of government intervention.”¹¹⁶ California’s lack of a strong enforcement mechanism is likely a reason why it has failed to meet its 20% target.

C. California’s Overreliance on Utilities Contributed to Its Failure to Meet Its RPS Target

Given the lack of centralized authority and enforcement power, California has relied largely on utilities to provide information for RPS-related decisions. In particular, utilities have asserted that renewable energy projects need increasingly large amounts of natural gas reserves to backup renewables during periods of intermittency.¹¹⁷ Partly due to this

111. See, e.g., Cal. Exec. Order S.14-08 (highlighting impediments to renewable development).

112. See, e.g., KEMA, Inc., *Building a Margin of Safety into Renewable Energy Procurements* (Jan. 2006).

113. CAL. PUB. UTIL. CODE § 399.14(a)(2)(B).

114. J. Weaver, *Can Energy Markets Be Trusted? The Effect of the Rise and Fall of Enron on Energy Markets*, 4 HOUSTON BUS. & TAX L. J. 1, 137-38 (2004).

115. D. Bush & C. Mayne, *In (Reluctant) Defense of Enron: Why Bad Regulation Is To Blame for California’s Power Woes*, 83 OR. L. REV. 207, 212 (2004).

116. Weaver, *supra* note 114, at 138.

117. See e.g., Cal. Pub. Utils. Comm’n, Decision D.10-07-045 (July 29, 2010), available at http://docs.cpuc.ca.gov/word_pdf/FINAL_DECISION/121605.pdf (discussing PG&E’s arguments for new natural gas capacity).

argument, California has approved increasingly large reserves of natural gas facilities, which has resulted in a reserve margin at least twice above what is necessary.¹¹⁸

This continual approval of increased amounts of fossil fuel facilities is due largely to California's overreliance on utilities' analyses. In fact, in 2006, the CPUC recognized that the utilities "are filling, and are projecting to fill, their respective net short positions with conventional resources to the effect of there being no room in . . . [the utilities'] . . . portfolio for other resources, or the conventional resources will be obsolete and result in large stranded costs."¹¹⁹ Recognizing that its reliance on the utilities' analyses was a problem, the CPUC called for a "highly developed analysis" with "analytical rigor" before future requests for fossil-fuel resources would be considered "legitimate."¹²⁰ The CPUC further provided that "[i]n subsequent iterations of the long-term procurement process, the IOUs [investor-owned utilities] will be expected in their resource planning to meet and exceed the high standards Californians expect as pacesetters on energy and environmental issues."¹²¹ The CPUC had however issued this warning before to no avail. The failure of utilities to adhere to the California's commitment to preferred resources was also an issue in a 2004 proceeding.¹²²

The development of more natural gas generating capacity is unnecessary and contrary to the purpose of a RPS,¹²³ and likely crowding out increased development of greater renewable resources. Indeed, the CEC found that new natural gas facilities are not currently needed to integrate renewable energy and meet RPS goals.¹²⁴ This is true even considering the eventual phase out and retirement of several facilities.¹²⁵

California has also relied largely on the development of large remote renewable energy, which often has transmission and land use issues, due to its overreliance on utility data. California's reliance on large remote

118. B. Powers, *Today's California Renewable Energy Strategy - Maximize Complexity and Expense*, 27:2 NAT. GAS & ELECTRICITY 19 (Sept. 2010).

119. Cal. Pub. Utils. Comm'n, Decision D.07-12-052 at 6 (Dec. 20, 2007).

120. *Id.*

121. *Id.*

122. Cal. Pub. Utils. Comm'n, Decision D.04-12-048 at Findings of Fact 54, 55 (Dec. 20, 2004), available at http://docs.cpuc.ca.gov/word_pdf/FINAL_DECISION/43224.pdf.

123. See D. Hurlbut, Nat'l Renewable Energy Lab., *State Clean Energy Practices: Renewable Portfolio Standards* at 5 (July 2008) ("most straightforward measures of RPS effectiveness are the degree to which fossil fuels have declined as a share of the state's electric-generation fuel mix").

124. See Cal. Energy Comm'n, *Impact of Assembly Bill 32 Scoping Plan Electricity Resource Goals on New Natural Gas-Fired Generation* (2009).

125. *Id.*

renewable energy projects is in part due to its lack of evaluation of current information of more viable and less-environmentally harmful alternatives such as distributed solar generation.¹²⁶ Utilities have incentives to seek remote renewable generation, which requires higher capital investment and transmission costs, since their rates are based on capital investment.¹²⁷ However, transmission related issues could cause contentious land use issues, which can lead to project failure.¹²⁸ Project failures, which are the result of utilities not picking the most viable projects, have greatly hindered California's ability to meet its RPS.¹²⁹

IV. Goals for Moving Forward

To meet California's future energy goals, California will need to stop doing business as usual and independently evaluate RPS issues. Some incentives that are important for meeting the RPS targets are contrary to current utility incentives. This inherent utility bias needs to be recognized, and strong compliance mechanisms related to contract viability and utility procurement need to be set to achieve better results.

A. California Should Enact Strong Enforcement Mechanisms

California agencies have recognized that its "agencies [need to] work in a more coordinated and efficient fashion."¹³⁰ Although this is a start, a plan by California's agencies to work together does not assure that California's goals will be met. A strong compliance authority is necessary to hold utilities accountable for meeting the RPS targets. Accordingly, groups advocating for RPS requirements have recognized the importance of strong enforcement mechanisms.¹³¹ Even these advocates, though, are concerned about punishing utilities for factors beyond their control.¹³² A close examination of RPS requirements demonstrates that with a revision of the viability requirements for contracts, the situations outside of utilities'

126. See Powers, *supra* note 118, at 19, 20.

127. *Id.* (discussing utility incentives for larger generation).

128. See A. Brown & J. Rossi, *Siting Transmission Lines in a Changed Milieu: Evolving Notions of the "Public Interest" in Balancing State and Regional Considerations*, 81 U. COLO. L. REV. 705 (2010).

129. Cal. Pub. Utils. Comm'n, *Renewables Portfolio Standard Quarterly Report* (Jan. 2008).

130. Cal. Energy Comm'n, *California Clean Energy Future Implementation Plan* at 23 (Sept. 2010).

131. *A Strong Clean Energy for California* (Aug. 2010), http://www.ucsusa.org/assets/documents/clean_energy/33_percent_res.pdf.

132. *Id.*

control will be minimized, enabling more effective enforcement of the RPS.

Other states have taken more authority to help assure that RPS goals are met. For example, some states have taken back siting authority from local zoning boards to oversee siting for renewable energy development.¹³³ California needs to pass provisions that allow for strong enforcement of RPS requirements rather than relying on its current flexible provisions.

Initially, California should include provisions that discourage unviable projects from being offered. Texas has successfully required contract terms that penalize construction delays and other types of operational issues.¹³⁴ These provisions have helped eliminate incentives for proposing projects that are likely to prove unviable.¹³⁵ In addition to eliminating incentives for unviable projects, Texas's renewable projects have also been shown to be cost competitive.¹³⁶ California utilities have spent a significant amount of time and resources on unviable projects. Part of this failure is due to developers not having sufficient experience or funding to complete the projects.¹³⁷ By requiring compliance with strict contract requirements, California can likely minimize the amount of contract failures due to developer issues, which will in turn reduce the cost of renewable development.

In addition to strengthening the contract requirements, California should enact strong enforcement requirements that hold utilities accountable for not meeting targets. California is currently unable to deter or prevent utilities from failing to meet their RPS targets because of the state's flexible enforcement approach and associated low-penalty provisions. Many of these provisions were enacted because the Legislature held the view that some issues are out of control of the investor-owned utilities.¹³⁸ Strong contract requirements and increased knowledge have changed this. High renewable usage levels have been achieved and the body of knowledge related to renewable energy development has grown exponentially since California's RPS targets were originally enacted, calling into question the original consensus supporting the "flexible" approach to RPS enforcement.

In addition to strengthening enforcement of the RPS targets, California

133. See *Residents Opposed to Kittitas Turbines v. State Energy Facilities Site Evaluation Council*, 197 P.3d 1153 (Wash. 2008) (upholding state law that overrides local zoning decision to prohibit wind development); Sara C. Bronin, *The Quiet Revolution Revisited: Sustainable Design, Land Use Regulation, and the States*, 93 MINN. L. REV. 231, 271 (2008).

134. See Langniss & Wiser, *supra* note 64, at 538.

135. *Id.*

136. *Id.*

137. Cal. Pub. Utils. Comm'n, *Renewables Portfolio Standard Quarterly Report* (Apr. 2008).

138. See *supra* at Section II(B).

could enact a policy that utilities should not be allowed to continue to recover money from ratepayers for all new fossil fuel contracts above the planning reserve margin if they are failing to meet their renewable requirements. This would also help alleviate California's extraordinarily high reserve margin levels.

B. California Needs to Conduct an Independent Analysis to Determine How to Integrate Renewables

Utilities have a strong economic incentive to develop new expensive facilities because rate recovery is based in part on capital expenditures.¹³⁹ Due to this incentive, utilities are not economically encouraged to evaluate all possible options for integrating renewables such as increased energy efficiency.¹⁴⁰ Thus, current economic incentives do not sufficiently encourage innovative renewable energy development rather than other most cost effective solutions.¹⁴¹ Consequently, instead of relying on utilities, regulators need to carefully examine how to integrate renewable energy resources and whether additional fossil fuel facilities are actually necessary to back them up.¹⁴² This is particularly true when utilities have incentives to request large-scale renewable projects that require significant capital investment.¹⁴³

Importantly, it is not clear that *any* additional new facilities will be needed to integrate renewables in California for many years. In fact, it appears that the CPUC has already allowed too many facilities to be developed since California is currently operating with an extraordinarily large reserve margin and several more fossil fuel facilities are scheduled to

139. See Powers, *supra* note 118, at 20.

140. See T. Duane, *Greening the Grid in California*, 25 NATURAL RESOURCES & ENVIRONMENT 31, 34 (2010) ("Another consequence is that the RPS then fails to further longer-term technology development, which is critical to reducing costs while improving renewable generation performance reliability.").

141. *Id.* (concluding that "[p]rice incentives alone are, therefore, not sufficient for steady development and deployment of new technologies - unless they are so high that they overcome all risks for technology and project developers.").

142. See, e.g., S. Ferrey, *Restructuring a Green Grid: Legal Challenges to Accommodate New Renewable Infrastructure*, 39 ENVTL. L. 977 (2009).

143. See, e.g., M. Dorsi, *Piedmont Environmental Council v. FERC*, 34 HARVARD ENVTL. LAW REVIEW 593, 600 (2010) (NGOs and government agencies "will need to develop and maintain expertise to determine when transmission actually supports renewable energy."); Duane, *supra* note 140, at 34 ("A multiattribute evaluative system is preferred over a price-only evaluation because some green power is worth a lot more than other green power, but its value may not be captured in monetized bidding systems where competing technologies are compared on price alone.").

come online in the near future.¹⁴⁴ Contrary to this trend, the reliance on natural gas plants will need to decrease for California to achieve its RPS goals. A 2003 study by Lawrence Berkeley National Laboratory found that California would need to reduce natural gas plant capacity to meet the proposed requirement to get 33% of electricity from renewable energy.¹⁴⁵

If backup capacity is necessary, all options that are potentially available and being developed should be examined to determine the best way to back up renewables.¹⁴⁶ Even if additional backup is needed, energy storage is a better backup for renewable energy than new facilities. In fact, as a recent analysis found, “storage can achieve better performance in the system per MW installed [for backing up renewable energy] than regulation from conventional generation.”¹⁴⁷ Storage also provides significant environmental benefits because it avoids greenhouse gases associated with increased use of combustion turbines.¹⁴⁸

Importantly, the CEC has acknowledged the role of storage technology in planning for the integration of intermittent renewable generation: “looking forward, some of the firming services provided by gas-fired generation will need to come from existing and emerging energy storage technologies that allow generators and transmission operators to fill the gap between the time of generation (off-peak) and the time of need (on-peak) for intermittent renewable energy.”¹⁴⁹ That CEC report similarly concluded that storage could replace the number of natural gas power plants that are required to backup the system,¹⁵⁰ and that the technology has advanced to the extent that several technologies will be able to provide utility-size

144. See Cal. Pub. Utils. Comm’n, Decision 10.07.045 (Concurrence of D. Gruenich).

145. See Lawrence Berkeley Nat’l Lab., *California’s Electricity Generation and Transmission Interconnection Needs Under Alternative Scenarios*, CEC 500-03-106, available at <http://certs.lbl.gov/pdf/ca-scenarios.pdf>.

146. See Int’l Energy Agency, *Empowering Variable Renewables: Options for Flexible Electricity Systems* 14 (2008), available at http://195.200.115.136/g8/2008/Empowering_Variable_Renewables.pdf.

147. KEMA, Inc., *Research Evaluation of Wind Generation, Solar Generation, and Storage Impact on the California Grid Prepared for the CEC* 4, 7 (June 2010), available at <http://www.energy.ca.gov/2010publications/CEC-500-2010-010/CEC-500-2010-010.PDF>.

148. See KEMA, Inc., *supra* note 147, at 76.

149. Cal. Energy Comm’n, 2009 *Integrated Energy Policy Report* 192 (Dec. 16, 2009), <http://www.energy.ca.gov/2009publications/CEC-100-2009-003/CEC-100-2009-003-CMF.PDF>; see also *id.* at 86 (“Other solutions [aside from natural-gas plants] such as energy storage and hybrid renewable plants, are also possible and could be preferable in the longer term as more aggressive climate mitigation targets are addressed.”).

150. *Id.* at 6, 192; see also *id.* at 86 (“[b]attery energy storage technology has improved over time to the point where there are several emerging battery technologies that can provide utility-scale energy storage.”).

storage.¹⁵¹

Consideration of energy storage systems for integrating renewables is essential because several energy storage systems are already operating and being developed in California. For example, the Southern California Public Power Authority signed an agreement with Ice Energy in January 2010 to install 53 MW of load-shifting storage capacity this year.¹⁵² In addition, a 2 MW battery storage project in Huntington Beach has been operational since 2008.¹⁵³ Moreover, there are several other energy storage projects being planned and implemented throughout California.¹⁵⁴

Not only are energy storage projects a potential alternative for integrating renewables that are under development, but they can also be a more cost-effective backup than fossil fuel plants.¹⁵⁵ Energy storage has many possible economic benefits. Renewable capacity firming is one such benefit, which involves the use of storage so that the combined renewable energy generation with storage is "somewhat-to-very constant."¹⁵⁶ The value of this benefit has been estimated to be \$709-\$915 per kW, or in broader terms, a potential benefit to the U.S. economy in the amount of \$29.9 billion (\$2.3 billion for California).¹⁵⁷ The same report includes an analysis of sixteen other benefits, detailing the impressive potential economic impact on energy storage integration.¹⁵⁸ The inclusion and consideration of these benefits in the comparison with gas-peaker plants and other forms of peak generation is a vital step towards fairly seeking the most cost effective electricity supply solutions during the LTPP process.

Notably, the CPUC staff recommended that it: "[c]onsider explicitly

151. *Id.* at 86.

152. S. Cal. Pub. Power Auth./Ice Energy Joint Press Release, *Southern California Public Power Authority to Undertake Industry's Largest Utility-Scale Distributed Energy Storage Project* (Jan. 27, 2010).

153. See D. Kilish, AES Corp., *Energy Storage Role in Smart Grid: CPUC Smart Grid Rulemaking, Integration of Renewables and Energy Storage*, at slide 2 (June 2009), available at <http://www.cpuc.ca.gov/NR/rdonlyres/FF391276-27FB-4BA3-80FF-6EFBC5EF5948/0/DaurenKilishAES.pdf>.

154. See Janice Lin, Cal. Energy Storage Alliance, *Imperative of Energy Storage for Meeting California's Clean Energy Needs*, at slide 38 (May 6, 2010), available at http://storagealliance.org/presentations/StrateGen_CESA_ESA_Presentation_2010-05-06.pdf.

155. Cal. Energy Storage Alliance, *Energy Storage: A Cheaper and Cleaner Alternative to Natural Gas Peakers 2* (June 2010), available at <http://storagealliance.org/whystorage.html>.

156. Jim Eyer & Garth Corey, Sandia Nat'l Labs., *Energy Storage for the Electricity Grid: Benefits and Market Potential Assessment Guide* (Feb. 2010), available at <http://prod.sandia.gov/techlib/access-control.cgi/2010/100815.pdf>.

157. *Id.*

158. *Id.*

placing EES [electricity energy storage] within the state's energy resource loading order and require utilities to incorporate EES in their integrated resource planning processes."¹⁵⁹ This should occur soon as the California legislature recently passed AB 2514, requiring the Commission to consider energy storage issues, ensuring the fair and completion evaluation of these issues.¹⁶⁰

Beyond just providing greater energy storage capacity, existing facilities can also be modified to provide backup resources. As described by the CAISO, intermittent renewables create a need for resources that have quick start-up and ramping times.¹⁶¹ For many current facilities, software upgrades can increase the start and stop time of these facilities.¹⁶² In particular, the available technology optimizes the "combustion process," allowing for faster and more efficient startup.¹⁶³ The software has been used in other facility upgrades resulting in increased abilities to startup faster.¹⁶⁴ Considering these types of upgrades to current facilities could lower the need for resources necessary to integrate renewable. The upgrades could also lower potential transmission needs by reducing the need to site new facilities online.

C. California Needs to Increase Its Focus on Small Distributed Generation Projects That Do Not Require Transmission Upgrades

One of the primary reasons cited for project failure in California is transmission issues. Transmission questions arise over how lines should be

159. See Cal. Pub. Utils. Comm'n, *Electric Energy Storage: An Assessment of Potential Barriers and Opportunities, Policy and Planning Division Staff White Paper 9* (July 9, 2010), available at <http://www.cpuc.ca.gov/PUC/energy/reports.htm>.

160. A.B. 2514, 2009-10 Leg., Reg. Sess. (Cal. 2010) (approved by the Assembly in June 2010); Cal. Pub. Util. Comm'n, Order Instituting Rulemaking Pursuant to Assembly Bill 2514 to Consider the Adoption of Procurement Targets for Viable and Cost-Effective Energy Storage Systems, Rulemaking 10-12-007 (Dec. 16, 2010), available at <http://docs.cpuc.ca.gov/published/proceedings/R1012007.htm>.

161. Letter from Jim McIntosh, Dir. of Renewable Res. Integration, Cal. Indep. Sys. Operator, to Pres. & Comm'rs, Cal. Pub. Utils. Comm'n, Re: A.09-10-022 and A.09-10-034 (Feb. 1, 2010), available at <http://docs.cpuc.ca.gov/efile/EXP/113557.pdf>.

162. See, e.g., Siemens A.G., *Integrated Technologies that Enhance Power Plant Operating Flexibility* (Dec. 2007), available at http://www.energy.siemens.com/hq/pool/hq/energy-topics/pdfs/en/combined-cycle-power-plants/PowerGen2007PaperFinal_.pdf.

163. See Gen. Elec. Co., *Ecomagination: OpFlex Turndown Technology*, available at <http://ge.ecomagination.com/products/opflex-turndown.html> (last visited March 13, 2011).

164. See Combined Cycle Journal, First Quarter 2008 at 14-16, available at <http://www.combinedcyclejournal.com/1Q2008/1Q2008-1/108Award-p.3-27.pdf>.

paid for and who decides whether a line should be sited.¹⁶⁵ The complexity of these questions and issues can delay potential transmission projects for several years.¹⁶⁶ Many of these transmission issues are a direct result of California's overreliance on large utility scale projects proposed by utilities instead of smaller distributed generation projects.¹⁶⁷ In addition to the transmission issues, large projects can have other negative impacts including high water usage, which is a major impediment to development of large solar plants since the best solar resources are in areas that are generally dry.¹⁶⁸

Regulators are just starting to realize the many benefits of smaller distributed generation projects. The CPUC recently acknowledged the benefits of smaller distributed generation facilities, which include the "relative ease and certainty of deployment that these facilities offer."¹⁶⁹ The ease of deployment is because "these facilities can be located close to load without the need for transmission additions, and may face fewer environmental barriers and public opposition than large scale projects."¹⁷⁰ Consequently, "it is reasonable to conclude that development of smaller projects can be accomplished more quickly and with less risk than larger facilities."¹⁷¹ Further, the California Clean Energy Future Implementation Plan recognized that distributed generation reduces transmission costs and losses at peak time, which could help "avoid the need for new power plants or expansion of existing plants."¹⁷²

The idea that solar photovoltaic distributed generation is a viable replacement for a natural gas peaker plant was also recognized by the CEC stating:

Photovoltaic arrays mounted on existing flat warehouse roofs or

165. See Duane, *supra* note 140, at 35-36.

166. See, e.g., *A Battle for California's Energy Future*, DESERT REPORT (June 2008) (detailing the long battle over the Sunrise Powerlink Transmission siting), available at <http://www.desertreport.org/?s=sunrise>.

167. See Powers, *supra* note 118 (detailing California's overreliance on large renewable facilities).

168. Bill Powers, *PV Pulling Ahead, But Why Pay Transmission Costs?*, NATURAL GAS & ELECTRICITY (Oct. 2009), available at <http://docs.cpuc.ca.gov/efile/EXP/119165.pdf>.

169. Cal. Pub. Utils. Comm'n Decision, D.10-04-052 at 19 (Apr. 2010), available at http://docs.cpuc.ca.gov/WORD_PDF/FINAL_DECISION/117115.pdf.

170. *Id.* at 16.

171. *Id.* at 17.

172. Cal. Energy Comm'n, *California Clean Energy Future Implementation Plan* at 55 (Sept. 2010) (recognizing that other instruments are necessary to achieve high levels of distributed generation: "Policies, such as feed-in tariffs for small scale generation, are being expanded to encourage installation of renewable distributed generation sized to serve demand within a local neighborhood.").

on top of vehicle shelters in parking lots do not consume any acreage. The warehouses and parking lots continue to perform those functions with the PV in place. . . . In addition, while PV is not a quick-start technology which can be dispatched on ten minutes' notice any time of the day or night, PV does provide power at a time when demand is likely to be high - on hot, sunny days.¹⁷³

Also contributing to the positive aspects of solar photovoltaic facilities is that it has dropped greatly in price, which has resulted in distributed solar PV being equivalent to central station solar PV, yet which can be developed in a much shorter time frame.¹⁷⁴ Another benefit of distributed generation is that geographical diversity increases the likelihood that solar power will be available when needed.¹⁷⁵ California should take positive steps to encourage further development of distributed generation by recognizing all of these benefits through incentive programs. Further, California should recognize that distributed generation provides a way to meet renewable goals while minimizing investment in transmission and costs of development to the environment.

V. Conclusion

California can maintain a leadership role in the renewable energy arena if it takes a hard look at why it failed to meet its renewable target. This leadership role will be possible if it determines a concrete way to meet its RPS goals in the future and enacts strong enforcement requirements that are administered by a central agency, which assures that decisions are based on independent assessments of issues.

173. Cal. Energy Comm'n, Final Commission Decision, *Chula Vista Energy Upgrade Project*, 07-AFC-4, at 29 (June 2009), available at <http://www.energy.ca.gov/2009publications/CEC-800-2009-001/CEC-800-2009-001-CMF.PDF>.

174. See T. Woody, *Transmission Constraints Derail Solar Project*, GRIST (June 28, 2010), <http://www.grist.org/article/transmission-constraints-derail-solar-project>.

175. Andrew Mills & Ryan Wisner, Lawrence Berkeley National Laboratory, *Implications of Wide-Area Geographic Diversity for Short-Term Variability of Solar Power* (Sept. 2010), <http://eetd.lbl.gov/ea/ems/reports/lbnl-3884e.pdf>.
